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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROGRAM DOCUMENT

FOR

A PROPOSED

DEVELOPMENT POLICY CREDIT

IN THE AMOUNT OF SDR 71.2 MILLION (US$100 MILLION EQUIVALENT)

TO

NEPAL

FOR A

FIRST PROGRAMMATIC ENERGY SECTOR DEVELOPMENT POLICY CREDIT

August 21, 2018

Energy and Extractives Global Practice
South Asia Region

NEPAL - GOVERNMENT FISCAL YEAR

July 16 – July 15

CURRENCY EQUIVALENTS

(Exchange Rate Effective as of July 31, 2018)

Currency Unit: Nepalese Rupee (NPR)

US$1.00 = NPR 109.83

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ACoS	Average Cost of Supply
AEPC	Alternative Energy Promotion Center
CAR	Capital Adequacy Ratio
DFID	U.K. Department for International Development
DoED	Department of Electricity Development
DPC	Development Policy Credit
EIA	Environment Impact Assessment
EIB	European Investment Bank
e-GP	Electronic Government Procurement
EGCL	Electricity Generation Company Limited
ERC	Electricity Regulatory Commission
ESMAP	Energy Sector Management Assistance Program
ETFC	Electricity Tariff Fixation Commission
FDI	Foreign Direct Investment
FVAP	Financial Viability Action Plan
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
GST	Goods and Services Tax
IBN	Investment Board of Nepal
IFC	International Finance Corporation
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
IPP	Independent Power Producer
ISCR	Interest Service Coverage Ratio
IT	Information Technology
JICA	Japanese International Cooperation Agency
KfW	*Kreditanstalt Fuer Wiederaufbau*
MCC	Millennium Challenge Corporation
MoEWRI	Ministry of Energy, Water Resources, and Irrigation
MoF	Ministry of Finance
MFD	Maximizing Finance for Development

MTF	Multi-tier Framework
NAS	Nepal Accounting Standards
NEA	Nepal Electricity Authority
NFRS	Nepal Financial Reporting Standards
NPTCL	Nepal Power Trading Company Limited
NRB	Nepal Rastra Bank
PBITDA	Profits before interest, tax, depreciation and amortization
PDA	Project Development Agreement
PEFA	Public Expenditure and Financial Accountability
PFM	Public Financial Management
PPA	Power Purchase Agreement
PPIAF	Public-Private Infrastructure Advisory Facility
PPMO	Public Procurement Monitoring Office
PPP	Public-Private Partnership
PSIA	Poverty and Social Impact Assessment
SJVNL	Sutlej Jal Vidyut Nigam Limited
T&D	Transmission and Distribution
TA	Technical Assistance
USAID	United States Agency for International Development

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NEPAL

FIRST PROGRAMMATIC ENERGY SECTOR DEVELOPMENT POLICY CREDIT

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SUMMARY OF PROPOSED CREDIT

NEPAL

FIRST PROGRAMMATIC ENERGY SECTOR DEVELOPMENT POLICY CREDIT

Borrower	Government of Nepal	
Implementation Agency	Ministry of Finance	
Financing Data	IDA Credit Terms: Regular (38 years, with 6 years grace period) Amount: SDR 71.2 million (US$100 million equivalent)	
Operation Type	First in a programmatic series of three Development Policy Credits	
Pillars of the Operation and Program Development Objectives	The Energy Sector Development Policy Credit (DPC) operation aims to support the government's efforts in improving the financial viability and governance of the electricity sector. The proposed DPC series have two pillars: (i) improving the financial viability of the electricity sector; and (ii) improving the governance of the electricity sector.	
Results Indicators (baseline FY2016 and target FY2022)	Average retail tariff relative to average cost of electricity services	Baseline: Average tariff is 32% below average cost of services Target: Average retail tariff covers average cost of electricity services
	NEA's PBITDA	Baseline: NPR 0.49 billion Target: > NPR 40 billion
	Overall transmission and distribution loss	Baseline: 25.8% Target: <18%
	Generation PPAs	Baseline: Generation PPA signed through negotiations Target: Generation PPA signed based on posted tariff and/or competitive bidding
	Amount of electricity traded and exchanged	Baseline: 2,178 GWh Target: At least 20% higher
	GESI guidelines	Baseline: electricity projects are not informed by GESI guidelines Target: GESI guidelines have informed at least one electricity sector project
Overall risk rating	High	
Climate and disaster risks	(a) Are there short- and long-term climate and disaster risks relevant to the operation? Yes. (b) 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.	
Operation ID	P154693	

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

1. INTRODUCTION AND COUNTRY CONTEXT

1. **The proposed programmatic DPC series will support Government of Nepal (GoN)'s efforts in improving the financial viability and governance of the electricity sector.** It will do so by (i) strengthening the enabling conditions for investment that are needed to meet the electricity demand in the country in a reliable and sustainable manner, and (ii) facilitating integration with regional electricity markets to ensure the efficient use of Nepal's surplus hydropower energy. The series has two pillars: (i) improving the financial viability of the electricity sector; and (ii) improving the governance of the electricity sector. IDA would provide US$100 million equivalent credit for the first operation in the DPC series.

2. **Despite political instability and vulnerability, poverty in Nepal has been on a declining trend.** The proportion of Nepalese households living in poverty (as measured by the international extreme poverty line) fell from 46 percent in 1996 to 15 percent in 2011.[1] 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. 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.

3. **Nepal is at a historic juncture, migrating to a federal state structure under a new constitution that defines Nepal as a federal democratic republic.** The new Constitution, promulgated in 2015, establishes Nepal as federal state with subnational governments. Nepal now has seven Provinces and 753 local governments. With the completion of elections for all three tiers of government, a new government took office in February 2018. This is leading to a new alignment of funds, functions and functionaries across the three tiers of government.

4. **Inadequate access to reliable, affordable, and sustainable electricity is a fundamental reason for Nepal's poor economic competitiveness.** While 95 percent of the population is estimated to have access to electricity through grid and off-grid connections according to the World Bank/ESMAP Multi-Tier Framework Surveys (2018), the annual per capita electricity consumption in Nepal, at 177 kWh, is a twentieth of the global average and a fifth of the South Asian average. The installed generation capacity (1,073 MW) has not kept up with the growing electricity demand (1,450 MW), leading to power outages of up to 16 hours a day until last year. Two-thirds of Nepal's firms identify electricity as a major constraint to doing business in Nepal[2]. The economic loss from load shedding is estimated to be as high as US$1.6 billion per year (in 2016 prices) during 2008–2016.[3]

5. **Nepal's electricity sector faces significant under-investment due to weak sector governance.** Investments must increase at least four folds to meet the growing electricity demand in the country. The proposed DPC operation focusses on a subset of key policy, regulatory, and institutional measures that are necessary to improve the financial viability and governance in the electricity sector. They include

[1] Based on International US$1.90 (2011 Purchasing Power Parity) per day per capita, Nepal Systemic Country Diagnostic 2017.

[2] Based on Nepal Enterprise Survey (2013) carried out by the World Bank.

[3] 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.

measures to improve the financial viability of the 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 create a level playing field for the private sector in the electricity sector. These measures will help lower the investment risk and reduce the cost of private capital to Nepal's electricity sector. This operation will help improve electricity access in Nepal by increasing the availability, affordability and reliability of electricity services (see annex 5 for an overview of the Nepal's energy sector).

6. **There is broad-based consensus among stakeholders on the key measures needed to unlock the potential of Nepal's power sector.** Upon conclusion of the peace process and the promulgation of the Constitution, the GoN, in February 2016, endorsed the 'Concept Paper on National Energy Crisis Prevention and Electricity Development Decade, 2016,' (hereafter 'Concept Paper') to address both the short-term energy crisis and lay the basis for long-term sustainable development of the sector. The White Paper on Energy, Water Resources and Irrigation Sector's Status and Roadmap for the Future (hereafter "the White Paper"), issued in May 2018, reaffirms the new government's commitment to these reforms.

7. **The proposed operation supports the World Bank's twin goals of poverty reduction and shared prosperity** and is consistent with the World Bank's Maximizing Finance for Development (MFD) approach and the Country Partnership Strategy for FY2019–2023. It complements the World Bank Group's existing engagement in generation, transmission, distribution and off-grid, renewable-based solutions in the form of investment operations and technical assistance.

2. MACROECONOMIC FRAMEWORK

8. **The macroeconomic policy framework remains adequate for this operation**. Despite several severe shocks in the past (conflict, unstable governments, earthquakes, trade disruptions, India's demonetization and introduction of Goods and Services Tax - GST), Nepal's macroeconomic fundamentals have remained sound. A projected increase in the fiscal and current account deficits are supporting the needed spending for reconstruction (following floods and the earthquake), and the transition to a federal structure (including transfers to subnational governments for improved service delivery). Although, increased borrowing of around 5 percentage points (between 2018 and 2021) will be needed, the nominal share of debt to gross domestic product (GDP) will remain below 40 percent. In addition, a draw down on reserves (to a level of 5 months of imports over the medium term) and reliance on concessional borrowing and grants will support the needed investments and spending for reconstruction and decentralization. Political risks are mitigated by the fact that the new government is now in place and committed to federalism. The risk of a higher fiscal deficit (as federalism is implemented) is mitigated by strong donor support, both in terms of technical assistance (TA) and concessional financing. Over the medium-term, as the transition period is completed, a well-functioning federal structure will help support stability and growth.

2.1 RECENT ECONOMIC DEVELOPMENTS

9. **Recent data released by the Central Bureau of Statistic (consisting of a revision of the FY2017 growth rate and an updated estimate for FY2018), show that growth has been strong, despite the external shock from floods.** In mid-August 2017, the worst flood in decades destroyed 64,000 hectares of standing crop, contributing to an estimated reduction in the agriculture growth rate from 5 to 2.8 percent (in FY2017 and FY2018, respectively). This shock has translated to a reduction in overall GDP growth from 7.9 to 6.3 percent. Growth in services and industry have remained at trend levels. With the continued

growth in hydropower capacity and the electricity subsector as well as earthquake reconstruction activities, the construction and industry sector continued to expand to meet the demand gap. In the service sector, the growth rate of the wholesale/retail trade (9.1 percent) and the hotel subsectors (9.8 percent) are estimated to remain strong in FY2018. Tourist arrivals are expected to be at record levels, but their contribution to growth will remain small because of the small GDP share. Wholesale/retail trade is the main driver of service growth (accounting for 33 percent of total growth of the subsector). On the demand side, investment contributed the most to growth. Gross fixed capital formation will reach 30 percent of GDP in FY2018, with over 80 percent of this increase coming from private investment. Consumption, however, will continue to ease with a slowdown in remittances.

10. **Inflation is expected to remain moderate at 4.5 percent in FY2018.** Nonfood items have been the main driver of inflation but have moderated compared to the same period last year. Due to moderating inflation in India and improving supply side constraints, the inflation rate slowed further to 4.2 percent (y-o-y) in December 2017 but increased to 6 percent (y-o-y) in March 2018 owing to a sharp uptick in vegetable prices. The Nepalese rupee is pegged to the Indian rupee at the rate of 1.6 Nepalese Rupees to 1 Indian Rupee (India is the largest trade partner) and, thus, inflation follows the price movements of the nominal anchor. Lower and stable inflation has led to the real effective exchange rate depreciating over the last six months for the first time since 2018.

11. **The trade deficit remained stable at 33 percent in FY2018.** Imports remained high at 43.1 percent of GDP, fueled by industrial supplies, capital goods, and fuel imports. Growth in food imports has been weak and is likely to decline relative to 2017 levels. Average growth of food imports in the first seven months of FY2018 was 3.4 percent per month y-o-y compared to an average growth of 44.3 percent y-o-y per month for the first seven months of FY2017. The declining trends for food imports are likely a result of the slowdown in remittances. Exports are estimated to be 9.5 percent of GDP (compared to a five-year average of 10.7 percent of GDP) as they continue to slowly recover from the earthquakes and trade disruption with India. In recent months, export demand which is expected to have further dampened due to the demonetization and introduction of the Goods and Services Tax in India[4], grew 28.8 percent (y-o-y) for the first three months of FY2018.

12. **Remittance growth, which financed almost all imports in previous years, has slowed.** The share of remittances in GDP continues to decline and is estimated to reach 23.4 percent in FY2018 (table 1). The main destinations for Nepali migrants are countries in the Gulf (Qatar, Saudi Arabia, United Arab Emirates) and Malaysia. Following the oil price slump in 2014 and subsequent austerity measures in host countries, the demand for migrant workers from Nepal has weakened.

13. **Continued weak exports, increasing demand for imports and slower growth in remittances has led to further widening of the current account deficit to 4.2 percent of GDP.** A key driver of the widening current account deficit stems from remittances which declined by 3 percentage points of GDP. In addition, the trade deficit is estimated to reach US$ 9.8 billion in FY2018 due to imports for floods and earthquake reconstruction, hydro, other infrastructure projects and oil consumption. Foreign reserves accumulation is expected to decline (by 2 months of imports between FY2017 and FY2018) to reach 7.8 months (or US$8.4 billion). Foreign direct investment (FDI) is estimated to reach US$ 243 million in FY2018, but will remain less than 1 percent of GDP.

[4] India reformed their indirect taxation system through the introduction of the Goods and Services Tax (GST) in July 2017. The GST replaces and subsumes 17 central and state taxes. It reduces rates on over 50 percent of items, with many essential items exempt from tax, and charges standard rates of 5 percent, 12 percent, 18 percent and 28 percent.

14. **Credit growth is moderating while the slower deposit growth continues.** Deposit mobilization eased due to the slowdown in incoming remittances. This led to a squeeze on the availability of loanable funds in banks. Credit growth in February 2018 stood at 16.7 percent (y-o-y), which is a significant decline from the peak of 31.9 percent in February 2017. Credit to Core Capital and Deposit (CCD) ratio of the banks, (capped at 80 percent), reached 78.1 percent in January 2017. The Nepal Rastra Bank (NRB) responded by introducing temporary restrictions on bank lending and temporarily changed the method of calculating the CCD ratio of banks. While these measures did slow lending, and provided breathing space for banks, the fundamental issue of the credit crunch persists because banks have not been able to increase deposit mobilization even as credit growth has dampened.

15. **The banking sector remains adequately capitalized and stable even as slower deposit growth continues.** The capital position of banks has improved significantly owing to the retention of earnings, issuance of rights to shares and mergers to meet the new capital requirement of NPR 8 billion. Recent estimates of the Capital Adequacy Ratio (CAR) is 14.1 percent (compared to 14.72 percent in FY2017). The Non-Performing Loan (NPL) ratio remains low at 1.74 percent of the total loan portfolio (though it increased slightly from a historic low of 1.54 in FY2017). Loan loss provisions are more than adequate to cover the impaired assets.

Table 1. Macroeconomic Indicators

	FY2015	FY2016	FY2017	FY2018(e)	FY2019(f)	FY2020(f)	FY2021(f)
Real economy (Percentage change, unless otherwise stated)							
Nominal GDP, current prices (NPR, billions)	2,130	2,253	2,643	3,007	3,311	3,642	3,988
Real GDP growth (at market prices)	3.3	0.6	7.9	6.3	5.0	5.1	5.0
Real GDP growth (at factor prices)	3.0	0.2	7.4	5.9	5.0	5.2	5.1
Contributions to GDP growth:							
Agriculture (percentage points)	0.4	0.1	1.8	1.0	1.5	2.0	2.0
Industry (percentage points)	0.2	-1.0	1.8	1.4	0.6	0.6	0.5
Services (percentage points)	2.4	1.1	3.8	3.6	2.9	2.6	2.6
Consumer prices (period average)	7.2	9.9	4.5	4.5	5.0	5.0	5.5
Fiscal sector (As percentage of GDP, unless otherwise indicated)							
Total revenue and grants	20.8	23.1	24.4	25.0	24.2	23.8	24.6
Expenditures	21.9	23.6	29.1	31.8	32.3	31.4	32.8
Net incurrence of liabilities	-0.9	2.4	3.2	6.7	8.1	7.6	8.2
Foreign	-0.7	0.7	1.4	2.0	2.4	2.7	2.6
Domestic	-0.2	1.7	1.9	4.7	5.7	4.9	5.6
Total public debt	25.6	27.9	26.6	30.2	35.8	34.4	35.6
Domestic	9.5	10.6	10.9	14.3	18.7	16.0	16.0
External	16.1	17.3	15.7	15.9	17.1	18.4	19.6
Monetary sector (Percentage change, unless otherwise indicated)							
Broad money	19.9	19.5	15.5	….	….	….	….
Domestic credit	15.6	18.1	20.2	….	….	….	….
Private sector credit	19.4	23.2	18.0	….	….	….	….
Balance of payments (As percentage of GDP, unless otherwise indicated)							

Current account balance	5.1	6.2	-0.4	-4.2	-5.6	-4.3	-1.9
Exports of goods and services	11.6	9.5	9.1	9.5	10.6	11.4	12.8
Imports of goods and services	41.5	39.3	42.9	43.1	44.7	45.1	44.7
Remittances (as percentage of GDP)	29.0	29.5	26.3	23.4	22.2	21.1	20.8
Gross official reserves ($, millions, eop)	7,067	8,340	8,730	8,427	7,332	6,623	6,951
Gross official reserves (in months of prospective imports of goods and services)	10.1	11.0	9.8	7.8	6.1	5.1	5.0
Rupees per U. S. dollar (period average)	99.5	106.4	106.2	…	…	…	…
Memorandum items:							
Nominal GDP, current prices (USD, billion)	21.4	21.2	24.9	…	…	…	…
Population, million	28.7	29.0	29.2	…	…	…	…
GDP per capita, USD current	747	731	853	…	…	…	…

Note: "…" in the table denotes data missing or not available.

16. **In addition to the updates by the Bureau of Statistics, the FY2019 Budget presents updated data for FY2017**. As a result, revenue in FY2017 as a share of GDP is slightly lower than estimated in the last data release. Annual revenue growth is robust but government spending has picked up significantly resulting in a higher fiscal deficit. Growth in revenues are a result of the heavy reliance on trade taxes and levies (including value-added tax and imports excise). Overall, these trade taxes amount to roughly 43 percent of the government's domestic revenue or close to 10 percent of GDP. Recurrent spending is estimated to increase to 21.9 percent of GDP in 2018 due to higher civil service wages, fund transfers to local governments, and increased social security spending. Capital spending is estimated to increase from 7.9 percent of GDP in FY2017 to 8.3 percent as post-earthquake reconstruction activities continue. This could result in a further increase in the fiscal deficit from 4.8 percent in FY2017 to 6.7 percent in FY2018 (table 2). As in past years, the level of the fiscal deficit will depend on the degree of underspending of the budget, which continues to be a challenge to spending efficiency. Hence, it is also possible that the fiscal deficit might be lower than projected should there be significant underspending of the budget.

Table 2. Fiscal Indicators

(As percentage of GDP, unless otherwise indicated)	FY2015	FY2016	FY2017	FY2018 (e)	FY2019(f)	FY2020(f)	FY2021(f)
Total Revenue and Grants	**20.8**	**23.1**	**24.4**	**25.0**	**24.2**	**23.8**	**24.6**
Total revenue	19.3	21.5	23.2	23.8	23.1	22.7	23.5
Tax revenue	16.7	18.7	20.8	21.7	25.0	24.1	23.5
Nontax revenue	2.3	2.7	2.1	2.1	2.3	2.5	2.6
Grants	1.8	1.8	1.2	1.2	1.1	1.1	1.1
Total Expenditure (includes on-lending)	**21.9**	**23.6**	**29.1**	**31.8**	**32.3**	**31.4**	**32.8**
Current expenditure	15.9	16.5	19.6	21.9	22.5	23.2	23.2
Capital expenditure	4.2	5.4	7.9	8.3	8.3	8.4	8.2
Overall balance (excluding grants)	-0.8	-0.4	-4.3	-6.5	-7.7	-7.3	-7.9
Overall balance (including grants)	0.8	1.3	-3.2	-5.2	-6.6	-6.2	-6.8
Fiscal Balance (including on-lending)	**-1.1**	**-0.4**	**-4.8**	**-6.7**	**-8.1**	**-7.6**	**-8.2**
Net financial transactions	-2.7	0.7	1.6	5.2	6.6	6.2	6.8
Net acquisition of financial assets (includes on-lending)	1.8	1.7	1.6	1.5	1.5	1.4	1.4
Net incurrence of liabilities (financing needs)	-0.9	2.4	3.2	6.7	8.1	7.6	8.2
Foreign	-0.7	0.7	1.4	2.0	2.4	2.7	2.6

Domestic	-0.2	1.7	1.9	4.7	5.7	4.9	5.6

2.2 MACROECONOMIC OUTLOOK AND DEBT SUSTAINABIITY

17. **Over the medium-term, government interventions to modernize the agriculture sector will strengthen growth which will average 5 percent in the forecast period**. While agriculture growth will initially suffer from the effects of the floods, especially in the food basket in the southern plains, it is expected to slowly recover to historical growth rates and gradually pick up momentum as government programs (recently outlined in the FY2019 Budget Speech) begin to take effect over the medium to longer term. Government targets a doubling of agriculture growth over the next 5 years through reforms to modernize the sector. This will be achieved through establishing Agriculture Knowledge Centers to support extension at the local level and increase access to modern seeds and inputs. The emphasis will be on increased commercialization and expansion of value chains. Construction is likely to remain strong, driven by post-earthquake reconstruction activities. However, the remaining sectors could be affected by uncertainty stemming from the transition to the new federal structure. Remittances could also slowdown further. Inflation, despite the recent uptick is expected to remain stable and below the Central Bank's target of 7.5 percent over the medium-term.

