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BEGINNING REFORMS AND ENDING POWER OUTAGES

THE CHALLENGE: MAKE UP FOR LOST TIME

Nepal has emerged from two decades of significant social, political and economic disruption. Ten years of Maoist conflict were followed by an almost equally long process to adopt a new constitution for the country. Despite the prolonged period of political instability, Nepal has made notable economic progress through these years. Growth averaged 4.3% between 2005 and 2015 when the constitution was adopted. The poverty rate fell from 46% in 1996 (when the conflict started) to 15% in 2011, mainly due to sharply increased remittances.

During the same period, Nepal's full economic potential was constrained by the lack of access to reliable, affordable and sustainable electricity. Until 2016, Nepal's per capita electricity consumption was only a twentieth of the global average and a fifth of the South Asian average.

- In 2016, the electricity sector was in a state of crisis, losing money and suffering from daily power outages.
- The government adjusted electricity tariffs, completed transmission interconnections with India and improved the management of the electricity utility to bring the electricity crisis to an end.
- The World Bank is supporting the government's efforts to sustain and build on the improvements in financial viability and governance of the electricity sector.

Daily power outages were the most visible symptom of this problem. They became increasingly severe from 2006 onwards, eventually averaging up to 14 hours a day between 2011 and 2016. The annual economic loss due to load shedding was estimated at US\$ 1.6 billion per year, or about 5% of GDP.

Widespread inefficiency in Nepal's electricity sector was one of the root causes for the chronic power outages. The system's technical and non-technical losses reached as much as 26% in 2016. The electricity system also added insufficient power generation capacity to meet growing

demand. Nepal's vast hydropower potential and other power generation sources such as solar remained underdeveloped, with just 20 MW of capacity added per year from 2000 to 2010. Energy imports from India helped to address the power shortage but they were constrained by inadequate cross border transmission infrastructure.

Electricity tariffs were only updated once between 2001 and 2015. They were not able to cover operating costs until 2017, not to mention allowing for reasonable returns on government equity and reinvestments. By FY2016, net accumulated losses had reached NPR 69.4 billion (US\$ 643 million), amounting to 192% of the Nepal Electricity Authority's (NEA's) revenues that year. As a point of comparison, this is 29% of the size of NEA's asset base.

THE RESPONSE: FROM CONCEPT TO ACTION

Once the constitutional drafting process concluded in 2015, there was renewed political will and an opportunity to tackle the electricity crisis. In February 2016, the government published the concept paper National Energy Crisis Prevention and the Electricity Development Decade, which targeted a tenfold increase in generation capacity to 10 GW in ten years, proposed a roadmap for sector restructuring and establishment of an independent regulator, and endorsed "take or pay" Power Purchase Agreements for private developers to improve the bankability of hydropower projects, recognizing the need to attract private sector financing and expertise. It also proposed an action plan to reduce technical and commercial losses in the electricity sector as well as measures to strengthen the environmental and social management of hydropower projects.

The concept paper paved the way for an ambitious reform program that tackles the electricity crisis on all fronts. Crucially, in September 2016, the government authorized a 14% increase in average tariff, effective in 2017, to move towards cost recovery. The Nepalese Parliament adopted legislation to set up an independent Electricity Regulatory Commission and new management



was installed at the NEA. The new management took immediate steps to optimize dispatch, reduce losses in the distribution system, introduce a demand management program, and increase domestic generation as well as imports. New companies were also created to manage electricity transmission, power trading and generation, and are expected to be given an increasingly greater role in the sector.

Similarly, action was taken to recognize the country's huge, untapped potential for hydroelectric energy and encourage private sector participation. The NEA followed this by signing "take or pay" agreements to develop more than 4 GW of new hydropower projects.

THE WORLD BANK'S CRUCIAL SUPPORTING ROLE

The government's reform program is very ambitious and takes Nepal into uncharted territory. The World Bank has provided support throughout the reform process.

In September 2015, in the month that the new constitution became effective, the Bank approved a US\$ 20 million

loan for a five-year investment project to help power sector agencies prepare for reforms and to pave the way for new hydropower generation and transmission projects that would meet international standards. This included support to prepare river basin plans, transmission and generation masterplans, prepare a power market reform roadmap and establish and operationalize a power trading company. The Energy Sector Management Assistance Program (ESMAP) provided technical assistance to assess the poverty and social impact of electricity tariff reform in the country, and to support a political economy study. Assessing the impact of reform on the poor and socially excluded groups has been important in demonstrating to the government that the near-term impact of the tariff increases on these groups is likely to be limited. Further ESMAP support will be used to assist the government with preparing a communication strategy for electricity sector reforms.