18. **The current account deficit is expected to widen as import growth remains strong, exports remain subdued and the remittance growth rate remains low.** Exports are expected to slowly recover from the adverse effects of the earthquake and trade disruption with India. Growth in exports is expected to remain subdued until infrastructure constraints can be fully removed, despite a possible depreciation of the real effective exchange rate. The decline in outflow of migrant workers and remittance inflows is likely to continue due to lower demand in Gulf countries. Imports growth is projected to remain strong, driven by reconstruction and infrastructure projects such as Pokhara International Airport, Babai Irrigation, Melamchi Drinking Water and efficiency gains in hydro stemming from government interventions supported under the *First Programmatic Energy Sector DPC*. The persistence of a large trade deficit and a continued slowdown in remittances is expected to keep the current account in deficit over the medium term, and will be financed primarily by long term borrowing, grants and a drawdown of international reserves (table 3). The current account deficit is expected to widen to just under 6 percent of GDP and moderate thereafter as reconstruction activities taper off. International reserves are forecasted to cover close to 5 months imports by FY2020 (table 1). There are negligible portfolio investments in the country and despite some expected increase in FDI (due to foreign investments in large infrastructure projects), it is expected to remain low. The central bank has maintained the currency peg with India, its largest trading partner, for the last two decades and is expected to continue to maintain the peg with the Indian Rupee.

19. **Government expenditure is expected to increase over the medium-term primarily because of the implementation of fiscal federalism. However, there is considerable uncertainty around the outlook.** Government spending as percent of GDP jumped by 5.5 percentage points between FY2016 and FY2017 primarily driven by a higher wage bill, larger transfers to local bodies to implement federalism and earthquake-related cash assistance and reconstruction activities. The transfers to the local government is estimated to increase to around 5 percent of GDP per year over the medium term (compared to 3 percent in 2017). This is expected to further increase by an additional 1 to 2 percentage points to reach 7 percent of GDP beyond FY2021. In the next three years (2019-2021), on average, total expenditure is likely to grow by 3-4 percent of GDP per year, because of the implementation of the federal structure. While there is considerable uncertainty around the scope and pace of the implementation of fiscal federalism (particularly given underspending), higher spending is expected because of: (a) the establishment cost for

state and local governments; (b) increased infrastructure spending by state and local governments; and (c) additional fund transfers for decentralized service delivery.

Table 3. BOP Financing Requirements and Sources (in US$)

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
Financing requirements	**1,153**	**-263**	**-1,432**	**-2,004**	**-1,755**	**-1,004**
Current Account deficits	1,320	-95	-1,228	-1,772	-1,502	-727
Debt amortization	-167	-168	-204	-231	-253	-277
Financing Sources	**-1,153**	**263**	**1,432**	**2,004**	**1,755**	**1,004**
FDI and portfolio investment (net)	56	127	243	240	249	333
Long term borrowing	338	589	796	996	1,205	1,262
Others (trade credits, currency deposits, misc items etc)	100	129	-142	-285	-372	-232
Changes in reserves (minus sign indicates increase)	-1,647	-583	535	1,052	674	-360

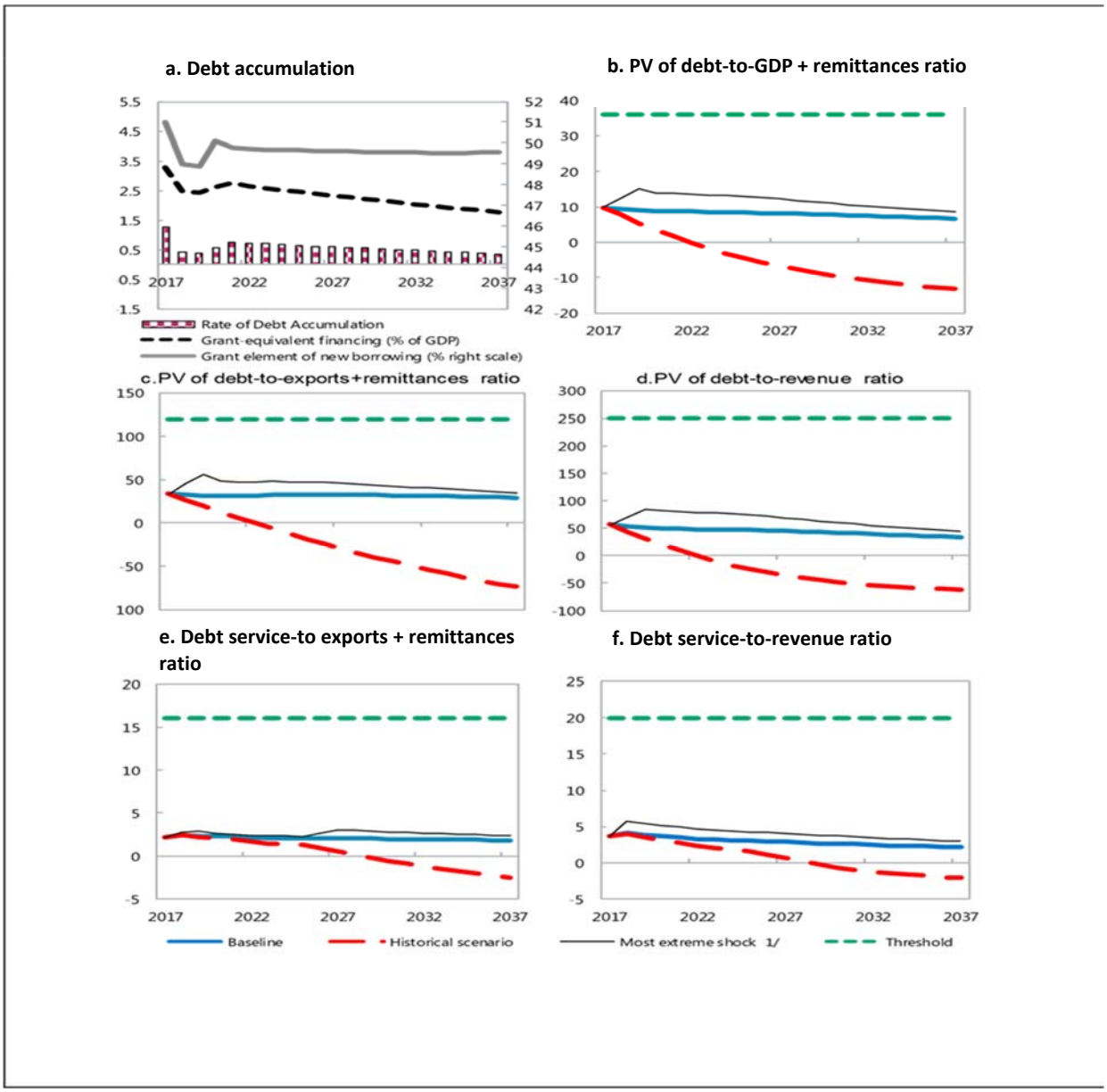
20. **The consolidated wage bill is not expected to change significantly.** The wage bill at the central level will decline with decentralization of service delivery[5] as central level civil servants get reassigned to subnational governments. However, with devolution of service provision to the provinces and local governments, the civil service bill will increase at subnational levels. Preliminary estimates of civil servants required for provincial governments is 2,600 and for local governments, 56,000. Reassignment of central level civil servants to the subnational governments have started, and the outcome is being monitored.

21. **Revenue collection is expected to grow, with a continued increase in trade taxes linked to import growth.** Non-tax revenues are also expected to increase because of dividends from institutions (such as Nepal Telecom) and royalties from new hydropower projects (such as Upper Tamakoshi). However, expenditure growth is likely to outpace the increase in revenue collection, resulting in a fiscal deficit of 6-7 percent of GDP in the forecasted period. The higher deficit will be financed by higher domestic and international borrowing (an increase of about 5 percentage points over the medium term). Also, the availability of concessional financing from international donors is expected to continue and possibly increase, as the government transitions to a federal structure.

22. **Despite the projected increase in the fiscal deficit, the stock of public debt is projected to remain low, increasing from 30 percent in FY2018 to 36 percent by FY2021.** Public debt, as a share of GDP, has fallen dramatically from around 64 percent in 2002 to around 27 percent in FY2017. While prudent fiscal management by the government has played a part in keeping debt levels low, revenue collection has been the key factor - annual growth rate of 0.5 percent of GDP – coupled with under execution of capital expenditure. The Joint World Bank- International Monetary Fund (IMF) Debt Sustainability Analysis (2017) has maintained the "low" risk rating of debt distress. The baseline macroeconomic projections underlying this Debt Sustainability Analysis assume a pickup in government spending and an increase in deficit levels over the medium term. However, Nepal's risk of debt distress is expected to remain low in view of the continued high level of concessionality of official borrowing and limited scaling up of capital spending due

[5] The number of federal level ministries will be reduced from 32 to 15.

Figure 1. Indicators of Public/Publicly Guaranteed External Debt under Alternative Scenarios, FY2017–2037



Source: World Bank/IMF Debt Sustainability Analysis.

The most extreme stress test is the test that yields the highest ratio on or before 2026. In figure 1. b., it corresponds to a Combination shock; in 1.c. to a Combination shock; in 1.d. to a Combination shock; in 1.e. to a Combination shock and in figure 1.f. to a one-time depreciation shock.

to weak implementation capacity. In addition, the government remains committed to fiscal prudence and recently formed a high level Public Expenditure Review Commission to carry out a spending review and suggest measures to cut down on spending, particularly considering federalism. Under the baseline scenario and stress tests, the indicators of the public external debt stock and public debt service ratios remain well below the policy-dependent indicative thresholds (figure 1). The Economic Affairs and Policy Analysis Division at the Ministry of Finance (MoF) is responsible for overall debt management in Nepal. It performs the middle office function of setting the targets and objectives of public debt policy. A Medium-

Term Debt Management Strategy awaits cabinet approval, and a dedicated public debt management unit consolidating all debt management functions is being established at the MoF.

23. **Higher expenditure linked to federalism will be financed by a combination of domestic revenue, domestic borrowing and donor funding.** Therefore, indicators of public external debt stock and public debt service ratios remain within the policy-dependent indicative thresholds even under stress tests, due to the continued high level of concessional borrowing.

2.3 IMF RELATIONS

24. **Nepal currently does not have an ongoing IMF program.** The last Article IV consultation was concluded on March 27, 2017. It advised the Government to adopt a tighter monetary policy stance, accelerate financial sector reforms in line with Financial Sector Assessment Program to mitigate macro-financial risks, and implement structural reforms to raise Nepal's growth potential. The next Article IV consultation is expected to take place in the fall of 2018. In the past, the Fund has provided technical assistance in the areas of tax administration, tax policy, public expenditure management, monetary policy operations, banking supervision, and macroeconomic statistics.

3. THE GOVERNMENT'S PROGRAM

25. **The Government is committed to developing a reliable, affordable, and sustainable energy sector that can support poverty reduction and shared prosperity in the country**. The GoN 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 and clean cooking to 100 percent of the population in 5 years, and (c) to increase the per capita consumption of electricity to 1,500 kWh in 10 years.

26. **The road map to achieve the above-mentioned goals is as follows:**

(a) In the short term, minimize load shedding through reduction of system losses, demand-side management and consumer education, increased power imports, and efficient system dispatch; initiate power sector reforms through establishment of the Electricity Regulatory Commission (ERC); preparation of the restructuring plan for the vertically integrated utility NEA; and preparation and implementation of the financial viability plan of NEA.

(b) In the medium term, reach supply-demand balance through investments in new generation, prioritization of large peaking and storage hydropower projects, expansion of T&D, energy access and export, and cross-border transmission lines; deepen power sector reforms through full operationalization of the ERC, establishment of a power trading mechanism, introduction of competitive power purchase mechanisms, integrated system planning, and separation of NEA's generation, transmission, and distribution business.

(c) In the long term, achieve sound regulatory framework, competent sector institutions and competitive, efficient power market through continued sector reform, sustainable investments in generation, transmission, and distribution infrastructure, grid and off-grid access, and integration into the South Asian regional power market.

4. THE PROPOSED OPERATION

4.1 LINK TO GOVERNMENT PROGRAM AND OPERATION

27. **The policy and institutional measures included in the proposed operation are consistent with the actions laid out in GoN's power sector strategy and action plan**. The proposed operation is the first in a programmatic series of three operations and is organized under two pillars: (a) improving the financial viability of the electricity sector and (b) improving the governance of the electricity sector. The indicative triggers for the second and third operations in the series, expected to be prepared in an 18-month interval, are focused on short- and medium-term policy measures. It is highly probable that the World Bank Group's support will continue to be relevant and necessary to address medium- and long-term policy measures after this series.

28. **The operation draws on previous experience in policy lending in Nepal**. The following four lessons are particularly relevant:

(a) By quickly responding and remaining committed to the client's request for assistance, the World Bank can continue to be regarded as a valued partner. It is important to maintain sufficient flexibility to adapt and respond to client needs and economic realities in the country.
(b) Coordination among the government agencies and development partners to maintain consensus on reforms and timely provision of necessary TA can provide better, more informed decision making by all parties involved.
(c) 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.
(d) Slow implementation of reforms by the client can be addressed through timely follow-up and cooperation among international agencies and through continuous engagement with reform champions.

4.2 PRIOR ACTIONS, RESULTS, AND ANALYTICAL UNDERPINNINGS

Pillar 1: Improving the financial viability of the electricity sector

29. **The financial health of NEA, which is the sole off-taker, has imposed significant fiscal burden on the Government and constrained the sector's capacity to mobilize sufficient investments.** In the years leading to FY2017, NEA posted large losses due to below cost retail electricity tariffs and high system losses. By FY2017, the net accumulated losses were NPR 28 billion, 0.9 percent of the 2017 GDP. In addition, NEA had a debt liability to the GoN of US$1.0 billion in FY2016 (see annex 6 for more details).

30. **Improved financial viability of the electricity sector would boost the confidence of private investors by minimizing off-taker risks.** A financially viable sector means full recovery of cost of electricity services, reasonable revenue for reinvestment, system losses on par with international benchmark, and a subsidy mechanism in place to ensure affordable electricity services to the poor. NEA's financial viability is one of the main priorities of the government program and its implementation requires efforts to increase revenues and reduce costs, and strong support of the World Bank and other development partners. Various attempts in the past did not have a lasting impact due to weak government commitment and monitoring mechanism which this series seeks to address.

Implementation of measures to improve the financial viability

DPC1	DPC2	DPC3
Prior Action 1: The Cabinet has approved the NEA financial restructuring plan.	**Trigger 1.** NEA publishes FY2020 tariff rates following ERC decision on its tariff application	**Trigger 1.** NEA publishes FY2021 tariff rates following ERC decision on its tariff application
Prior Action 2: The NEA Board of Directors has adopted a financial viability action plan.	**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.	**Trigger 2.** NEA's audited financial statements for FY2020 are compliant with NFRS and have been published.

31. **The implementation of the financial restructuring plan (Prior Action 1) is helping turn around the financial position of NEA after 10 consecutive years of losses.** The financial restructuring plan covers

(a) Reducing the interest rate from 8 percent to 5 percent on government loans to NEA;
(b) Clearing the arrears on electricity payments owed by government offices;
(c) Settling the outstanding subsidies owed by the government to NEA; and
(d) Converting NEA's outstanding payments to the GoN into additional equity. These outstanding payments are for the purchase of electricity from the Tanakpur Project until FY2016 and the outstanding payments of interest during construction.

32. The GoN converted US$130 million of debt (13 percent of total) into government equity in FY2017. This reduced NEA's interest costs by 31 percent (US$15 million) and lowered the cost of supply by US¢0.8 per kWh. NEA is currently carrying out reconciliation of the arrears on electricity payments and outstanding subsidies owed by government agencies to NEA on account of electricity provided to cold storage, milk chilling centres, and jute factories.[6] The remaining actions in the restructuring plan are expected to be completed by FY2019. The GoN had also approved an average tariff increase of 14 percent in September 2016 after a four-year hiatus. The tariff increase and financial restructuring plan have led NEA to post a net profit of NPR 1.5 billion (US$14 million) in FY2017 after 10 consecutive years of losses. A sustained focus on increasing revenue and reducing system losses and financing costs will be needed in the coming years to enable NEA to meet its power purchase agreement (PPA) obligations and maintain robust financial health.

33. **Electricity tariffs that are reflective of efficient costs in the electricity supply would improve NEA's financial health and provide predictability for sustainable investment in the power sector.** NEA will need to publish the tariff schemes following ERC decisions on its annual tariff applications (DPC2 - trigger 1 and DPC3 - trigger 1). The ERC is required to respond to NEA's tariff application within 60 days; once the ERC decision is published, no redetermination of tariff can be made within 12 months. The ERC is also expected to ensure that the mitigation mechanisms are in place to protect the poor and vulnerable. The new tariff regime would represent a significant upgrade from the current arrangement of setting electricity tariffs through the Electricity Tariff Fixation Commission (ETFC). Tariff increases often involved protracted and nontransparent negotiations with NEA and were highly irregular -- There was no increase in electricity tariffs between 2001 and 2012 and then again until 2016. Tariffs were perennially below the cost. This severely limited NEA's ability to make new investments and sign PPAs with IPPs, which contributed to the electricity sector crisis in the country.

[6] NEA's initial estimates of arrears are NPR 4.5 billion (US$41.3 million) till FY2017, more than 80 percent of which are owed by municipalities and rural municipalities.

34. **Adoption of a financial viability action plan (Prior Action 2) is essential to sustain the short-term improvement and ensure the long-term viability of the sector.** The main drivers of NEA's financial viability include: (a) adequate investment to meet growing demand, (b) efficient operations with reasonable T&D losses, and (c) rationalization of tariff decisions toward cost reflective tariff. The NEA Financial Viability Action Plan (FVAP) with a 10-year outlook calls for actions to optimize: (a) cost through integrated generation and transmission planning, energy banking,[7] reduction in T&D losses, and appropriate management of foreign exchange risks; and (b) revenue through restructuring of financial arrangements between NEA and its subsidiaries,[8] strengthening power trading and export strategy, waiver of past liabilities of NEA, separation of transmission and system operation functions, and energy efficiency measures. Going forward, the FVAP will be updated and implemented on a continuous basis. Subsequent DPC operations in this series will monitor and update the FVAP to ensure that the sector remains financially viable. It is expected that NEA would have restructured its financial arrangement with subsidiary companies by DPC2 (DPC2 - trigger 2). By DPC3, NEA's audited financial statements for FY2020 should be compliant with Nepal Financial Reporting Standards (NFRS)[9] and should be published (DPC3 - trigger 2). This would strengthen its financial management system and enhance transparency in its annual financial statements.

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.	**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.	**Trigger 3.** NEA has (i) completed implementation of the institutional measures to reduce transmission and distribution losses outlined in NEA's loss reduction master plan and (ii) published the results of performance contracts.

35. **Performance contracts for NEA's managers are expected to induce behavioral changes that will increase efficiency of the electricity system**. T&D losses in Nepal, at 25.8 percent in FY2016, are significantly higher than global and regional benchmarks**.** The implementation of performance incentives in NEA's regional offices (Prior Action 3) provides the NEA management with a strong institutional tool to reduce T&D losses. T&D losses, including theft, have been difficult to overcome under NEA's current human resource policies. The new performance-based scheme aligns employee incentives with NEA goal of reducing T&D losses. NEA has signed performance contracts with the chiefs of one regional office and 17 district offices since December 2017 and plans to roll it out in the remaining regional and district offices in FY2019.

[7] Energy banking refers to the potential of Nepal to export surplus energy in wet seasons to neighboring countries and buy the same quantum back in dry seasons with no exchange of monetary proceeds.

[8] Currently NEA earns dividend income on equity investment in subsidiaries and pays for power purchase. While the average power purchase cost is around NPR 5.5 per unit, the dividend income per unit is just NPR 0.8, far below the expected return on equity (~16%).

[9] The NFRS are issued by the Accounting Standards Board of Nepal. The Institute of Chartered Accountants of Nepal (ICAN), a regulatory body under the Nepal Chartered Accountants Act of 1997, has mandated state-owned enterprises, such as NEA, to comply with the NFRS in their financial statements from FY 2016/17 onward.

36. **Going forward, NEA will adopt and implement a loss reduction master plan, starting with priority distribution centers and then roll it out in all distribution centers** (DPC2 - trigger 3 and DPC3 - trigger 2). NEA will assess the baselines and targets for the technical and commercial losses in the distribution networks, appraise investment needs to reinforce and upgrade electricity distribution system, and identify comprehensive institutional measures. Specific institutional measures to improve performance are expected to include: (a) determination of technical and nontechnical loss targets; (b) online progress reports; and (c) adoption of smart metering, online billing, and collection systems, and so on. The outcome of performance contracts will be measured in terms of loss reduction. Loss reduction will help lower the cost of supply and thus improve the financial viability of the electricity sector.

37. **Expected results under Pillar 1 are:** (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) profits before interest, tax, depreciation and amortization (PBITDA) will increase to at least NPR 40 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.

Pillar 2: Improving the governance of the electricity sector

38. **Weak governance, in the form of an inadequate legal and regulatory framework, inconsistent policy and decision making, and cumbersome approval processes, is one of the main impediments to power sector investments in Nepal.** Investment in the power sector averaged about US$300 million per year over the last five years, far below the actual needs of over US$2 billion per year to meet the growing demand. There was a significant gap between the planned targets and actual achievement during various national plan periods in the past due to underinvestment and weak implementation capacity. Both the private sector and public-sector projects suffered delays due to (a) protracted environmental clearance and land acquisition procedures and (b) unclear and inconsistent policies on mitigation of social and environmental impacts and benefit sharing. As a result, the sector experienced chronic load shedding and overloaded T&D networks.

39. **Nepal needs to pursue structural reforms in the electricity sector to increase investments.** Given the prospect of surplus generation in the wet season and inability of NEA to offer take or pay contracts to all developers, investors must have access to large domestic customers and the Indian and regional electricity market to ensure the economic and financial viability of their investments. This is only possible if all developers have open access to the transmission network and are not at a disadvantage vis a vis NEA's generation plants. The establishment of an electricity regulator, a new Electricity Act to redefine the roles and responsibilities of different sector institutions, an independent transmission and system operator, open access and transmission pricing guidelines, and operationalization of an electricity trading company are all essential for ensuring unfettered access to the domestic and regional electricity market for private developers.

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.	**Trigger 4.** The Government of Nepal has submitted the Electricity Act to the Parliament.	**Trigger 4.** The Cabinet has approved regulations implementing the Electricity Act.

40. **The effective implementation of the Government's program requires a common vision of the sector among stakeholders.** With the transition to the new federal structure and completion of the historic elections, it is important to articulate and consolidate the strategic directions and priorities of the sector that are accepted by all stakeholders. The Government adopted an Energy, Water Resources, and Irrigation Sector's Status and Roadmap for the Future (also known as White Paper) in May 2018 and a power sector strategy and action plan in July 2018 (DPC1 - Prior Action 4) that identifies the following priorities of the GoN:

(a) Installing 3 GW of hydropower in 3 years, 5 GW in 5 years, and 15 GW in 10 years.
(b) Renewing the legislative and regulatory framework in the sector, including adoption of an Electricity Act and Renewable Energy Development Act and implementation of the ERC Act.
(c) Improving NEA's financial viability through a reduction of T&D losses to 15 percent in five years.
(d) Advancing power sector market reform and regional electricity trade.
(e) Achieving universal access to electricity and clean cooking.
(f) Establishing a domestic carbon market, promoting renewable energy to mitigate climate change, and investing in climate change adaptation measures.

41. **The approval of a new Electricity Act will provide the overarching legal framework for the electricity sector under the new constitution and federal structure (DPC2 - trigger 4).** Electricity is defined as a concurrent subject in Nepal's new constitution, implying that responsibilities in the sector will be shared between the central and provincial governments. The new Electricity Act together with associated regulations and guidelines (DPC3 - trigger 4) will: (a) clarify the role of federal, provincial, and local governments in the electricity sector; (b) provide a high-level road map for restructuring and electricity market reforms in the country; (c) recognize trading as a separate licensed activity; (d) enable third-party access and/or open access to the transmission network; and (e) remove and streamline provisions that conflict with other legislations.

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 5.** ERC has issued tariff-setting guidelines.	**Trigger 5.** ERC has issued guidelines on open access and transmission pricing.

42. **A sound regulatory framework is crucial to attract investments in the sector.** Attracting and retaining public and private investments in the power sector requires open competition, transparency to level the playing field, mechanisms for risk sharing, and service standards to ensure quality and customer protection. Until now, Nepal has not had an independent electricity regulator. Limited regulatory functions were undertaken by the MoEWRI which is a policy-making body and the ad-hoc EFTC which oversaw tariff-setting. In other functions, NEA has been self-regulated, for example, PPAs are subject to approval by its Board.

43. **The GoN is committed to establishing an autonomous, transparent, and accountable regulatory framework.** Nepal's Parliament approved the ERC Act in August 2017 and implementing regulations have been approved by the Cabinet in July 2018 (Prior Action 5). The regulator's mandate is to: (a) determine tariff and regulate the sale and purchase of electricity, (b) support the establishment of a wholesale electricity market, (c) introduce transparency and competition in the electricity market, and (d) protect the interest of consumers. The regulator's role will evolve from initially controlling prices and ensuring

efficient provision of services to monitoring the abuse of market power and ensuring open and fair access to the transmission system. The regulator will issue regulations and guidelines on tariff-setting, transmission pricing, and open access (DPC2 - trigger 5 and DPC3 - trigger 5), as well as the grid code and supply code and regulations on power trading. The new regulatory framework will help provide confidence to private investors that they will be treated fairly in a rule-based sector.

Restructuring NEA to move toward electricity markets

DPC1	DPC2	DPC3
	Trigger 6. The Cabinet has adopted a resolution on the sequence, timeline, and milestones for the restructuring of NEA.	**Trigger 6.** Government of Nepal has restructured the NEA by completing the separation of its generation, transmission, and distribution business under a holding company structure, pursuant to the Electricity Act and the Cabinet-approved NEA restructuring plan.

44. **The vertically integrated structure of NEA, together with its poor creditworthiness, has become a major constraint to higher level of private investment in hydropower.** NEA has a mixed function of power generation and system dispatch, and owns and operates the national T&D system. Private IPPs are expected to bring large-scale investments in hydropower generation, but are at a disadvantaged position in transmission access, dispatch, and PPA negotiations with NEA which develops and operates power plants of its own.

45. **The aim of electricity sector restructuring and market reform is to improve the governance and performance of the electricity sector institutions and eventually improve quality and efficiency in electricity services.** NEA started the process of internal restructuring in the mid-2000's by creating four core business groups Generation, Transmission, Distribution, and Engineering Services. Yet these reforms could not be implemented due to civil conflict, political instability, and exogenous shocks. With the first democratic elections under the new constitution completed recently and implementation of the new federal structure, the Government is now keen to pursue these reforms. NEA is currently implementing initiatives such as the adoption of Enterprise Resource Planning system and Nepal Financial Reporting Standards, introduction of performance incentives, and preparation of asset valuation study to support these reforms.

46. **To initiate the transition from a vertically integrated utility to an electricity market for competition, the Government will adopt a resolution that outlines the sequence, time line, and milestones of the sector restructuring process (DPC2 - trigger 6).** The separation of generation, transmission, and distribution under the NEA holding company structure (DPC3 - trigger 6) will be a key milestone in NEA's restructuring process and the transition to an electricity market. This will take place once NEA has (a) completed the asset valuation process that is under way and (b) established generation, transmission, and distribution companies as separate corporatized entities with their own management and staff. In addition to facilitating the transition to an electricity market, the completion of this milestone will be helpful in achieving transparency in pricing and benchmarking costs and standards of service. It will also enable the new regulator to understand costs and to exert pressures for lower costs and improved quality of service.

47. **The long-term goal is to seek integration into the regional electricity market and 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 (from 1 GW to >3 GW)[10] to justify an electricity market and benefit from competition. In the near term, Nepal would transition to a single buyer model with bilateral contracting and third-party access, allowing market players to enter mutually beneficial contracts with other players in both Nepal and neighboring countries. Nondiscriminatory access to the transmission system for generators to sell to the system operator, large customers, and export customers will be the underpinning principle of these reforms.

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.	**Trigger 7.** NPTCL Board of Directors has approved its Business Plan and Operating Procedures.	**Trigger 7.** NPTCL has commenced electricity trading.

48. **The GoN is committed to strengthening the institutional framework for electricity trade, as a necessary step toward the development of an electricity market.** The GoN established the Nepal Power Trading Company Limited (NPTCL) in 2016[11] and its Board has appointed its Managing Director (Prior Action 6) to promote domestic and regional trade of electricity. In the short term, the NPTCL will focus on bridging the supply gap in the country through imports from India. In the medium term, once substantial generation capacity that is currently under construction comes online, the NPTCL will help find a market for the surplus generation in Nepal's power system from both NEA generation plants and from take and pay IPPs. The NPTCL will also have a role in helping maximize the revenues from the sale of free power allocated to the GoN in various export-oriented projects and attracting viable investments by entering into commercial arrangements with sellers and buyers through back-to-back PPAs.

49. **NPTCL will have an important role in improving the affordability of electricity in Nepal and ensuring financial viability of the sector.** The Average Cost of Electricity in Nepal's electricity system is projected to be at least 30 percent lower with electricity trade than otherwise. Without a strong institution managing the country's electricity trade, Nepal will not able to find market for its surplus generation in the wet months and find cheap imports in the dry season. As a result, the average cost of electricity served to Nepal's consumers would increase, which could adversely affect the sector's financial viability.

50. **The approval of NPTCL's Business Plan and operating procedures will facilitate the institutional development of the NPTCL (DPC2 - trigger 7).** The NPTCL will lay out, in a business plan, a clear work program, budget, and human resource and infrastructure requirements to achieve the NPTCL's institutional vision. Implementation of the plan will be supported initially by its paid-in capital. Over time, its trading fees and income will fund NPTCL. The NPTCL will be fully operational by DPC3 (DPC3 - trigger 7), carrying out functions required to deliver on its trading role in the market.

Introduction of new PPA Guidelines and Competitive Power Purchase Mechanism

DPC1	DPC2	DPC3
Prior Action 7. NEA Board of Directors has adopted: (a) power purchase rates and associated rules for PPA	**Trigger 8.** NEA Board of Directors has issued	

[10] Rudnick, H. and C. Velásquez. 2018. "The Emerging Experience of Developing Country Markets."

[11] The main shareholders of the NPTCL are NEA (51 percent), Electricity Generation Company (17 percent), National Transmission and Grid Company (17 percent), and Hydropower Investment and Development Company Limited (15 percent).

of run-of-the river, peaking run-of-the-river and storage hydropower generation projects; and (b) guidelines on foreign currency-denominated PPAs.	competitive bidding guidelines for electricity projects.	

51. **Another barrier to attracting private sector investment and FDI for hydropower projects in Nepal is the PPA-related risk.** Until recently, PPA negotiations with NEA were conducted on a case-by-case basis with high uncertainty. In addition, past projects with FDI and dollar-dominated PPAs showed that foreign exchange risks in the Nepalese context can be substantial and can result in NEA incurring substantially higher financial costs than expected. Since private sector investment and FDI are important to meet the investment needs of the sector, the GoN is committed to addressing these constraints through policy interventions.

52. **The adoption of power purchase rates and associated rules for PPA of hydropower projects and guidelines on foreign currency-denominated PPA (Prior Action 7) will help increase investments in the sector, including foreign investments.** These guidelines, issued in April 2017, offer differentiated PPA rates ranging from US¢5 to US¢12 for run-of-the-river, peaking run-of-the-river, and storage projects for dry and wet seasons based on estimates of costs of these options together with a reasonable rate of return for investors. In addition, these guidelines offer partial foreign currency-denominated PPAs for projects larger than 100 MW with foreign financing, with a provision to cover the foreign debt incurred by developers through U.S. dollar-denominated payments for 10 years or until the project has repaid its foreign loans, whichever happens earlier. These guidelines represent an upgrade from the status quo arrangements where PPA decisions were made through negotiations.

53. **NEA will gradually introduce competitive power purchase by issuing competitive bidding guidelines for electricity generation projects (DPC2 - trigger 8).** Competitive power purchase will be a further improvement over the current posted PPA tariffs, allowing prioritization of hydro PPAs based on annual and seasonal energy demand and least energy costs and transparency in PPA signing. It can be enabled by a legal framework through the proposed Electricity Act. Competitive bidding of hydropower is more complex than solar projects because of its long preparation and gestation period and site specificity of hydropower resources. NEA will adopt a learning-by-doing approach, building on international experience in hydropower and renewable energy auctions and counting on TA and expert advice from the World Bank and others.

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 manual.	**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.	

54. **Nepal's current environmental and social standards are inadequate for sustainable development of hydropower projects and T&D infrastructure.** Weaknesses in the environmental and social clearance process include: (a) inadequate environment impact assessment (EIA) guidance and protocols; (b) weak and inefficient review, approval, and oversight processes within the Government; (c) inadequate management of social risks and impacts; and (d) limited capacity on gender and social inclusion (GESI) mainstreaming at NEA and lack of GESI guidelines. As Nepal prepares to develop large run-of-the-river and strategically important storage hydropower projects, clear and consensus-based guidelines for resettlement and rehabilitation, other mitigation support for people affected by the

projects, and strengthening and streamlining of environmental and social provisions for investment will be needed.

55. **The Government is making a concerted effort to address environmental and social risks in the electricity sector.** The Ministry of Forests and Environment has adopted a new Hydropower Environmental (and Social) Impact Assessment Manual[12] to help hydropower developers conduct EIAs that meet international standards and assist the Government with the review and approval process (Prior Action 8). It will be important to strengthen the regulatory mechanisms to ensure that the manual is effectively implemented. By DPC2, the Cabinet is expected to approve revised forest clearance guidelines to clarify and improve the existing guidelines, consistent with international good practice, and approve new right-of-way[13] guidelines. NEA is expected to adopt the GESI guidelines (DPC2 - trigger 9). The GESI guidelines will help NEA close the capacity gap on GESI and mainstream GESI in the project cycle of energy sector projects and programs.

56. **Expected results under Pillar 2 are:** (a) electricity traded and exchanged has increased by at least 20 percent from a baseline of 2,178 Giga Watt hour (GWh), (b) PPAs are signed based on posted tariff and/or competitive bidding from a baseline where PPAs were signed based on negotiations, and (c) at least one project is informed by the GESI guidelines from a baseline with no GESI guidelines.

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

Table 4. DPC Prior Actions and Analytical Underpinnings

Prior Actions	Analytical Underpinnings
Pillar A: Improving the Financial Viability of the Electricity Sector	
Prior Action 1. The Cabinet has approved the NEA financial restructuring plan. **Prior Action 2.** The NEA Board of Directors has adopted a financial viability action plan.	• Consultancy services for NEA Power Sector Financial Analysis and Viability Action Plan, 2017–2018, the World Bank, informed FVAP (Prior Action 2). • Report on Standards and Codes Accounting and Auditing for Nepal, World Bank, June 2015, to inform DPC3-Trigger 2. • TA on Energy Tariff Reform in Nepal, 2017–2019, supported by Energy Sector Management Assistance Program (ESMAP)/World Bank, informed Poverty and Social Impact Assessment (PSIA).
Prior Action 3. NEA has signed performance contracts with chiefs of regional and district offices to reduce transmission and distribution losses.	• TA on loss reduction master plan, 2018–2019, the World Bank, informed DPC2-Trigger 3 regarding preparation of such plan. • Reducing Non-Technical Electricity Loss through Employee Incentive Schemes, November 2017, USAID, informed design of the performance contracts
Pillar B: Improving the Governance of the Electricity Sector	
Prior Action 4. The Ministry of Energy, Water Resources and	• Study on Power Market Reform Roadmap, 2016–2017, PPIAF/World Bank, informed power market reform roadmap.

[12] This manual was prepared with assistance of the International Finance Corporation (IFC) and covers environmental and social aspects even though the title only mentions environmental impacts. It is a living document and targets only hydro projects requiring EIA (based on the umbrella act Environment Protection Act, 1997). It is important to set up mechanisms to ensure the implementation of the procedures, steps, and criteria set forth in this manual.

[13] Right of way refers to the corridor areas along the route of transmission lines. Since the land along the route of transmission lines are not acquired, right of way is not covered under the current land acquisition policy in Nepal.

Prior Actions	Analytical Underpinnings
Irrigation has adopted a power sector strategy and action plan.	• Just-in-time advisory services to Ministry of Energy, Water Resources, and Irrigation (MoEWRI) on development of power sector strategy and road map, 2018, World Bank, informed the preparation of the power sector action plan. • Electricity Demand Forecast Report 2015–2040, 2017, Water and Energy Commission Secretariat of Nepal, informed sector targets in the White Paper.
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.	• TA to Ministry of Energy to draft ERC Bill, 2016, and to support implementation of the Act, 2016–2020, USAID and Millennium Challenge Corporation (MCC), informed preparation of the ERC Bill and its implementation. • Political Economy Analysis of Power Sector Institutional Reforms, 2017, U.K. Department for International Development (DFID), informed NEA restructuring plan.
Prior Action 6. The Nepal Power Trading Company Ltd. has been established and its Board of Directors has appointed a Managing Director.	• Study on Power Trading Company, 2015, supported by Asian Development Bank (ADB), informed establishment of the NPTCL. • TA to help NPTCL business plan, 2018–2019, World Bank, will inform operationalization of NPTCL.
Prior Action 7. NEA Board of Directors has adopted: (a) power purchase rates and associated rules for PPA of run-of-the river, peak run-of-the-river, and storage hydropower generation projects; and (b) guidelines on foreign currency-denominated PPAs.	• Study on Power Market Reform Roadmap, completed in 2016, PPIAF/World Bank • Political Economy of Power Sector Institutional Reforms, 2017, DFID.
Prior Action 8. The Ministry of Forests and Environment has adopted a hydropower environmental impact assessment manual.	• TA to the GoN on RoW Policy, 2018–2019, the World Bank, will inform RoW guidelines. • TA to the Ministry of Forests and Environment on Forest Land Clearance process, 2017–ongoing, DFID, World Bank, and ADB, will inform forest clearance guidelines. • TA to Department of Electricity Development (DoED) on Guidelines for Cumulative Impact Assessment, Reservoir Resettlement, and Benefits Sharing, 2017–2018, the World Bank, informed preparation and implementation of hydropower EIA manual. • Advisory services to the Ministry of Forests and Environment in updating Guidelines and Procedures for Hydropower EIA and e-flows, 2017–2018, IFC, informed preparation of EIA manual. • Environmental Sector Diagnostic, 2018-2019, World Bank, will inform future E&S policy needs • TA on strengthening the capacity of Nepal's energy sector to deliver gender equality and social inclusion results, ADB, 2018–2020, to inform GESI guidelines.

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

58. **The proposed DPC series is fully aligned with the second pillar of Nepal's new Country Partnership Framework for FY2019–FY2023[14],** which supports growth and employment through the

[14] Discussed by the Board on August 7, 2018.

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.

59. **This operation is consistent with the World Bank's MFD approach to development finance.** The DPC series focuses on key institutional and policy actions that are necessary to remove binding constraints to private investment in the sector and will help lower the investment risk and reduce the cost of private capital to Nepal's power sector. An Infrastructure Assessment, including the energy sector, is currently under way to assess the potential to leverage private capital for infrastructure investments 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 in a sustainable manner.

60. **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—the 38 MW Kabeli A Hydroelectric Project (US$40 million IDA and IFC senior loan of US$39 million) and the proposed 216 MW Upper Trishuli Hydropower Project. 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 proposed in this operation 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

61. **The Government has undertaken broad-based consultations with relevant stakeholders on the policy interventions supported by this operation.** Key stakeholders, including government agencies, the private sector, political parties, think tanks, industry groups, and civil society have been consulted on the policy measures proposed in the DPC series both as part of donor-led efforts and government consultations. There is consensus among stakeholders that significant reforms, including those supported by this series, are needed to turn the sector around and mobilize billions of investments needed from the public and private sector.

62. **The proposed DPC operation was prepared in close collaboration with development partners active in the energy sector of Nepal.** The reforms supported by the DPC have benefited from the support of the ADB, MCC, USAID, DFID, Japanese International Cooperation Agency (JICA), German Agency for International Cooperation (*Deutsche Gesellschaft fur Internationale Zusammenarbeit*, GIZ), *Kreditanstalt Fuer Wiederaufbau* (KfW), European Investment Bank (EIB), European Union, and Norway. The development partners recognize the importance of the proposed policy reforms to mobilize private investment and unlock the potential of Nepal's energy sector and are coordinating closely with the World Bank to ensure uniform and consistent advice is given to the Government.

63. **The development partners have contributed to the design of reforms through TA and advisory services.** The ADB has been assisting the Government with institutional arrangements for power trading, water resource management and distribution planning. USAID has been advising the Government on the establishment of the ERC. The MCC is expected to provide technical assistance to operationalize ERC by improving its technical skills and providing advisory services in specialized areas such as establishment of

a regulatory cost recovery system for transmission operations. DFID supported the political economy analysis of NEA restructuring and is advising the Government on forest clearance guidelines. JICA is supporting the Government on capacity building of new institutions in the sector and prioritization of the storage hydropower projects.

5. OTHER DESIGN AND APPRAISAL ISSUES

5.1 POVERTY AND SOCIAL IMPACT

64. **The impact of tariff reforms supported in this operation (DPC2-Trigger 1 and DPC3-Trigger 1) on electricity affordability is likely to be small.** To reach cost-recovery level, average electricity price could increase by 51 percent between fiscal 2018 and fiscal 2022 under a pessimistic projection for NEA's financial performance. A simulation analysis based on multi-tier household survey in 2017 shows that the impact of the proposed price hike on electricity affordability is small because expenditures on electricity have been a moderate component of the total expenditure of the Nepali households – only 1.35 percent for the general population during 2017. In the worst-case scenario where income stays the same and demand is perfectly price inelastic, the budget share of electricity would increase at most to 1.91 percent for the average population in 2022. It would increase to 2.74 percent for the poorest quintile and 1.58 percent for the richest quintile. The budget share of electricity expenditure even for the poorest income group would still be well below the standard 10 percent affordability benchmark after proposed tariff increase.

65. **The impact of tariff increase on households' welfare is marginal.** The simulation analysis shows that the welfare loss measured by consumer surplus change associated with an increase in tariff is modest for all households. The loss in consumer surplus is up to 0.53 percent of household expenditure for the top 20 percent and 0.93 percent for the poorest 20 percent. Female-headed households are slightly more affected than male-headed households because households headed by women spend a marginally higher share of total expenditure on electricity compared to their male counterparts.

66. **Poorer households would be marginally more affected by tariff increase** because electricity expenses represent a larger share of total expenses of poorer households than that of richer households. The Multi-Tier Framework (MTF) 2017 survey indicates that, on average, the poorest 20 percent households spend 2.02 percent of total monthly expenditure on electricity in 2017, while the share for the richest 20 percent is 1.13 percent.

67. **Welfare impacts could increase once demand has increased.** The welfare impact is likely to be much greater when access is expanded and shortages are reduced so that actual consumption reflects true demand for electricity. The increase in electricity expenditure is likely to be larger for poorer households who currently have lower access to electricity. While about 85 percent and 7 percent of the households in the top expenditure quintile reported having national grid and local mini-grids as their main source of electricity, respectively, about 32 percent of the households in the poorest quintile do not have access to grid electricity.

68. **However, electricity sector reform also provides opportunities that otherwise would not exist to improve reliable access to electricity.** These welfare gains are likely to significantly outweigh any adverse impact of tariff increase in the long run. Based on data from the MTF 2017, 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 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.

69. **GoN is committed to instituting mechanisms to mitigate the adverse impacts of the tariff reforms on the poor and improving access to electricity for all.** Under ERC Act (Prior Action 5), the new regulatory agency is required to ensure that mitigation mechanisms are in place to protect the poor and vulnerable. The GoN is also committed to achieve universal electricity access within five years with support from the World Bank and other donors. This DPC series also include GESI measures to mitigate the impacts on the generally vulnerable female-headed households.

5.2 GENDER AND SOCIAL INCLUSION

70. **Electricity sector policies are not gender reflective**. Women play a key role in energy collection and usage. However, most women are not targeted as primary beneficiaries of energy services thus excluded from accessing energy sources. Despite big national focus on GESI, gender considerations are weak in energy sector policies. Gender-neutral laws and regulations could exacerbate existing gender biases. There is no overarching gender strategy for the energy sector. This has manifested into various gender gaps in the energy sector, including institutional gender capacity gap, asset/endowment gap, voice/agency/participation gap, and livelihood gaps[15].

71. **The government is addressing these gaps through development and implementation of GESI guidelines and strengthening of the human and institutional capacity in the electricity sector.** ADB is implementing a TA of US$2 million to support the government efforts on strengthening GESI and safeguards approaches in the electricity sector projects and programs. A key output of this TA is to develop GESI guidelines and strengthen the technical capacity of NEA staff, including staff in its environmental and social services department, and the National Association of Community Electricity Users Nepal (NACEUN) in GESI mainstreaming. Adoption of the GESI guidelines in the electricity sector is an important policy milestone (DPC2 - trigger 9). The guidelines will provide guidance on the implementation of gender equality and social inclusion in all aspects of policy reforms/development, program/ project design and implementation processes and within institutions (staffing) in an integrated manner.

5.3 ENVIRONMENTAL AND SOCIAL ASPECTS

72. **Most reforms supported by this operation are expected to have potentially positive or neutral effects on the environment.** The approval of the new Electricity and ERC Acts (Prior Action 5 and DPC2 - trigger 4) will provide a conducive environment for investment in the sector which may also lead to increased environmental and social risks. Currently, NEA has insufficient capacity to address environment and social risks. Further, trigger 6 of DPC3, related to NEA restructuring for establishing different companies, could have an adverse impact on the already weak capacity of NEA. Therefore, it is essential to establish an adequately resourced unit dedicated to E&S in each restructured entity.

73. **Tariff reforms (DPC 2-Trigger 1 and DPC 3-Trigger 1) could lead to increase in the cost of electricity and increase the pressure on the forest resources.** The fuel needs of the country are currently largely met through traditional sources, primarily fuel wood. Along with other human activities, fuelwood collection has placed strain on Nepal's forest stocks. This risk is mitigated by the emphasis of the DPC series on reducing electricity costs. Furthermore, government schemes such as subsidies for solar

[15] See details in ADB, Enhancing social sustainability of energy development in Nepal, February 2018.

generation plants are expected to reduce the pressure on forest resources. Further, the positive impact of the tariff reforms includes the increased availability of reliable power which has positive implications on reducing household air pollution and improving the overall health of mainly women and children.

74. **The Government is making efforts to address environmental and social risks in hydropower development and T&D infrastructure**. The recently adopted Hydropower Environmental Impact Assessment Manual will provide guidance for good environmental and social management practices in the hydro sector. This manual provides detailed guidance for meaningful engagement of stakeholders, scope and approaches to risk assessments, and the need for alternative analyses. The manual also includes a focus on cumulative impact assessment (CIA) to understand the effects of numerous projects on a given area. However, it will be important to improve this manual gradually to reflect new developments, as well as the recommendations of CIA and Strategic Environmental and Social Assessment which are under preparation. It will be also important to develop more specific guidelines on key areas of social risk, including land acquisition, resettlement and livelihoods restoration, benefit sharing schemes, approaches to engaging with indigenous communities, and issues of cultural heritage.

75. **The National Planning Commission is reviewing environment and social management framework for hydropower development in Nepal, with the intention of strengthening it.** To address the regulatory challenges which arise due to poor co-ordination among ministries, the National Planning Commission has initiated the process of collaborating with MoEWRI, Ministry of Forests and Environment, and Ministry of Agriculture, Land Management and Cooperatives to identify the gaps and make recommendations on revisions to the applicable environmental and social policies, regulations and for simplifying the clearance processes.

76. **The World Bank is currently supporting the Government's efforts.** The Bank is helping to improve national policies and capacity to manage environmental and social risks in the energy sector through its investment and advisory activities. As part of these efforts, the Bank will provide training on safeguard management, environmental assessment for transmission lines, and alternatives analysis to strengthen NEA's capacity. The Bank will also help NEA develop an internal policy to guide its approach and management of environmental and social risks.

77. **Climate co-benefits assessed from this operation (DPC1) is US$50 million (50 percent).** This reflects the emphasis of the prior actions on improving energy efficiency through loss reduction, increasing hydropower generation, and displacing diesel self-generation and imported thermal generation in the country's electricity system.[16] The climate co-benefits of the operation are expected to increase over the medium to long term, once Nepal can export hydropower to displace thermal generation in the Indian electricity system. The World Bank is providing technical assistance to pilot the Bank's climate resilience guidelines in the hydropower sector.

5.4 PFM, DISBURSEMENT, AND AUDITING ASPECTS

78. **The Government's PFM systems have improved.** 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 (IT) in PFM processes. As compared to the first PEFA Assessment (2007), the second assessment (2015) recorded improvements

[16] There is significant supply shortfall in Nepal's electricity system, which is currently met through imports from India and diesel self-generation. The share of electricity imported from India increased to 35 percent in FY2016 from less than 10 percent in FY2006. Import is expected to continue to increase until domestic generation is increased.

in 16 indicators. There are nonetheless areas requiring improvement. The strengthening of PFM areas is supported by the World Bank-financed Development Policy Operations through establishment of a policy framework for PFM, particularly in the country's move toward federalism.

79. **The government budget classified by functions, functionaries, and charts of accounts is publicly available in the MoF website.** Budget information by geographical locations and monthly expenditure reports by functions are available at the Financial Comptroller General Office website. All financial transactions of the federal government have been unified under a single treasury.

80. **There is a need to strengthen the monitoring and oversight function of public enterprises such as NEA.** The GoN reported 41 public enterprises at the central government level, with an operating income equivalent to 10.7 percent of GDP during FY2016. However, apart from contribution in strategy setting and policy guidance through board representation of the MoF and/or relevant line ministries and oversight through 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. In 2015/16, practically all dividends (99.9 percent) were generated by only one public enterprise (public telecom company), while only marginal contributions were made by two others.

81. **NEA is in the process of strengthening its financial management system.** The annual audits have highlighted deficiencies in its financial management system such as poor asset management, weak internal controls, and accounting policies not being based on NFRS. The development of the Enterprise Resource Planning system, being supported under the World Bank-financed Nepal India Transmission and Trade Project, is expected to largely mitigate internal controls deficiencies with control measures built into the system. The process of asset valuation is also supported through a component under the World Bank-financed Power Sector Reform and Sustainable Hydropower Development Project. The adoption of NFRS will further strengthen asset monitoring and recording of NEA's assets based on international standards.

82. **Given the importance of this action, adoption of the NFRS by NEA is proposed as an indicative trigger in this programmatic series.** NEA is in the process of hiring expertise to support the NFRS adoption based on the terms of reference, preparation of which was supported by the World Bank. The accounting policy change based on the NFRS is expected to be completed by FY2019 for preparation of financial statements for FY2019 based on the NFRS.

83. **The public procurement framework is adequate**. 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 the United Nations Commission on International Trade Law, provide an international standard procurement legal framework. Anchored in this act and the supporting regulations is the single Electronic Government Procurement (e-GP) portal, which is facilitating the availability of standard bidding documents online for all common procurements to all interested parties and online procurement progress monitoring by the PPMO. This e-GP platform 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 World Bank is supporting the Government in preparing a public procurement strategic framework, facilitating the third-party IT security audit of the e-GP system, and strengthening the PPMO.

84. **The IMF 2017 Staff Report states that the central bank, Nepal Rastra Bank (NRB), had made limited progress in improving its safeguards framework and addressing recommendations from the previous assessment (2011).** The quality of the external audit continued to fall short of international standards and priority should be given to engaging an auditor with requisite experience. The legal framework should also be enhanced to strengthen the central bank's autonomy and governance arrangements. The assessment concluded that strong commitment from the NRB Board and management is essential to improve the internal audit function and reinforce controls in key areas, including foreign reserves management and currency operations.

85. **Disbursements.** The proposed operation is the first in a programmatic series of three DPCs. The credit proceeds will be made available to the Government upon approval of credit effectiveness. The Government will submit a withdrawal application in the requested format to the World Bank once the credit has been approved and the World Bank has notified the credit effectiveness to the Government. At the MoF's request, the disbursement in USD will be made into the treasury account of the Government maintained at the NRB, the central bank of Nepal, 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 general fund, 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.

86. **Confirmation and eligible expenditure.** MoF will confirm to the World Bank 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 Financing Agreement, the World Bank will require the Government, upon notice from the World Bank, to refund an amount equal to the amount of said payment to the World Bank. Amounts refunded to the World Bank upon such request shall be cancelled.

87. **Reporting, auditing and closing date.** No audit will be required for the proposed operation. The closing date of the proposed credit will be March 31, 2019.

5.5 MONITORING, EVALUATION, AND ACCOUNTABILITY

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

89. **Grievance redressal.** 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 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, because 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 Grievance Redress Service, 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.

90. **Citizen engagement.** Citizen engagement is envisaged around electricity tariff reforms (Pillar A) that will be supported by the DPC operation. Specific actions with citizen engagement elements that are proposed to be undertaken include (a) consultations with consumer groups, including vulnerable groups, before the design of electricity tariff reforms and (b) consultations with consumer groups, including vulnerable groups, to gather periodic feedback on the impact of these reforms and inform midcourse corrections. The findings of the PSIA will be used to better target these consultations, including to the most vulnerable groups. Specific indicators to track these citizen engagement efforts along with data collection and reporting arrangements will be defined during the implementation of electricity tariff reforms. The World Bank will also explore options for institutionalizing the citizen engagement arrangements developed to support the ERC or some other relevant institutions.

6. SUMMARY OF RISKS AND MITIGATION

91. **The overall risk of the proposed operation is high.** The main risks to achieving the results of the proposed policy measures are related to political and governance, sector strategies and policies, institutional capacity, and stakeholders (see table 5).

92. **Political and governance risks are rated high.** Nepal's transition has been characterized by frequent government changes. Nonetheless, new constitutional checks and a fewer number of political parties following the 2017 elections bode well for stability in the coming days. However, state restructuring on this scale is an uncharted territory for Nepal and smoothening the transition from the previous unitary system to the new federal one will remain a daunting task. Key aspects of the new system require further definition and may continue to be contested by different population groups. Moreover, the transition to a federal structure is expected to require significant additional funding to finance the budget expenditure. DPC support can significantly assist in funding the deficit and is expected to gain traction from the highest level in the Government, bureaucracy, and legislature.

93. **Risks related to sector strategies and policies are high.** Policy measures and changes in the energy sector are susceptible to delays or ineffective implementation. A realistic and phased approach, compared to previous reform attempts, has been proposed, which includes a clearly defined sector road map and action plan, and a phased approach to NEA restructuring from internal unbundling to corporatization of business functions to wholesale markets.

94. **Institutional capacity risks are high.** This operation supports the creation of new institutions in the electricity sector and restructuring of the existing institutions. These institutions will become operational in an environment where institutional capacity is already weak. To address the institutional capacity constraints at the local level, the World Bank is leading the 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.

95. **Weak implementation capacity and lax enforcement of rules and regulations have increased fiduciary risks, which are rated as substantial.** The approval and implementation of the new financial procedural act is expected to increase accountability and transparency and lower fiduciary risks. Fiduciary risks are also mitigated through on-going institutional capacity strengthening activities.

96. **Environmental and social risks are Substantial.** The Nepal energy sector is prone to 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. Such risks will be mitigated through improved hydropower EIA manual on the policy front and capacity building to strengthen government staff's knowledge in reviewing EIAs and monitoring mitigation measures.

97. **Stakeholders risks are High.** 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. There is also risk of political and social opposition to the tariff reforms supported by DPC if the service quality does not improve and load shedding resumes. 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 5. Risks indicator

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

Note: H = High; S = Satisfactory; M = Medium; L = Low.

ANNEX 1: POLICY AND RESULTS MATRIX

Prior Action for DPC1	Trigger for DPC2	Trigger for DPC3	Results	
			Baseline[17] (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.	**Trigger 1.** NEA publishes FY2020 tariff rates following ERC decision on its tariff application.	**Trigger 1.** NEA publishes FY2021 tariff rates following ERC decision on its tariff application.	Average retail tariff is 32% below the average cost of electricity services NEA's PBITDA[18]: NPR 0.49 billion Overall T&D losses: 25.8%	Average retail tariff covers average cost of electricity services NEA's PBITDA is > NPR 40 billion Overall T&D losses: <18%
Prior Action 2: The NEA Board of Directors has adopted a financial viability action plan.	**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.	**Trigger 2.** NEA's audited financial statements for FY2020 are compliant with NFRS and have been published.		
Prior Action 3: NEA has signed performance contracts with chiefs of regional and district offices to reduce transmission and distribution losses.	**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.	**Trigger 3.** NEA has (i) completed implementation of the institutional measures to reduce transmission and distribution losses outlined in NEA's loss reduction master plan and (ii) 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.	**Trigger 4.** The Government of Nepal has submitted the Electricity Act to the Parliament.	**Trigger 4.** The Cabinet has approved regulations implementing the Electricity Act.		

[17] The base year is 2016 when the project concept note was approved unless noted otherwise.
[18] PBITDA = Profit before interest, tax, depreciation and amortization.

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 5.** The ERC has issued tariff-setting guidelines.	**Trigger 5.** The ERC has issued guidelines on open access and transmission pricing.	Electricity traded and exchanged is 2178 GWh PPAs are signed through negotiation Electricity projects are not informed by GESI guidelines	Electricity traded and exchanged has increased by at least 20% PPAs are signed based on posted tariff and/or competitive bidding GESI guidelines have informed at least one electricity sector project
	Trigger 6. The Cabinet has adopted a resolution on the sequence, timeline and milestones for the restructuring of NEA.	**Trigger 6.** Government of Nepal has restructured the NEA by completing the separation of its generation, transmission and distribution business under a holding company structure, pursuant to the Electricity Act and the Cabinet-approved NEA restructuring plan.		
Prior Action 6. The Nepal Power Trading Company Ltd. has been established and its Board of Directors has appointed a Managing Director.	**Trigger 7.** NPTCL Board of Directors has approved its business plan and operating procedures.	**Trigger 7.** NPTCL has commenced electricity trading		
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 PPAs.	**Trigger 8.** NEA Board of Directors has issued competitive bidding guidelines for electricity projects.			
Prior Action 8: The Ministry of Forests and Environment has adopted a hydropower environmental impact assessment manual.	**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.			

ANNEX 2: LETTER OF DEVELOPMENT POLICY

Government of Nepal
MINISTRY OF FINANCE

SINGHADURBAR
KATHMANDU, NEPAL

Ref No : MoF/2018.19/142

01 August 2018

Dr. Jim Yong Kim
President
World Bank Group
1818 H Street NW
Washington DC 20433
United States of America

RECEIVED
- 1 AUG 2018
Ref No: 2091
WORLD BANK RECEPTION

RE: DEVELOPMENT POLICY CREDIT

Dear Mr. Kim,

The Government of Nepal aims to graduate Nepal from least-developed country status by 2022 and achieve the status of middle-income country by 2030. The Government's 14th Development Plan (FY2017–2019) targets annual average growth of 7.2 percent and a reduction in the share of the population living under the poverty line to 17 percent by FY2019. 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, I wish to apprise you our energy sector reform program. Therefore, we have focused on the development of a credible and actionable program which can be implemented over the short and medium-term with the assistance from the World Bank and other development partners.

I. RECENT SITUATION

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

II. OUR POLICY RESPONSE

In February 2016, Government of Nepal endorsed the "Concept Paper on National Energy Crisis Prevention and Electricity Development Decade, 2016," (hereafter the "Concept Paper") to address the short-term energy crisis and lay the basis for long term sustainable development of the sector. The reform proposals in the Concept Paper were endorsed by two subsequent coalition Governments in 2017. The white paper on

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Energy, Water Resources and Irrigation Sector's Status and Roadmap for Future issued in May 2018 and the subsequent power sector strategy and action plan reaffirm our commitment to these reforms.

Energy Sector Reforms

The energy sector reform program is anchored in the White Paper and the power sector strategy and action plan. The objective of the Government's reform program is to develop an energy sector that meets the needs of Nepalese people and economy in a reliable, affordable and sustainable manner. The reforms involve key policy and institutional actions in two focus areas.

- Improving financial viability of the electricity sector
- 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. We are committed to ensuring the financial viability of the sector and have approved a NEA financial restructuring plan to achieve short term improvement in NEA's financial situation and a financial viability action plan to ensure its financial sustainability over the medium to long term. Our aim is to introduce electricity tariffs that are reflective of efficient costs in the electricity supply chain and to provide predictability for sustainable investment in the power sector. This will support investors in making decisions to finance much needed new generation capacity, transmission upgrading and distribution improvements.

The key building blocks of reforms are already in place. In September 2016, the Electricity Tariff Fixation Commission increased average tariffs by 14% to significantly reduce the gap between average cost of supply and average realized revenue. In FY2019, we will be transitioning to a more transparent, robust and predictable tariff framework under a new electricity regulator, the enabling legislation which was passed in FY2018. The new regulator will prepare formula-based tariff regulations that will annually update costs and transfer them to tariffs, and at the same time introduce performance and quality of service standards and incentives for the transmission and distribution systems. The new system under an independent and fully empowered regulator will provide tariff predictability to participants in the electricity sector.

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 FY2016, NEA's transmission and distribution losses (25.8%) were significantly higher than regional and global benchmarks. NEA is implementing performance incentives in its regional and district offices to reduce losses.

Going forward, the NEA will prioritize the implementation of a loss reduction master plan to bring transmission and distributions losses to acceptable levels.

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 meet the electricity demand in the country. To do so, we are committed to improving the sector governance to reduce risks and increase the efficiency of investments in the electricity sector. We have identified five broad focus areas for the next five years:

- **Nepal Electricity Regulatory Commission.** The parliament of Nepal approved the Nepal Electricity Regulatory Commission Act in FY2018. We plan to make the regulator operational in FY2019. The regulator's mandate is to strengthen the rules and oversight and introduce more competition and transparency in the electricity market. The regulator will issue guidelines and regulations on tariff, open access, grid code and supply code and power trading and ensure tariffs reflective of efficient costs of supply.
- **Electricity Act.** As part of our reform program, we plan to submit a new Electricity Act to the parliament in FY2019. The new Electricity Act, together with associated regulations and guidelines, will provide the legal foundations for sector restructuring and electricity market reforms in the country.
- **NEA Restructuring.** We are committed to take a phase-wise approach to NEA's restructuring and plan to adopt a resolution outlining the sequence, timeline and milestones for the same. We have started the restructuring by separating generation, transmission and distribution under a holding company structure, and in the longer term, corporatize these business units and increase private sector participation.
- **Nepal Power Trading Company Limited.** We established the Nepal Power Trading Company Limited (NPTCL) in 2016 and have appointed its Managing Director to make it operational. NPTCL's shareholders are expected to complete the transfer of paid in capital in FY2019. NPTCL will lay out in a business plan a clear work program, budget, human resource and infrastructure requirements to achieve its institutional vision. NPTCL is mandated 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.
- **PPA and Competitive Bidding Guidelines.** The NEA Board of Directors has adopted the Power Purchase Agreement (PPA) rates and associated rules for Power Purchase Agreement of Run of River/Peaking Run of River/Storage projects and guidelines on foreign currency-denominated PPAs. NEA will introduce competitive power purchase by issuing competitive bidding guidelines for electricity generation projects.
- **Environmental and social guidelines for hydropower development.** We have adopted a hydropower environmental impact assessment manual to help hydropower developers conduct Environmental Impact Assessments that meet international

standards and assist the government with the review and approval process for sustainable hydropower development. Going forward, we are committed to continue improving the regulations and guidelines for environmental and social impact management in the energy sector. We plan to approve revised forestry clearance guidelines to improve the existing guidelines, and approve new Right of Way guidelines. The NEA is expected to adopt Gender and Social Inclusion guidelines.

III. Government Commitment

We take this opportunity to reiterate our commitment to undertaking the reforms that are required to improve the performance of the power sector. We have already taken some significant decisions including substantial tariff increases, implementation of the NEA restructuring plan, a loss reduction drive in NEA and improved PPA guidelines and hydropower EIA guidelines. These actions have helped to improve the performance of the electricity sector after more than a decade of severe electricity 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% in FY2016 to 23% in FY2017. NEA achieved an operational profit in FY2017 for the first time in 10 years.

You will appreciate 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 of Nepal's plan to deal with structural impediment to the performance of the energy sector is matched by our commitment to improving the quantity and quality of physical investment in the sector, wherever possible with private sector investment participation.

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

Yours Sincerely,

(Dr. Yuba Raj Khatiwada)
Minister of Finance

ANNEX 3: IMF RELATIONS NOTE

Nepal—Assessment Letter
June 29, 2018

This note provides the IMF staff's assessment of Nepal's macroeconomic conditions, prospects, and policies.

Growth has remained strong as Nepal's economy continues to rebound from the earthquakes and trade disruption in 2015. The Central Bureau of Statistics estimates growth at 6.3 percent in FY2017/18 (mid-July 2017 to mid-July 2018). This follows the growth rebound to 7.9 percent in FY2016/17, from 0.6 percent in the previous fiscal year. Activity has been supported by two successive favorable monsoon seasons, accommodative monetary policy, rising government spending, a pickup in reconstruction activity, and a marked improvement in electricity supply. Inflation averaged about 5 percent (y/y) in recent months, after averaging a multi-year low of 3.2 percent in 2017 on low food prices. Growth is projected to moderate to 5 percent in FY2018/19 and inflation to rise to about 6 percent, as activity begins to run up against capacity constraints and food prices firm. In the staff's baseline, growth is projected to average about 4½ percent per annum in the medium term, somewhat above Nepal's historical performance reflecting improved power supply.

Buoyant imports and some one-off factors have led to a marked deterioration in the current account following five years of surpluses. Inflows of remittances have remained resilient, increasing by 10 percent (y/y) in U.S. dollar terms during the first 10 months of FY2017/18, but exports of goods and services and FDI inflows remain low. International reserves have declined by US$200 million since January, but remain adequate at US$9.3 billion in May (more than 8 months of prospective imports of goods and services).

The economy faces both upside and downside risks. Rising government spending associated with the operationalization of fiscal federalism mandated by the 2015 constitution could provide stronger-than-projected support to near-term growth but also widen the current account and fiscal deficits, increasing macro-stability risks. Sustained implementation of appropriate structural reforms by the new government could raise medium-term growth. Key medium-term downside risks pertain to the weak capital budget implementation capacity and financial sector vulnerabilities. These could be exacerbated by a tightening of liquidity conditions reflecting expansionary fiscal policy and/or softening remittances.

Fiscal policy should focus on managing fiscal decentralization prudently and improving the quality of public investment. Nepal's public debt remains moderate (about 29 percent of GDP) but the fiscal balance turned into a deficit in FY2016/17, after four years of surpluses caused by weak capital spending implementation. While central government capital spending has seen a welcome increase, it continues to bunch at the end of the fiscal year, undermining expenditure quality. Increased transfers to local governments are associated with an estimated deterioration of the fiscal position by 2 percentage points of GDP to a deficit of about 5.3 percent of GDP in FY2017/18, although it remains to be seen to what extent local governments have been able to spend the funds that were transferred to them. The budget for FY2018/19 is based on very ambitious revenue targets, and full implementation of budgeted spending, including transfers to the subnational governments, would lead to a further increase in the public debt ratio. Establishing sustainable and well-balanced inter-governmental fiscal arrangements is a priority. To prevent crowding out credit

to the private sector and limit demand pressures, net domestic financing of the budget should not exceed 1 percent of GDP per annum. There is also an urgent need to build public financial management capacity at the sub-national level.

The current monetary policy stance is broadly appropriate but the NRB will need to stand ready to tighten to support the exchange rate peg to the Indian rupee if inflation pressures increase.

- After a strong credit expansion that peaked with a 32 percent year-on-year growth rate in February 2017, credit growth moderated to 17 percent, on average, during the first eight months of FY2017/18 thanks to the phasing out of a temporary relaxation of the loan-to-deposit ratio ceiling and the introduction of a loan-to-value ceiling on car loans. Credit growth picked up to 20 percent (y/y) in May 2018, amid resilient inflows of remittances which have been a key funding source for Nepal's predominantly bank-based financial sector.
- The authorities have strengthened monetary management. From November 2017, the implementation of the interest rate corridor has led to higher and more stable interbank rates. With a more expansionary fiscal stance, tighter monetary policy will likely be needed to maintain the stability of the peg and keep inflation in check.
- Rapid credit growth and the buildup of macro-financial risks underscore the need to accelerate banking sector reforms. Building on the recent amendments to the regulatory framework, loan classification, provisioning, and banks' risk management practices should be upgraded.

Structural reforms will be essential to promote sustained high and inclusive growth, and to achieve the Sustainable Development Goals. Boosting potential growth requires improvements in competitiveness and the business climate, as well as in infrastructure. Efforts would need to focus on strengthening the government's policymaking and implementation capacity, creating a conducive environment for domestic and foreign investment, and accelerating implementation of donor-supported projects.

IMF Relations

- In the aftermath of the 2015 earthquakes, the IMF's Executive Board approved the disbursement, as direct budget support, of the equivalent of SDR35.65 million (22.7 percent of quota) under the Fund's Rapid Credit Facility on July 31, 2015.
- The 2017 Article IV Consultation was concluded by the IMF's Executive Board on March 27, 2017. The mission to conduct the 2018 Article IV Consultation is planned for the fourth quarter of 2018.
- In recent years, the Fund has been providing technical assistance in the areas of tax administration, tax policy, public expenditure management, monetary policy operations, and macroeconomic statistics. A long-term resident advisor is supporting the NRB's efforts to strengthen banking supervision. Nepal is a member of the South Asia Regional Training and Technical Assistance Center (SARTTAC) in New Delhi. The joint IMF-World Bank FSAP was completed in mid-2014.

Nepal: Selected Economic Indicators, 2015/16-2018/19[1/]

Population (2016, est. million): 29.0
Quota: 156.9 million SDR
Main exports (2017): Textiles and other manufactured goods, food items
Key export markets (2017): India, U.S., Turkey

	2015/16	2016/17	2017/18	2018/19
			Projections	
Output				
Real GDP growth (percent)	0.6	7.9	6.3	5.0
Employment				
Unemployment (percent)	...	...	...	...
Prices				
Inflation (period average, percent)	9.9	4.5	4.5	5.8
Inflation (end-year, percent)	10.4	2.7	6.3	5.7
General government finances (percent of GDP)				
Total revenue and grants	23.4	24.7	25.9	27.6
of which: tax revenue	18.7	21.3	22.3	23.4
Expenditure	22.0	28.0	31.2	31.5
of which: current expenditure 2/	16.5	20.0	23.7	24.5
capital expeniture	5.5	8.0	7.5	7.0
Fiscal balance	1.4	-3.3	-5.3	-4.0
Public debt	27.9	26.8	29.9	32.1
Money and credit				
Broad money (percent change)	19.5	15.5	15.8	12.3
Domestic credit (percent change)	17.4	20.2	21.4	19.8
Credit to private sector (percent change)	23.2	18.0	16.5	16.2
Balance of payments				
Current account (percent of GDP)	6.3	-0.4	-6.3	-5.2
Trade balance (percent of GDP)	-30.2	-34.5	-36.9	-36.4
Remittances (percent of GDP)	29.6	26.8	26.4	25.3
Reserves (months of prospective imports)	9.6	8.9	8.3	7.2
Public external debt (percent of GDP)	17.3	15.9	16.3	16.7
Exchange rate				
Exchange rate (Nepali rupees/US$; period average)	106.4	106.2	108.3	109.5
Real effective exchange rate (period average, y/y percent change)	6.0	3.3	...	...

1/ Fiscal year ends mid-July.

2/ Current expenditure includes transfers to subnational governments which can be used for capital expenditure.

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: The Cabinet has approved the NEA financial restructuring plan. **Prior Action 2.** The NEA Board of Directors has adopted a financial viability action plan.	**To be determined.** Tariff escalation may increase pressure on the forest resources. Subsidies based on minimum consumption of electricity, subsidies for solar installation, and establishment of dedicated hydro/solar financing mechanism are some measures which the Government has planned to introduce for reducing the pressure on forests. On the positive side the availability of reliable power will increase the use of electricity, which will have positive implications on reducing household air pollution and improving overall health of mainly women and children.	**No.** In the near term, higher electricity prices could affect households' welfare through increase in electricity expenditures. However, the financial implications are likely to be small as electricity expenditure has been a modest component of households' total expenditure. Electricity will remain affordable after the proposed tariff increase. The adverse impact of higher electricity price is progressive because wealthier households benefit more from current subsidies. Tariff reform could also lead to overall improvement in electricity access and quality which would disproportionally benefit poor households as they are less likely to have access to electricity and less able to cope with power outages.
Prior Action 3: NEA has signed performance contracts with chiefs of regional and district offices to reduce transmission and distribution losses.	**No.**	**To be determined.** The financial viability action and restructuring plan could lead to increased electricity supply, but could also result in tightened bill collection and crackdown on illegal connection. Poor households are likely to be more affected by both effects.
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.	**To be determined.** The increase in hydro investment due to reforms could lead to negative environmental effects in a sector with weak capacity. The environmental and social risks should be, in general, mitigated with the new dispositions contained in the hydropower EIA Manual.	Distribution neutral
Prior Action 5 (i) The Government of Nepal has published the ERC Act in the official gazette, and (ii) The Cabinet has approved	**To be determined.** The regulator will help improve the efficiency of the sector and reduce costs. This should help increase electricity consumption and reduce the pressure on forest resources.	Distribution neutral

executive regulations implementing the ERC Act.		
Prior Action 6. The Nepal Power Trading Company Ltd. has been established and its Board of Directors has appointed a Managing Director.	No	Distribution neutral
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.	No	Distribution neutral
Prior Action 8: The Ministry of Forests and Environment has adopted a hydropower environment impact assessment manual.	Positive.	Distribution neutral

ANNEX 5: NEPAL ENERGY SECTOR: OVERVIEW

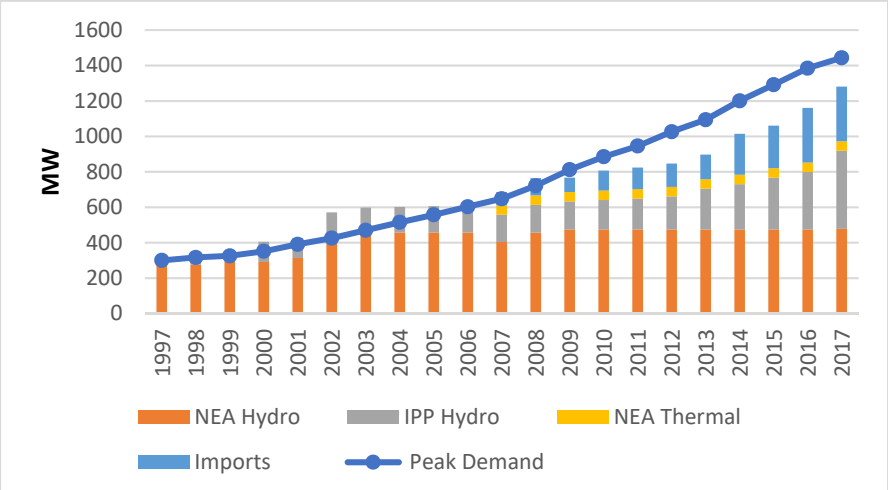
A. Context and Background

1. **Nepal faces significant supply constraints in its electricity system.** Although Nepal's hydro generation potential is estimated to be more than 40 GW, less than a fortieth or 1.1 GW of this potential has been developed. The country has only added about 400 MW of hydro generation capacity since 2002 (see box A5.1 for key facts). The installed electricity generation capacity is not sufficient to meet the peak demand of about 1,450 MW in 2017 (Figure A5.1). The shortfall is especially severe in the winter when glacial water flows decrease reducing the utilization of the installed capacity by two-thirds. The shortfall was resolved through power outages of up to 16 hours until late 2016 and electricity imports from India. The T&D network is aging and stressed, while metering, billing, and collections need to be modernized.

Box A5.1. Key Facts and Figures on Nepal's Power System

The total installed capacity in Nepal power system is 1,073 MW, including 562 MW owned by NEA and 511 MW owned by the private sector. The demand during the peak hour stands at 1,300 MW and was as high as 1,450 MW in 2017. To meet the current demand, up to 450 MW of electricity is being imported from India. There are a 78 km 400 kV transmission line, a 75 km 220 kV transmission line, and 2,819 km 132 kV transmission lines under operation, as well as 1,357 km of 220 kV transmission lines and 1,357 km of 132 kV transmission lines under construction. By mid-March 2018, the number of NEA's customers has reached 3.5 million, of which 94 percent are domestic customer consuming 41.9 percent of the total supply, 1.4 percent are industrial customers consuming 35.6 percent of total supply, and 4.6 percent are other customers consuming 22.5 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.

Figure A5.1. Peak Demand versus Electricity Supply, 1997–2017



Source: NEA

2. **Most households and businesses in Nepal do not have access to adequate and reliable electricity service.** While 95 percent of the population is estimated to have access to grid and off-grid electricity (a quarter of which is through mini-grid and off-grid), the per capita electricity consumption of

177 kWh per year is a twentieth of the global average and a fifth of the per capita electricity consumption in South Asia. Nepal relies overwhelmingly on traditional biomass and imported petroleum to meet its energy needs, which constitute 80 percent and 12 percent of energy consumption, respectively. Electricity constitutes less than 5 percent of energy consumption, despite the country's large hydro generation potential.

3. **This has adversely affected the country's economic performance.** Two-thirds of Nepal's firms identify electricity as a major constraint to doing business in Nepal. Commercial and industrials consumers must rely on expensive diesel generators. The economic loss from load shedding is estimated to be as high as US$1.6 billion per year during 2008–2016. The high cost of power has severely weakened their productivity, competitiveness, and growth. The lack of job opportunities has pushed more than 5 million Nepali laborers to work overseas. Agriculture is the largest contributing sector to the GDP, but its productivity is also constrained by the lack of electricity for irrigation.

4. **Substantial generation capacity is under development but is facing delays in implementation.** A total of 172 projects with total installed capacity of 4,642 MW have received generation license and are at different phases of construction. NEA has signed PPAs for 244 hydroelectric projects with total installed capacity of 4,138 MW, of which 73 projects with a total installed capacity of 511 MW have started commercial electricity generation and are connected to the national grid. Most hydropower plants under construction are experiencing delays due to external shocks such as the 2015 earthquakes, trade blockade with India, and weak implementation capacity. Timely commissioning of the planned projects could lead to surplus generation in the summer months. The electricity shortage in the dry season on the other hand is expected to continue in the medium term and will need to be mitigated through electricity imports from India.

5. **Nepal has been increasingly relying on electricity imports from India to reduce the electricity shortage in the country.** The share of electricity imported from India increased to 35 percent in FY2017 from less than 10 percent in FY2006. The increase in electricity trade was made possible by the completion of a key interconnection between Muzzafarpur in India and Dhalkebar in Nepal that facilitated about 300 MW of imports from India in FY2017. The cost of imports from India (NPR 5 per kWh to NPR 9 per kWh) is projected to be lower than expensive storage projects in Nepal (>NPR 10 per kWh), indicating that imports can be a more economic option for meeting demand in the dry season. Given the prospect of surplus electricity in the wet season in Nepal from FY2020, there will be a strong economic rationale for Nepal to export to India in the wet season. The difference in the daily load curve between north India and Nepal will also provide opportunities for optimizing load-generation balance in the region. Overall, electricity trade with India represents a win-win option for Nepal to improve the reliability of its electricity system and meet its electricity requirements in a cost-effective way.

6. **The development of large export-oriented hydropower projects has so far failed to materialize despite interest from reputed international developers.** The Government has signed Project Development Agreements (PDAs) with several large export-oriented projects, but despite years of efforts, none of these projects have yet reached financial closure.[19] Nonetheless, the potential for export to India and neighbors such as Bangladesh remains and the export could take place once the appropriate political as well as enabling institutional and regulatory frameworks to facilitate electricity trade with neighbors are in place.

[19] Projects for which the PDA has already been signed with the GoN include: (a) 900 MW Arun and (b) 900 MW Upper Karnali.

Box A5.2. Key Electricity Sector Institutions

(a) **MoEWRI:** It is the line ministry with primary jurisdiction over the power sector and is responsible for the development of water resources in Nepal.

(b) **National Planning Commission:** The commission is the apex advisory body of the GoN for formulating a national vision, periodic plans, and policies for development.

(c) **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 power sector by providing 'one window' service and license to power projects. The DoED also serves as a secretariat to the ETFC.

(d) **NEA:** NEA is the GoN's undertaking that is responsible for the generation, transmission, and distribution of electricity in the country as a vertically integrated utility.

(e) **Water and Energy Commission Secretariat:** 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 and energy resources sector.

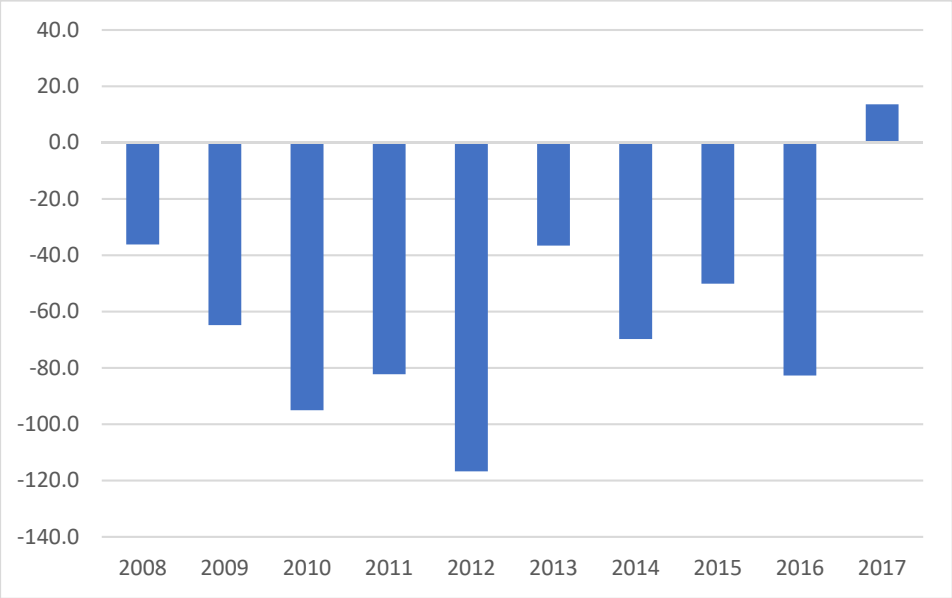
(f) **Investment Board Nepal (IBN):** The IBN was created in 2011 by the Investment Board Nepal Act. The IBN was formed to promote economic development in Nepal by creating an investment-friendly environment. It does so by mobilizing and managing public-private partnerships (PPPs), and domestic and foreign private investment in sectors such as hydropower, chemical fertilizers, and integrated solid waste management.

7. **Investments must increase substantially to meet the medium-term needs of the sector.** Investment needs in the sector are estimated to be at least US$2 billion per year through to 2030 to meet the electricity demand in the country. Since domestic resources will not be sufficient for meeting the investment needs of the sector, the Government will need to find ways to mobilize foreign investments together with government and local private investment.

B. Issues and Challenges

8. **The vertically integrated utility NEA has a weak credit worthiness** (see Box A5.2 for list of key electricity sector institutions)**.** Almost a quarter of the electricity is lost due to technical and non-technical losses, unfairly increasing the cost of electricity to paying consumers. Electricity tariffs have been set by the Government through the EFTC; and tariff increases have been highly irregular. NEA losses in 2016 (US$82.7 million) were equal to 0.5 percent of GDP. Cumulative losses of NEA since 2008 (US$643 million) are equal to 3 percent of GDP (figure A5.2). NEA is unable to serve its debts or generate the financing required to invest in power system infrastructure. NEA's poor creditworthiness is one of the major difficulties for IPPs in raising project financing against PPAs. 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. NEA turned from operating loss to profit in FY2016–17 for the first time in 10 years because of a 14 percent increase in tariff and implementation of a financial restructuring plan. Yet a sustained focus on increasing revenue, reducing system losses, and financing costs will be needed in the coming year to enable NEA to meet its PPA obligations and maintain robust financial health.

Figure A5.2. NEA Net Income, 2008–2017 (US$, millions)



9. **The legal and institutional framework in the electricity sector is weak.** While successive governments in Nepal have expressed a commitment to attract private sector investment, progress in establishing an enabling environment for large private investments has been limited. Attracting and retaining private investment requires mechanisms for sharing risks, the provision of common infrastructure such as transmission corridors and roads, streamlined procedures, regulatory improvements, and structural reforms. The Government has failed to update the legal and institutional framework that was set up in the early 1990s to institute such arrangements (see Box A5.3 for the list of electricity sector legislation and policies). Electricity agencies continue to have overlapping roles, unclear mandates, and multiple roles. The Electricity Act has not been updated since 1992 and does not provide a framework to allow IPPs to exploit the surplus generation in the system through exports and trade. The sector does not have an independent and fully empowered regulatory authority. Given NEA ownership of generation and its control over transmission and dispatch, the current institutional framework does not provide a level playing field in the sector to IPPs.

10. **There are major challenges to mobilizing domestic financing for hydropower development.** Nepal's financial institutions are expected to have US$14 billion in debt financing available for hydropower financing by 2030. There continues to be significant appetite among domestic investors and financial institutions to develop hydropower projects. However, the ability of developers to access this financing remains limited because of: (a) the elevated risk perception of hydro among lenders due to poor credit worthiness of NEA, (b) the lack of availability of long tenor loans, (c) poor capacity of financing institutions to appraise hydropower projects, and (d) unavailability of nonrecourse project finance in the sector.

11. **The enabling condition to attract foreign investment to the sector is weak.** Almost all the new capacity expected to come online in the next five years is either being developed by subsidiaries of the vertically integrated utility NEA or small domestic IPPs with take-or-pay PPAs with NEA. Foreign IPPs have not achieved progress given the absence of dollar-denominated PPAs and country and sector risks. While Nepal's first two IPPs were developed with foreign investment in the 1990s, NEA has not signed further PPAs with foreign IPPs until 2017. The PPA rates of these two IPPs—Himal Khimti and Bhotekoshi—have

Box A5.3. Legal and Regulatory Framework in Energy Sector

At present, various legal instruments for the management and utilization of energy resources exist and are in enforcement: Hydropower Development Policy 2001, Rural Energy Policy 2006, Nepal Electricity Authority Act 1984, Water Resources Act 1992, Electricity Act 1992, Environment Protection Act 1997, Electricity Theft Control Act 2002, Water Resources Strategy 2002, National Water Plan 2005, and so on.

The key laws are briefly described as follows:

- **Nepal Electricity Authority Act 1984:** This act provides for the establishment of NEA to decide for power supply by generating, transmitting, and distributing electricity in an efficient, reliable, and convenient manner.
- **Electricity Act 1992:** The laws relating to survey, generation, transmission, and distribution of electricity as well as standardization and safeguard issues relating to electricity services come under this act. This act brought in 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:** The 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 and establishes a system of licensing, and prohibits water pollution.
- **Electricity Theft Control Act 2002:** The act defines electricity theft in its different forms and provides penalty mechanisms to reduce electricity theft in the country.
- **Hydropower Development Policy 2001:** The Hydropower Development Policy pursued to introduce 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.
- **IBN Act 2011:** Apart from large infrastructure projects such as roads and airports, large hydropower projects above 500 MW also come under jurisdiction of the IBN. The objective of this institution 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. The IBN functions directly under the chairmanship of the Prime Minister of Nepal.
- **ERC Act 2017.** The act defines the role of the ERC, which: (a) determines tariff and regulates the sale and purchase of electricity; (b) supports the establishment of a wholesale electricity market, (c) introduces transparency and competition in the electricity market, and (d) protects the interest of consumers.

escalated significantly since the mid-1990s and are now three times higher (US¢14 and US¢11) than the PPA rate NEA has with domestic IPPs in the wet season (US¢4). Negotiations with foreign IPPs have on many occasions stalled due to unclear PPA and PDA guidelines and NEA's unwillingness to bear foreign exchange risks of dollar-denominated PPAs.

12. **Despite the progress made over the past few years, sector-specific guidelines on environmental and social issues still requires improvement.** Electricity projects implemented during the last decade were significantly delayed due to issues related to land acquisition, environmental clearance, resettlement, transmission right-of-way compensation, and benefit sharing issues. Inadequate guidance as well as weak and inefficient review, approval, and oversight processes within the Government led to poor management of environmental and social issues in projects. Adequate investments and timely completion of T&D lines to support the evacuation of power from new hydro generation plants is an ongoing challenge.

13. **Investment decisions in the sector are not sufficiently informed by a formal planning process.** Investments in the sector are guided by the periodic plans of the National Planning Commission, which

lay out the three-year targets for various sectors including the power sector. Investments to meet these targets are selected on a project-by-project basis without adequate consideration of technical and economic merits of the projects and without sufficient coordination with other investment decisions. The use of formal sector plans (covering, load demand, generation, transmission, and distribution) and river basin plans to inform the priority order of investments is absent. There is no coordination between access efforts through grid extension and off-grid renewable energy technologies. There is a need to strengthen the hydropower licensing process by moving from a developer-driven approach to an open, transparent, and efficient licensing process based on basin-wide hydropower development planning.

14. **There is inadequate local technical capacity to develop large electricity sector projects, including storage projects.** There is insufficient local capacity to develop large hydropower projects and transmission lines and substations with voltages higher than 220 kV. NEA and domestic IPPs lack the know-how and capacity to develop large storage hydro projects with complex technical, social, and environmental requirements. A lack of preparation of adequate number of projects in line with international standards is also one of the major barriers in catalyzing expected foreign investment and financing. Inadequate capacity within public agencies has generated long delays in the review and approval process when the technical preparation work is submitted from private developers.

15. **The transition to the federal structure under the new constitutions will add complexity to the sector.** Electricity is defined as a concurrent subject in Nepal's new constitution, implying that responsibilities in the sector would be shared between the central and provincial governments. While clear definition of responsibilities of central- and provincial-level governments is still pending, provincial governments are expected to have a role in electricity distribution and generation.

Government and Development Partner Program

16. **The government has proposed an ambitious program to address these challenges.** The government adopted an *Energy, Water Resources and Irrigation Sector's Status and Roadmap for the Future* in May 2018 and a power sector strategy and action plan that identifies the ambitious priorities of the government: (i) installing 3GW of hydropower in three years, 5GW in five years and 15GW in 10 years; (ii) renewing the legislative and regulatory framework in the sector including adoption of an Electricity Act and Renewable Energy Development Act and implementation of ERC Act; (iii) improving the financial viability of NEA through a targeted reduction of transmission and distribution losses to 15% in five years; iv) advancing power sector 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. Please refer to the development policy letter in Annex 2 for more information on the government's program.

17. **Nepal's development partners are providing wide ranging assistance to support government's program in the sector.** Development partner assistance covers the full range of areas (Figure A5.2) and electricity sector institutions (Figure A5.3).

Figure A5.3 - Investment Projects (By Area)

Donors/ Partners	Hydropower Generation	Grid-Connected Solar	Transmission	Distribution	Rural Electrification	Other Renewable Energy	Clean Cooking	Energy Efficiency
ADB								
DFID								
EU								
EIB								
Germany/GIZ								
Germany/KFW								
Japan/JICA								
Norway								
USA/MCC								
WBG/IDA								
WBG/IFC								

Figure A5.4 - Technical Assistance and Advisory Activities (By Institution)

Donors/Partners	Nepal Electricity Regulatory Commission	Nepal Electricity Authority	Nepal Transmission Grid Company Limited	Electricity Generation Company Limited	Department of Electricity Development	Investment Board of Nepal	Nepal Power Trading Company Limited	AlternativeEnergy Promotion Center
ADB								
DFID								
Germany/GIZ								
Germany/KfW								
Japan/JICA								
Norway								
USA/MCC								
USA/USAID								
WBG/IDA								
WBG/IFC								

ANNEX 6: FINANCIAL ANALYSIS OF NEPAL ELECTRICITY AUTHORITY

A. Current Financial Performance

1. **NEA has become profitable in FY2017 despite headwinds.** An increase of about 14 percent in average billing rate in FY2017 coupled with reduction in system losses from 25.8 percent to 22.9 percent and implementation of the NEA financial restructuring plan (Prior Action 1) helped NEA become a profitable entity. NEA posted a net profit of NPR 1.5 billion (US$14 million) in FY2017 (figure A6.1). The costs from T&D losses fell by 11 percent (figure A6.2). Sales increased by almost 30 percent. The increase in sales was attributable to reduced load shedding hours for industries and commercial setups in Kathmandu and Pokhara regions, in addition to a steady growth in number of consumers.

Figure A6.1. Revenue and Profit (NPR, million)

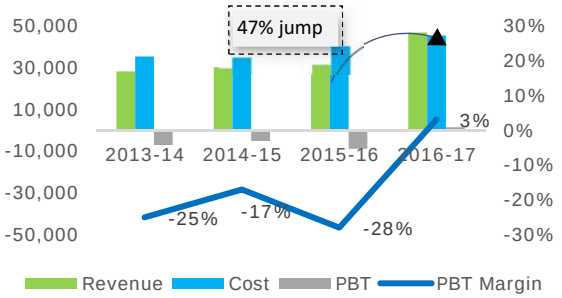
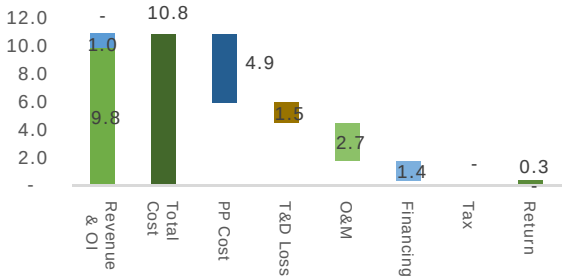
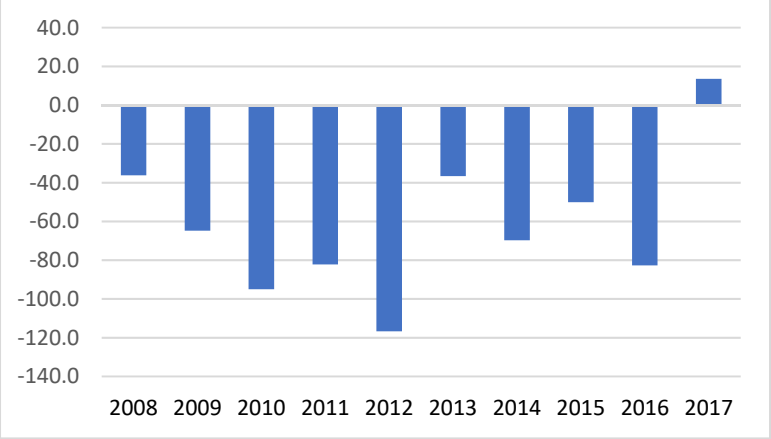


Figure A6.2. Cost Structure FY2017 (NPR per kWh)



2. **Before FY2017, NEA had posted 10 consecutive years of losses due to below cost retail electricity tariffs and high system losses (figure A6.3).** 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 69.4 billion (US$643 million), that is, 16 percent of the total asset size.

Figure A6.3. NEA Net Profits (US$, millions)



3. **The NEA financial restructuring plan (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. NEA's interest expenses were reduced by 31 percent from FY2016 to FY2017. NEA's interest service coverage ratio (ISCR) and current ratio improved from −0.8 and 0.5 in FY2016 to 1.75 and 0.6, respectively, in FY2017. See figures A6.4, A6.5, and A6.6 for more information on the evolution of NEA's energy, consumer, sales, revenue mix, and cost of power.

Figure A6.4. Energy Mix (%)

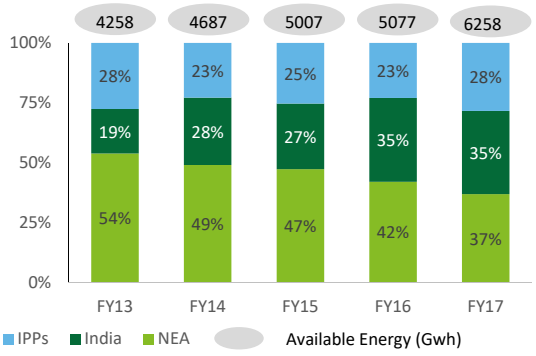
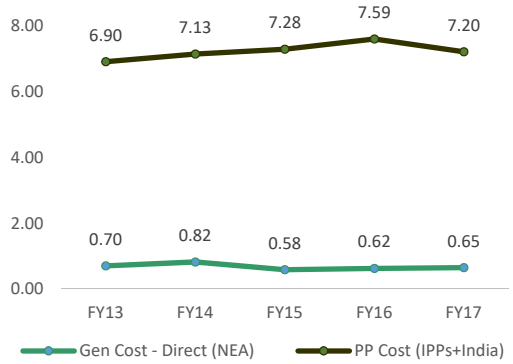
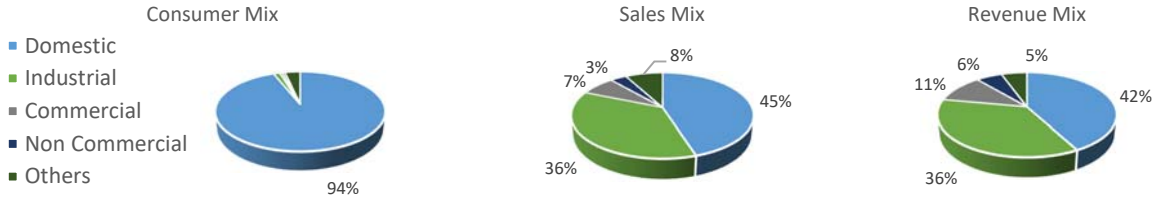


Figure A6.5. Average Cost of Power (NPR per kWh)



Source: NEA FVAP
Gen = generation

Figure A6.6 Consumer, Sales, and Revenue Mix



Source: NEA FVAP

B. NEA's Financial Outlook

4. **NEA's financial obligations are set 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 US$272 million to US$860 between FY2018 and FY2022. Further NEA has planned a capital expenditure of US$2.7 billion between FY2018 to FY2022 (figure 6.7 and figure 6.8). 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 8 percent, in line with inflation rates.

5. **Under the business as usual scenario, Average Cost of Supply (ACoS) of NEA is projected to increase significantly.** The business as usual scenario assumes that the historical levels of T&D losses would be 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¢9.7 (NPR 10.1 per kWh) per unit in FY2017 to US¢15.6 (NPR 16.2 per kWh) per unit in FY2022.

6. **The implementation of NEA's financial sustainability framework (Prior Action 2) will help moderate the increase in NEA's ACoS.** As part of its financial sustainability framework, NEA is targeting to reduce T&D losses from 22.8 percent in FY2017 to 15.3 percent in FY2022 and net out its electricity exports in the wet season with electricity imports in the dry season through energy banking with its neighbors. Likewise, it expects to find markets for 90 percent of the surplus electricity from its electricity generation plants and take-or-pay contracts in neighboring countries. Under the reform scenario consisting of the successful implementation of the financial sustainability framework, the ACoS of NEA is projected to increase from US¢9.4 per unit (NPR 9.8 per kWh) in FY2017 to US¢10.6 per unit (NPR 11 per kWh) in FY2022. The projected income statement, cash flow statement, balance sheet, and financial ratios of NEA over FY2018–2022 for the reform scenario are presented in tables 6.1, 6.2, 6.3, and 6.4.

Figure A6.7. Expenditure Projections (NPR, billions)

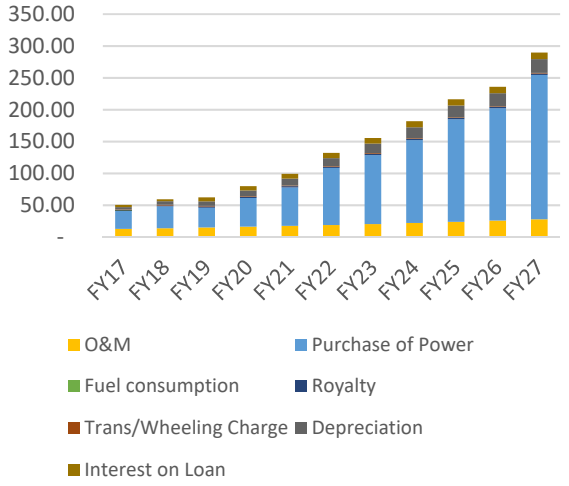
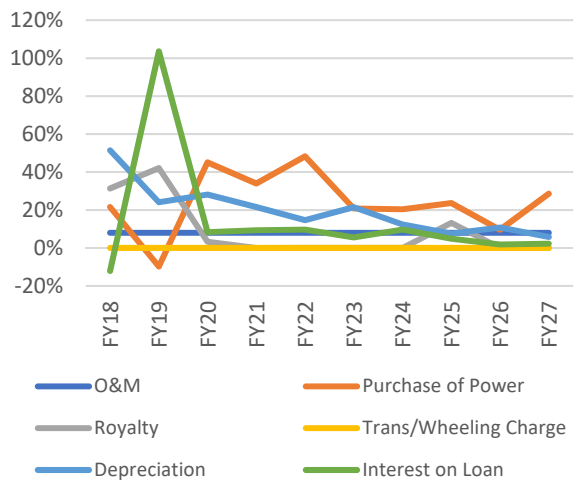


Figure A6.8. Growth Rate of NEA Expenditure (%)



Source: NEA FVAP

Table A6. 1. ACoS in Business as Usual and Reform Scenarios (NPR per kWh)

	FY2018	FY2019	FY2020	FY2021	FY2022
ACoS (Business as Usual scenario)	10.1	11.2	12.6	13.6	16.2
ACoS (Reform scenario)	9.8	10.4	10.4	10.4	11.0

Table A6.2. Projected Income Statement of NEA Under Reform Scenario

NPR, Millions	FY2018	FY2019	FY2020	FY2021	FY2022
Revenue from Sale of Power	57,289	74,858	88,785	120,013	137,419
Revenue from export to India	-	583	4,518	8,041	16,649
Revenue Subsidy	-	-	-	-	-
Other Income	5,092	5,601	6,161	6,777	7,455
Dividend Income	162	162	857	1,115	1,401
Expenditure					
O&M Cost	14,010	15,131	16,341	17,649	19,061
Employee Expenses	9,576	10,342	11,170	12,063	13,028

Rehabilitation & Maintenance	2,495	2,695	2,910	3,143	3,395
Administrative & General	1,939	2,094	2,262	2,443	2,638
Purchase of Power	32,342	30,487	46,086	62,421	92,580
Fuel consumption	-	-	-	-	-
Royalty	1,271	1,806	1,865	1,865	1,865
Transmission/Wheeling Charge	1,017	1,017	1,017	1,017	1,017
Total	48,640	48,442	65,310	82,952	114,523
PBITDA	13,903	32,763	35,012	52,994	48,401
Depreciation	5,453	7,003	9,611	12,173	14,557
PBIT	8,451	25,760	25,401	40,821	33,844
Interest on Loan	3,078	6,061	6,550	7,354	8,227
Interest on Working Capital Loan	701	932	1,020	1,309	1,358
(Gain)/Loss on Foreign Exchange	-	1	4	69	206
Interest on Cash Deficit Loan	-	-	-	-	-
Profits Before Tax (PBT)	4,672	18,766	17,828	32,090	24,053
Tax Payable	1,168	4,691	4,457	8,022	6,013
Profit After Tax (PAT)	3,504	14,074	13,371	24,067	18,040

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

Table A6.3. Projected Cash Flow Statement of NEA Under Reform Scenario

NPR, Millions	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
Revenue	57,289	74,858	88,785	120,013	137,419
Revenue from export to India	-	583	4,518	8,041	16,649
Revenue Subsidy	-	-	-	-	-
Other Income	5,092	5,601	6,161	6,777	7,455
Dividend Income	162	162	857	1,115	1,401
O&M Cost	(14,010)	(15,131)	(16,341)	(17,649)	(19,061)
Purchase of Power	(32,342)	(30,487)	(46,086)	(62,421)	(92,580)
Fuel Consumption	-	-	-	-	-
Royalty	(1,271)	(1,806)	(1,865)	(1,865)	(1,865)
Transmission/Wheeling Charge	(1,017)	(1,017)	(1,017)	(1,017)	(1,017)
Taxes	(1,168)	(4,691)	(4,457)	(8,022)	(6,013)
Change in Current Assets/Liabilities	(10,012)	(3,301)	(1,255)	(4,127)	(710)
CF from Operating Activities	2,723	24,771	29,300	40,844	41,677
Change in Investments	(1,897)	(4,810)	(7,633)	(10,959)	(16,931)
Capital Expenditure	(24,891)	(79,543)	(83,956)	(79,897)	(78,159)
CF from Investing Activities	(26,788)	(84,354)	(91,589)	(90,856)	(95,090)
Debt	14,990	48,466	51,994	48,754	47,358
Equity	7,859	23,448	23,890	23,481	23,309
Cash Deficit Loan	-	-	-	-	-
Debt Repayment	(2,808)	(5,895)	(6,632)	(8,166)	(10,577)
Cash Deficit Loan Repayment	-	-	-	-	-
Increase in Working Capital Loan	7,009	2,310	879	2,889	497
Interest on Debt	(3,078)	(6,061)	(6,550)	(7,354)	(8,227)
Interest on WC Loan	(701)	(932)	(1,020)	(1,309)	(1,358)
Gain/(Loss) on Foreign Exchange	-	(1)	(4)	(69)	(206)
Interest on Cash Deficit Loan	-	-	-	-	-
CF from Financing Activities	23,272	61,335	62,557	58,226	50,797
Cash Schedule					
Opening cash balance	24,824	24,031	25,783	26,051	34,265

NPR, Millions	FY2018	FY2019	FY2020	FY2021	FY2022
Cash generated during the year	(793)	1,752	268	8,214	(2,616)
Closing Cash Balance	24,031	25,783	26,051	34,265	31,649

Table A6.4. Projected Balance Statement of NEA under Reform Scenario

NPR, Millions	FY2018	FY2019	FY2020	FY2021	FY2022
Gross Fixed Assets	201,705	250,764	330,188	406,482	476,895
Accumulated depreciation	55,667	62,670	72,281	84,454	99,010
Net fixed assets	146,038	188,094	257,908	322,029	377,885
Capital work in progress	44,090	74,574	79,106	82,709	90,455
Investments	27,657	32,467	40,101	51,059	67,991
Current assets	36,187	39,335	41,862	47,342	50,531
Cash and bank balance	24,031	25,783	26,051	34,265	31,649
TOTAL ASSETS	278,003	360,254	445,027	537,405	618,512
Equity	90,372	113,820	137,710	161,190	184,500
Reserve and surplus	(22,873)	(8,799)	4,572	28,639	46,679
Non-current liabilities	693	693	693	693	693
Long-term loans	122,755	165,326	210,688	251,276	288,058
Working capital loan	7,009	9,319	10,198	13,087	13,584
Cash deficit loan	-	-	-	-	-
Current liabilities	80,047	79,895	81,166	82,519	84,998
TOTAL LIABILITIES	278,003	360,254	445,027	537,405	618,512

Table A6. 5. Projected Key Financial Ratios under Reform Scenario (%)

	FY2018	FY2019	FY2020	FY2021	FY2022
Profitability ratios					
PBITDA margin (%)	24%	44%	39%	44%	35%
Profit after tax margin (%)	6%	19%	15%	20%	13%
Return on equity (%)	4%	14%	11%	16%	10%
Return on net worth (%)	6%	16%	11%	14%	9%
Return on gross fixed assets (%)	2%	6%	5%	7%	4%
Return on net fixed assets (%)	3%	8%	6%	8%	5%
Return on total assets (%)	2%	7%	5%	8%	5%
Leverage ratios					
Debt-to-equity ratio	1.36	1.45	1.53	1.56	1.56
Debt-to-net worth ratio	1.82	1.57	1.48	1.32	1.25
Debt service coverage ratio	2.04	2.27	2.24	2.81	2.17
ISCR	3.91	4.48	4.51	5.93	4.96
Self-financing ratio	0.11	0.31	0.35	0.51	0.53

ANNEX 7: 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 to present a partial equilibrium analysis of the poverty and welfare impact of raising electricity tariffs on households in Nepal. The analysis finds that expenditures on electricity have been a moderate component of the total budget of the Nepali households; they represented 1.35 percent of the household's monthly expenditure during 2017 and would increase up to 1.91 percent after a proposed 51 percent tariff increase during fiscal 2018 and fiscal 2022. Consumer surplus change, that is the welfare loss due to price increase, is estimated to be 0.64 percent of total expenditure. The welfare impact is marginally higher for the poorer households.

3. However, welfare impacts could increase once suppressed demand is addressed. The impact of tariff increase on electricity affordability and consumer welfare appears to be modest because average electricity consumption is extremely low in Nepal. The welfare impact is likely to be much larger when access is expanded and shortages are reduced so that actual consumption reflects true demand for electricity.

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: Annual Household Survey (AHS) 2014-2015 conducted by Central Bureau of Statistics of Nepal; and a household survey based on the multi-tier framework (MTF) of energy access sponsored by the World Bank and carried out during July - November 2017. The MTF survey covered 6000 households in 7 provinces and 3 ecological regions (Mountains, Hills and Terai). The survey collected basic demographic and economic characteristics of households including gender, age, education, occupation, dwelling, hygiene, and sanitation information. Detailed information was also collected on household electricity use, such as primary and alternate sources of electricity and the quality of electricity supply.

Electricity access and power outages

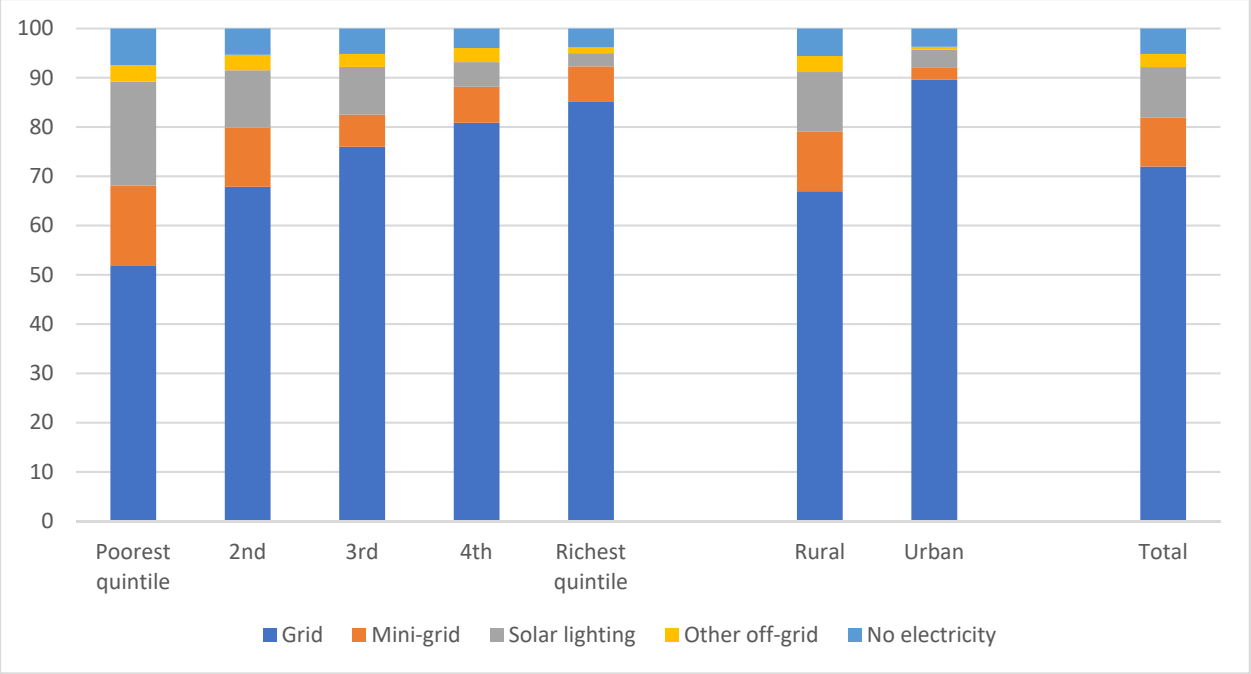
6. There appears to be a significant improvement in access to electricity in Nepal over the past few years. AHS 2014-2015 suggests that roughly 17 percent of households do not have access to any source of electricity. This number is reduced to 5.2 percent according to the MTF survey in 2017 (figure A7.1).

7. However, a significant share of households still relies on various lower-quality off-grid solutions as their primary source of electricity, including solar-lighting system, pico-hydro, solar lantern, solar home

system, and rechargeable battery (car battery). While AHS 2014-2015 does not provide a breakdown of source of electricity, the MTF household survey shows that only 72 percent of households are connected to the national grid and roughly 10 percent to local mini grids.

8. Off-grid households tend to be poorer and more likely to live in rural areas (figure A7.1). 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, close to 32 percent of the households in the poorest quintile do not have access to national grid or mini-grids.

Figure A7.1: Access to Electricity by Source (Percent)

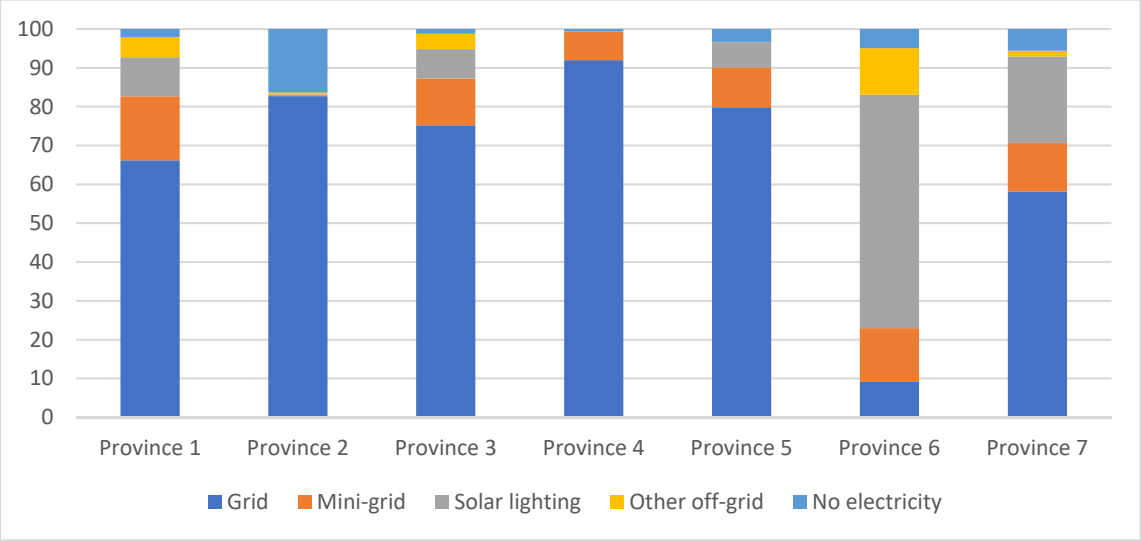


Source: Multi-tier household survey in Nepal 2017
Note: Solar lighting systems include 2 lights with cell phone charger and/or radio. Other off-grid solutions include solar lantern, pico-hydro, solar home systems (2 lights with cell phone charging, and TV, fan or fridge), and rechargeable battery.

9. There is also a large urban and rural divide. The combined access rates to grid- and local mini-grids in rural area is 78 percent compared to 92 percent in urban area. Among all provinces, province 6 has the lowest access rate to national grid where only 9 percent of households are connected. Province 2 has the largest share of unelectrified population where more than 16 percent of households lack access to any source of electricity (figure A7.2).

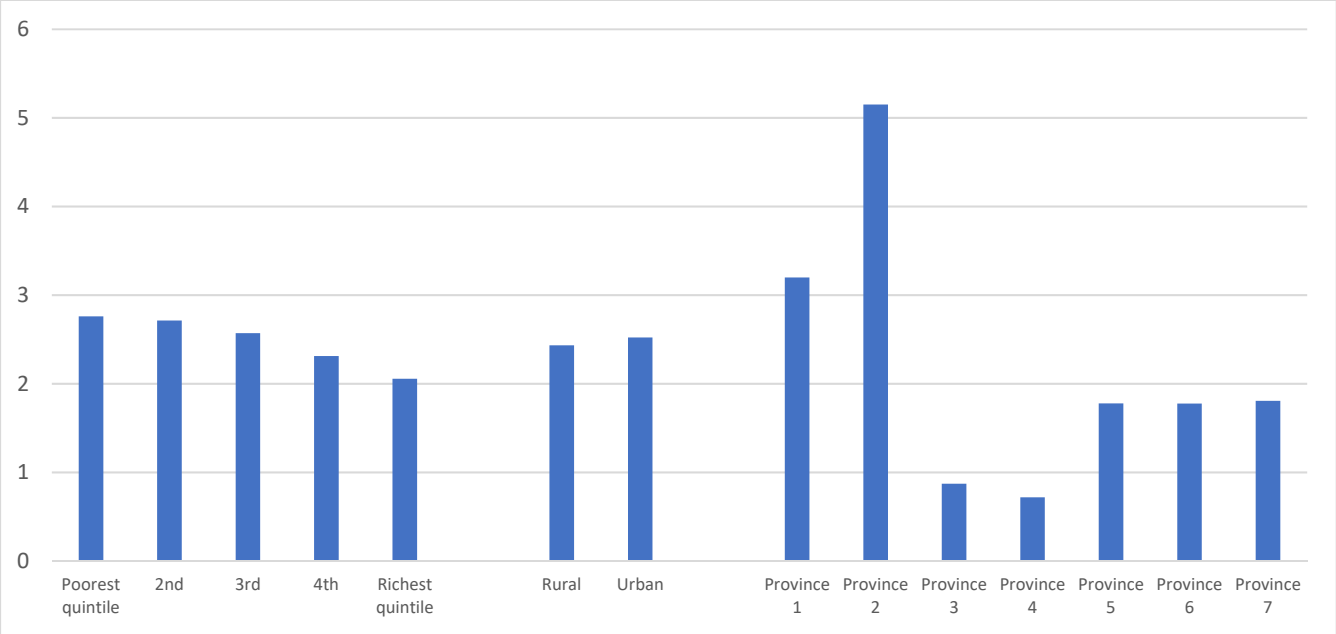
10. Quality of electricity supply measured by daily average duration of power outages vary largely across provinces (figure A7.3). Electricity supply is least reliable in province 2 where power outages on average last for 5.2 hours a day. In contrast, daily power outages are only 0.9 hours in province 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 A7.2 Access to Electricity by Province (Percent)



Source: Multi-tier household survey in Nepal 2017
Note: Solar lighting systems include 2 lights with cell phone charger and/or radio. Other off-grid solutions include solar lantern, pico-hydro, solar home systems (2 lights with cell phone charging, and TV, fan or fridge), and rechargeable battery.

Figure A7.3. Daily Average Duration of Power Outages (hours/day)



11. Nepal has an increasing block tariff structure for electricity – the tariff charged per kilowatt hour (kWh) increases with the tariff slab. As of 2017, Nepal Electricity Authority set 7 tariff slabs for residential consumers (table A7.1A).

Table A7.1: Residential Electricity Tariffs as of FY2017

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, then consumption from the first unit itself shall be charged at NPR 7.0 per unit.

13. For that last three slabs, a 'previous slab benefit' structure is in place - a household pays the rate on the slab immediately below for all electricity up to that slab's lower bound, and the rate on that slab for the remainder. For example, if a household consumes 100 kWh per month, it will be charged NPR 7.0 per unit for the first 50 units and all units after that at NPR 8.5 per unit. Therefore, the total monthly bill for 100 units will be NPR 775.

14. Using data on electricity expenditure reported in the 2017 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 face tariffs of the first two slabs. Meanwhile, electricity consumption is positively correlated with income (Figure A7.4). Only 11.8 percent of households in the poorest quintile consume more than 51 kWh of electricity a month.

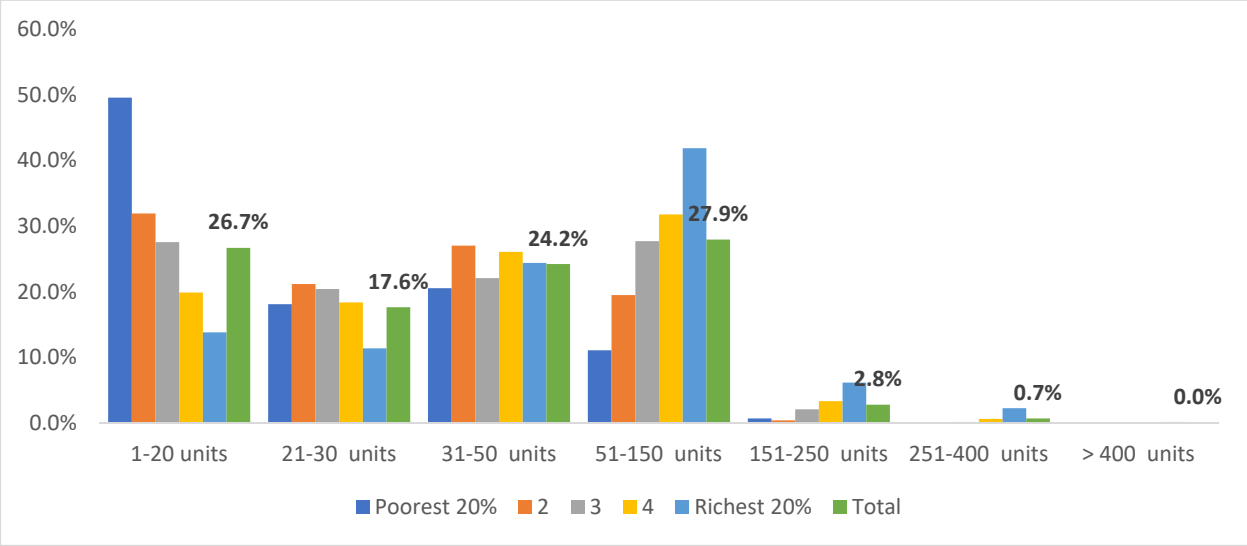
15. The budget share of electricity is a modest component of households' total expenditure. It is about 1.35 percent on average and 2.02 percent for the poorest quintile during 2017 (figure A7.5). The expenditure share of electricity is inversely correlated with total expenditure – poorer households spend more on electricity per month relative to richer households. In addition, urban households spend much more than rural households; female-headed households spend more than male-headed households. [20]

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,

[20] About 1 percent of households who reported having access to national grid did not report having electricity expenses. A series of statistical analysis 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.

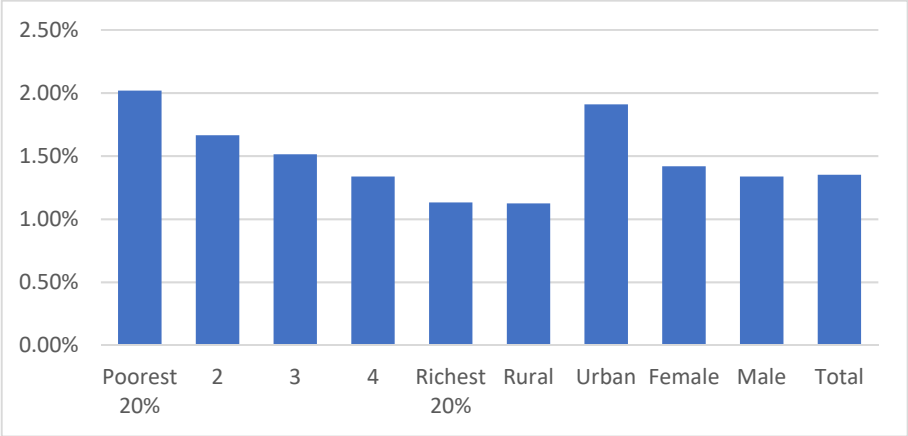
the line of perfect equality, the more unequal is the distribution of consumption and income. Figure A7.6 indicates that the electricity consumption and income were skewed towards the non-poor, however, electricity consumption gap between the poor and non-poor was higher than the expenditure gap.

Figure A7.4. Share of Households in Each Tariff Slab by Expenditure Quintile



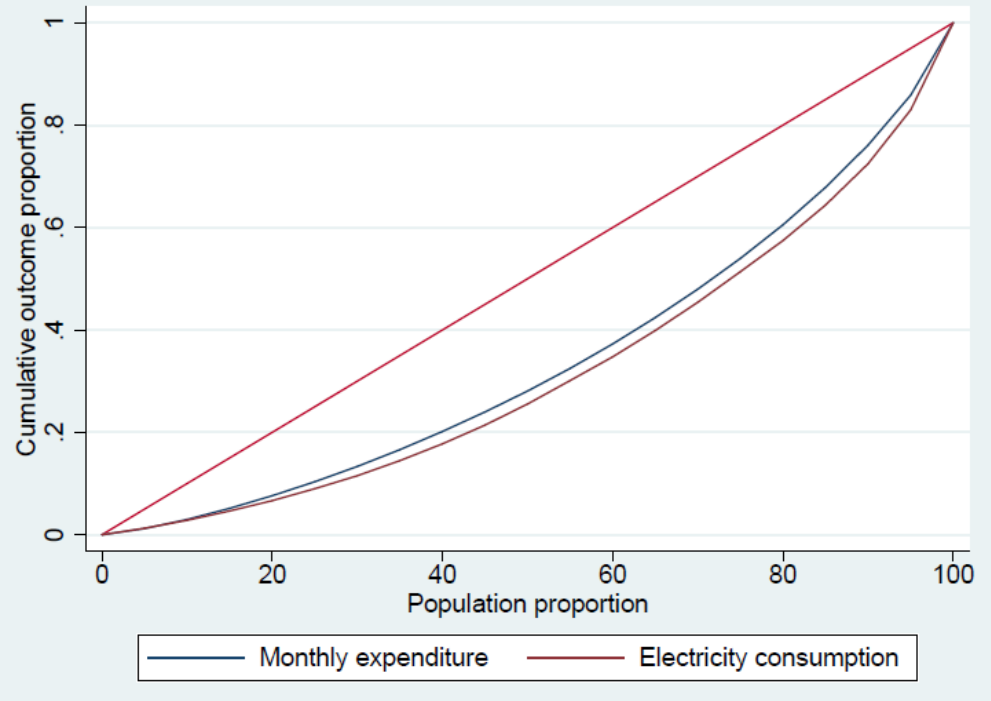
Source: Calculation based on multi-tier household survey in Nepal in 2017

Figure A7.5 Share of Electricity Expenses in Total Expenditure



Source: Multi-tier household survey in Nepal in 2017

Figure A7.6 Household Electricity Consumption and Total Expenditure Lorenz curves



Source: Estimation based on multi-tier household survey in Nepal in 2017

Distributional impact of electricity tariff increase

17. Recent literature suggests that households respond to average price of electricity instead of marginal price of electricity[21]. To estimate the impact of electricity tariff increase, we consider the scenario in which average electricity price will increase by 51 percent between FY 2018 and FY 2022 to reach cost-recovery level under the BAU scenario. 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 fiscal 2018 and 2021. As a stretch test, we also consider a worst-case scenario where income does not the change throughout the period.

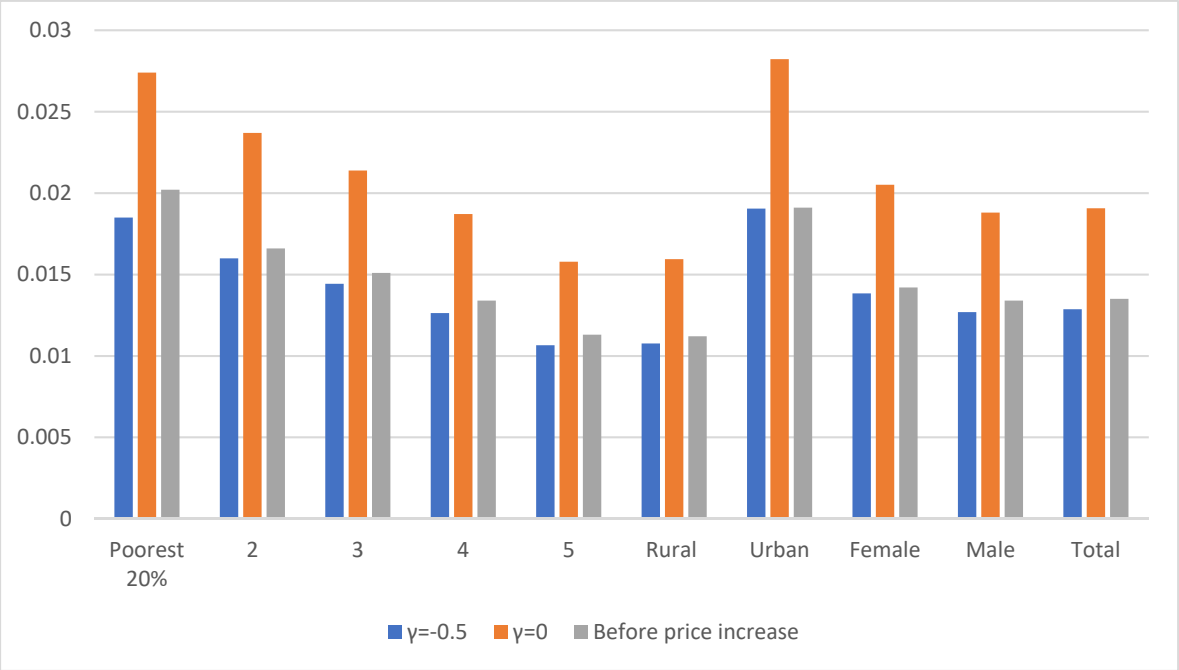
18. There are no reliable estimates for residential price elasticities of electricity in Nepal. We consider two potential scenarios: a higher-impact scenario in which demand is perfectly inelastic to price changes and a lower-impact scenario where price elasticity is -0.5, an assumption in line with the range of price elasticity in other developing countries[22]. We further assume that price elasticities are constant across all households. 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, suggesting that electricity consumption is very inelastic to income change in Nepal. This low-income elasticity may be caused by supply shortages which severely suppress demand increase.

[21] Ito, K. 2014. "Do Consumers Respond to Marginal or Average Price? Evidence from Nonlinear Electricity Pricing." *American Economic Review*, 104(2): 537-63.

[22] Zhang, F. 2015 Energy price reform and household welfare: the case of Turkey. *Energy Journal*. 36(2): 71-96.

19. The impact of tariff increase on electricity affordability is small (Figure A7.7). Even in the worst-case scenario in which income stays the same and demand is perfectly inelastic, the budget share of electricity for the poorest quintile would increase from 2.02 percent to 2.74 percent after the price hike. On average, the expenditure share of electricity would increase from 1.35 percent to 1.91 percent. The share of electricity expenditure of all income groups would be well below the 10 percent standard affordability benchmark after proposed tariff increase. If income increases at the same rate as the projected increase in GDP, then the budget share of electricity expenses would decline across all income groups because income increase more than offsets price increase.

Figure A7.7 Budget Share of Electricity Expenditure after Price Hike in a Worst-case Scenario



Source: Estimation based on multi-tier household survey in Nepal in 2017
Note: This figure shows a worst-case scenario where income stays the same and price elasticity of demand is zero.

20. Welfare loss associated with electricity price increase is low. Welfare loss in the worst-case scenario, approximated by consumer surplus change is estimated to be NPR 100.69 per month for an average bottom expenditure quintile household, or about 0.93 percent of household total expenditure, compared with NPR 298.60, or about 0.53 percent of total expenditure for the top quintile[23]. The impact is regressive because electricity expenses represent a larger share of total expenses of poorer households than that of richer households. Female-headed households are slightly more affected than male-headed households on a relative basis because households headed by women spend a marginally higher share on electricity compared to their male counterparts. Table A7.2 summarizes the estimated welfare loss across expenditure groups under two different scenarios for price elasticity.

[23] Consumer surplus change is the area below the demand curve and above the price. We assume a constant elasticity demand curve.

Table A7.2: Consumer Surplus Change from Price Increase

	γ=-0.5		γ=0.0	
	Loss in consumer surplus (NRs.)	Percent of total monthly expenditure	Loss in consumer surplus (NRs.)	Percent of total monthly expenditure
Poorest Quintile	98.86	0.91	100.69	0.93
2	139.30	0.79	141.88	0.80
3	170.96	0.71	174.12	0.72
4	205.96	0.62	209.77	0.63
Richest Quintile	293.17	0.52	298.60	0.53
Rural	152.37	0.53	155.19	0.54
Urban	297.57	0.94	303.08	0.95
Female	173.24	0.68	176.45	0.69
Male	189.61	0.62	193.11	0.63
Total	186.65	0.63	190.11	0.64

Note: This table shows welfare loss in a worst-case scenario where there is no income increase during the study period.

21. However, welfare impacts could increase once suppressed demand is addressed. The welfare impact is likely to be larger when access is expanded and shortages are reduced so that actual consumption reflects true demand for electricity.

Benefits of electrification

22. 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.

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

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

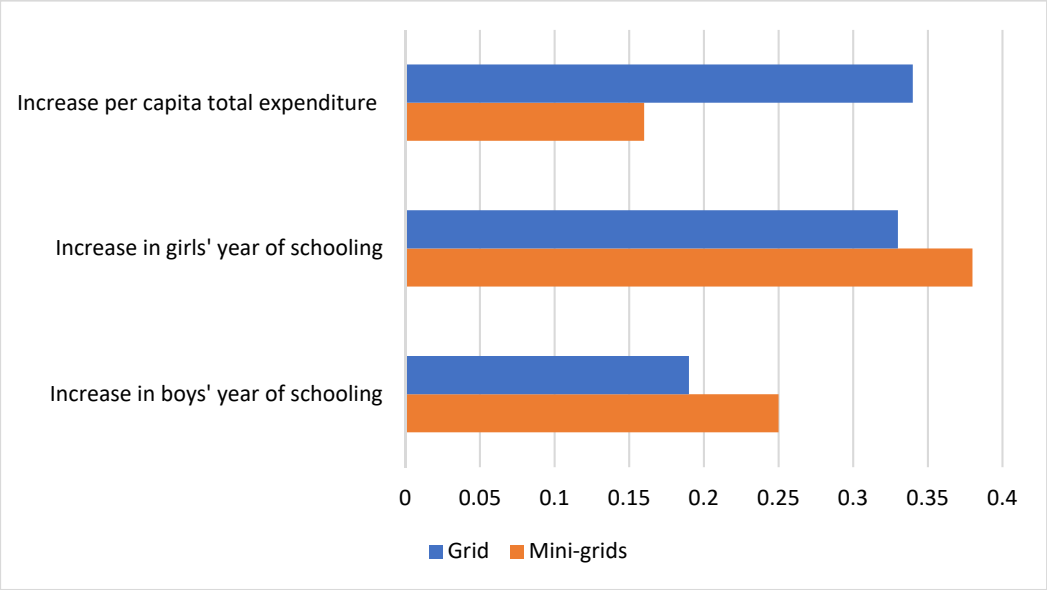
where *Yi* denotes the outcome variables of household i, including per capita total expenditure, and children's school enrollment and years of schooling; *Xi* is a vector of observable household- and community-level characteristics, including age, gender and education level of household's head, the number 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 is unobserved

household or village characteristics that could also affect households economic and social outcomes. ε_{it} is an idiosyncratic error term. β, γ, and δ are unknown parameters to be estimated.

24. An ordinary least squares estimation of equation 1 is likely to be biased because of the endogeneity of G_i and M_i. 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 (u_i) 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.

25. 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 A7.8 Benefits of electrification



Source: Estimation based on multi-tier household survey 2017

26. The estimation results show that gaining access to grid and mini-grids are associated with higher income and better educational results (Figure A7.10). 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.

ANNEX 8: OVERVIEW OF DEVELOPMENT PARTNERS' ACTIVITIES IN THE ENERGY SECTOR

Agencies	Engagement	Status
(i) Improving Operational Efficiency and Financial Viability		
IDA	NEA Integrated Financial Management System	Ongoing
	Asset inventory and management of NEA	
	Preparation of the financial viability action plan for NEA	
ADB	TA 9266:REG- Improving institutional capacity on preparing energy efficiency investments TA 9267:REG- Promoting and Scaling Up Solar Photovoltaic Power through Knowledge Management and Pilot Testing in Bangladesh and Nepal	Ongoing
JICA	Adviser to NEA for hydropower planning	Ongoing
DFID + USAID	Support to NEA's Economic Analysis Division on tariff restructuring, cross-subsidies, interface with the Electricity Regulatory Commission (ERC), and market expansion.	Ongoing
(ii) Strengthening investment planning and project implementation		
a. Generation		
ADB	Grid-connected solar development through private sector participation under additional financing to SASEC Power System Expansion Project.	Ongoing
ADB+JICA+ EIB	Tanahu Storage Hydropower Project (140 MW)	Ongoing
IDA	Grid Solar PV (25 MW)	Ongoing
	Preparation of the detailed engineering and Environmental and Social Impact Assessment for the Upper Arun and Ikhuwa Khola Project	Ongoing
	Preparation of the feasibility and Environmental and Social Impact Assessment with detailed design for the Arun Hub-Mirchaiya-Arun Hub-Basantapur-Inaruwa 400 kV transmission Line	Ongoing
	Upper Arun Hydropower Project	Planned
IDA&IFC	Kabeli A (37 MW), under implementation by Kabeli Energy Limited	Ongoing
	UT1 Hydropower Project	Planned
IFC	Andhi Khola Hydropower Project	Ongoing
KfW	Support to operation and maintenance of Middle Marsyangdi hydropower and Lower Marsyangdi hydropower	Ongoing, near completion
DFID	Support to office of IBN on (a) mega hydro PPPs: Arun 3 (900MW), Upper Karnali (900 MW), West Seti (750MW), Upper Marshyangdi (600 MW) and (b) solar parks.	Ongoing
	Funding of InfraCo Asia, joint venture partners for Kabeli A (37 MW) and GuarantCo, provider of credit guarantees for Lower Solu (82 MW)	Ongoing
	Funding of Commonwealth Development Corporation: lending to Upper Trishuli 1 (216 MW) and Upper Karnali (900 MW).	Planned
USAID	Support to IBN and DoED on management of priority large hydropower projects	On-going
b. Transmission:		
ADB	Strengthening transmission grid capacity for Kathmandu Valley	Ongoing
	Butwal-Kohalpur 132 kV second circuit stringing, 208 km; Middle Marsyangdi-Marsyangdi 132 kV second circuit stringing, 40 km; Dumre-Damauli 132 kV transmission line, 21 km; Dana-Kusma 220 kV transmission line; Kusma-New Butwal 220 kV transmission line; New Butwal-Bardaghat 220 kV transmission line.	Ongoing

Agencies	Engagement	Status
	Construction of new grid substations and augmentation of existing grid substation at various locations under Electricity Transmission Expansion and Supply Improvement Project.	Ongoing
	Construction of new grid substations and augmentation of existing grid substation at various locations under SASEC Power System Expansion Project.	Ongoing
	Construction of new grid substations in Kathmandu Valley under Power Transmission and Distribution Efficiency Enhancement Project.	Planned
ADB+Norway	Kohalpur-Mahendranagar 132 kV second circuit stringing 185 km transmission line and associated substations; New Khimti-Barhabise 400 kV transmission line; Marsyangdi (Markichowk)-Kathmandu (Matatirtha) 220 kV transmission line and associated substation	Planned
IDB	Bharatpur-Bardaghat (220 kV double circuit, 75 km)	Ongoing
	Hetauda-Bharatpur (220 kV single circuit, 75 km)	Ongoing
	Hetauda-Dhalkebar-Inaruwa (400 kV double circuit, 285 km)	Ongoing
MCC	400 KV double circuit transmission lines: New Damauli-Ratmate, 88 km; New Butwal-New Damauli, 84 km; Ratmate-Lapsiphedi, 58km; Ratmate-New Hetauda, 56 km; and New Butwal-India Border, 23 km.	Planned
	Three substations at Ratmate, New Damauli, and New Butwal	Planned
KfW	28 km 220 kV double circuit transmission line between Chilime and Trishuli 3B with two hub substations at the ends	Ongoing
	Upgrade of load dispatch center Master Station in Kathmandu with emergency backup station at Hetauda	Ongoing
	40 km 220 KV double circuit transmission line from Lekhnath in Kaski to Damauli in Tanahun.	Under preparation
EIB	Construction of Samundratar-Trishuli 3B hub transmission line and substation under the Power System Expansion Project.	Ongoing
	Marsyangdi Corridor-Markichowk-Bharatpur 220 kV transmission line	Ongoing
EIB+ European Union	Construction of transmission lines, including two substations, the upgrade of a dispatch center and a rural electrification component (transmission + 2 substations) under the grid development program.	Ongoing
c. Distribution:		
IDA	Distribution loss reduction project under the Grid Solar project	Ongoing
	Distribution system digital transformation and expansion project	Planned
ADB	Distribution system expansion and augmentation in various locations under SASEC Power System Expansion Project	Ongoing
	Distribution system expansion and augmentation in various locations under Electricity Transmission and Supply Improvement Project;	Ongoing
	Modernization and upgradation of distribution system in Kathmandu Valley under Power Transmission and Distribution Efficiency Enhancement Project.	Ongoing
ADB+Norway	Preparation of Distribution System/Rural Electrification Master Plan	Ongoing
AIIB	Distribution expansion in Western Nepal	Planned
	Project supervision support for Implementation of SASEC Power System Expansion Project	Ongoing
kfW	Distribution system reconstruction, upgrading, and extending in Rasuwa and Nuwakot districts	Ongoing
Norwegian Ministry of	Private sector electricity supply and access	Planned

Agencies	Engagement	Status
Foreign Affairs		
d. Technical Assistance:		
DFID	Support to improve the efficiency and effectiveness of forest clearance and replacement for infrastructure projects including energy.	Ongoing
	Project Acceleration Unit in Ministry of Energy to help troubleshoot problems facing generation and transmission projects.	Ongoing
	Support to NEA in developing a foreign exchange risk hedging mechanism for U.S. dollar-denominated PPAs	Ongoing
	Support to establishment of Dolma Himalayan Climate Fund that will promote private equity investment in renewable energy projects in Nepal	Ongoing
DFID+IDA	Support to NEA in developing a foreign exchange risk hedging mechanism for U.S. dollar-denominated PPAs	Ongoing
IDA	Support to DoED on cumulative impact assessment for the Tamor River Basin and related capacity building	Ongoing
ADB	Detail design of Tamor Hydropower Project	Planned
	Detail design of Dudh Koshi Hydropower Project	Ongoing
	Detail design of Lower Seti Hydropower Project	Planned
	Rehabilitation of Sundarijal Hydropower Project	Planned
	Grid connected solar development through private sector participation under additional financing to SASEC Power System Expansion Project.	Planned
(iii) Establishing legislative and regulatory framework		
IDA	Technical support provided in preparation of the Integrated Water Resource Management Policy and Water Resources Act	Ongoing
	Technical support provided in preparation of Power Sector Roadmap and Strategies	Ongoing
	Assistance in preparation of the right-of-way management policy for the transmission line projects	Ongoing
USAID	Assistance in preparation of the National Electricity Regulatory Commission Act	Completed
USAID	Assistance to set up the ERC	Ongoing
GIZ	TA in preparation of the National Biomass Energy Strategy	Completed
	TA in preparation of the National Benchmarks for Biomass Stoves	Completed
	TA in preparation of the cabinet policy decision to enable grid feed-in of co-generated electricity from sugar production	Completed
	TA in preparation of the National Energy Efficiency Strategy	Ongoing
	TA in preparation of the National Energy Efficiency Action Plan	On-going
	TA in preparation of the Energy Conservation Bill	Ongoing
(iv) Implementing power sector market reform		
ADB	TA 8329-NEP: Support for Sustainable Energy Management and Reforms.	Ongoing
	TA 8658-REG: South Asia Economic Integration Partnership Subproject on Power Trading in Nepal and Bangladesh.	Ongoing
IDA	Support for operationalization of the PTC	Ongoing
	Development Policy Lending for the energy sector	Ongoing
	Prepared the road map for power market reforms	Ongoing
IFC	Streamlining licensing process for small hydro (<25 MW) projects	Planned
MCC	TA support to (a) strengthen NEA's capacity in reducing transmission/distribution losses, in cross-border power trade ability, compliance with newly established ERC, transmission asset operations, and	Planned

Agencies	Engagement	Status
	management; and (b) ERC in establishing/rolling out of an independent electricity sector regulator (the 'ERC') and its operationalization	
(v) Achieving universal access to electricity and clean cooking		
Agencies	**Engagement**	**Status**
ADB	Decentralized rural electrification through mini-hydro, wind/solar hybrid mini-grid under SASEC Power System Expansion Project	Ongoing
	Data collection and feasibility study of the Utility Scale Wind Energy Project	Ongoing
IDA	Scaling up the Renewable Energy Program in low-income countries (extended biogas)	Ongoing
	Developing improved solutions for cooking	Ongoing
	Renewable Energy Resource Mapping Project (Wind and solar)	Ongoing
	Business Models for off-grid energy access (SREP)	Ongoing
kfW	Support through AEPC for the promotion of photovoltaic- based drinking water supply system in rural areas.	Ongoing
	Support through the AEPC for the upgrade of the renewable energy test station	Ongoing
	Detailed study on used battery management and recycling	Ongoing
	Implementation of the Plant Rehabilitation and Energy Efficiency Improvement Project for household biogas plants through the AEPC	Ongoing
	Support for the establishment of a used battery recycling plant	Planned
	Support the AEPC for the promotion of institutional photovoltaic applications (water supply, health facilities education)	Ongoing
	Rural electrification in the transmission line project vicinity	Ongoing
GIZ	Support for the establishment of provincial energy offices	Ongoing
DFID	Support to the AEPC in formulation and implementation of National Renewable Energy Framework (NREF)	Ongoing
	Strengthen capacity of and providing funding through the Central Renewable Energy Fund to enable and manage climate funds	Planned
JICA	Micro Hydro Improvement Project in Western area in Federal Democratic Republic of Nepal	Ongoing
Norway	Clean cooking stoves project with the Global Alliance for Clean Cookstoves, International Centre for Integrated Mountain Development, and World Health Organization. World Health Organization is developing models for cities working to improve air quality.	Ongoing
(vi) Energy efficiency		
kfW	Investment support for the Nepalese industries for switching to energy efficient measures	Ongoing
ADB	TA 9266:REG- Improving Institutional Capacity on Preparing Energy Efficiency Investments TA 9267:REG- Promoting and Scaling Up Solar Photovoltaic Power through Knowledge Management and Pilot Testing in Bangladesh and Nepal	Ongoing
GIZ	Technical support to energy efficiency and loss reduction in distribution system	Ongoing
GIZ	Integration of energy efficiency into higher education and vocational training	Ongoing
GIZ	Private sector development for energy efficiency services (audits, energy management system, and so on)	Ongoing