The dialogue with the World Bank and several other international development partners led to the approval of a US\$ 100 million energy sector development policy credit (DPC) in September 2018. This DPC is the first in a series of three, with the collective aim of supporting the government's energy sector reform agenda.

The first DPC supported the government in its efforts to improve the financial performance and governance of

the electricity sector. These efforts aim to improve the financial viability of the NEA, and to establish a more transparent and accountable legal and regulatory framework. The DPC also supports the government's policies and actions to better prepare Nepal to capture the full benefits of regional integration and of trading in the emerging regional electricity market, restructure the NEA, and establish a level playing field for the private sector.

EARLY IMPACTS: PROFITABILITY, WHILE FIGHTING POVERTY

The measures taken by the government and NEA enabled it to end load-shedding across the country in 2018. With support from the World Bank and other development partners, Nepal has implemented tariff adjustments and taken steps to reduce technical and non-technical losses of the utility that allow it to move towards recovering the cost of electricity, one of its key short term aims. The NEA had suffered ten consecutive years of losses, including over US\$ 100 million in 2016. Following the tariff increase and the roll out of its financial restructuring plan, the NEA turned a profit in 2017 and 2018. A financial viability action plan is in place to keep this on a sustainable path. NEA's system losses decreased from 26% in FY2016 to 20% in FY2018.

The government of Nepal and the World Bank have a shared mission to boost inclusive growth and reduce poverty. Indeed, the new regulatory agency's mandate includes a commitment to mitigate negative impacts of tariff reforms on the poor. In Nepal's case, the proposed tariff adjustments were found to have a modest impact on affordability of electricity for the poor in the near-term. However, additional mitigation mechanisms will still be needed in the medium term, once levels of electricity consumption increase. The estimated long-term benefits of these actions also significantly outweigh the estimated costs. These findings were supported also by a 2017 World Bank survey, which found that Nepalese households consume relatively little electricity compared to other countries, and that electricity bills represent only a small part of their spending.



MOVING FORWARD: RISKS AND REASONS FOR OPTIMISM

After two decades of uncertainty, Nepal has achieved significant progress in the three short years since it adopted a new constitution. While Nepal's electricity sector is back on track, the reform agenda still has a long way to go. There are several factors that could help or hinder this process. NEA's tariffs need to be reviewed regularly by the new regulator to help maintain financial performance and mobilize the investments it needs. Similarly, the government needs to substantially strengthen public investment management and the planning process in the electricity sector, as well as environmental and social management of projects.

The opportunity for reform arose from a new-found political stability. This stability significantly increases the likelihood that existing reforms will not be reversed and enables further strengthening of the sector and its institutions.

Building on a foundation of success in ending power outages and recovering electricity sector costs, the government and the NEA are moving to their longer-term objectives. The NEA is stepping up the pace of adding

new generation capacity, which it aims to more than double in the next five years. In the same five years, the government is committed to achieving universal electricity access. These ambitions are not without their challenges, including limited institutional capacity to undertake large scale generation expansion, and insufficient local financing to meet capital expenditure needs.

Thus, even as sector prospects are promising, a large agenda remains. Government agencies, in collaboration with their partners and stakeholders, must sustain efforts to harvest the large economic potential that can be unlocked by reforms in Nepal's electricity sector. The case of Nepal has demonstrated the value of working collaboratively on an international level with the World Bank and multiple other partners. Harnessing international technical know-how and applying it in a locally suitable manner can help build much needed implementation capacity. The leadership of national reform champions has shown how individuals can make a critical difference. Despite a challenging road ahead, Nepal is an example of what can be achieved when a window for reform opens and political will is channeled into creating real and lasting change.

ABOUT ESMAP

The Energy Sector Management Assistance Program (ESMAP) is a global knowledge and technical assistance program administered by the World Bank. It provides analytical and advisory services to low- and middle-income countries to increase their know-how and institutional capacity to achieve environmentally sustainable energy solutions for poverty reduction and economic growth. ESMAP is funded by Australia, Austria, Canada, Denmark, the European Commission, Finland, France, Germany, Iceland, Italy, Japan, Lithuania, Luxembourg, the Netherlands, Norway, the Rockefeller Foundation, Sweden, Switzerland, and the United Kingdom, as well as the World Bank.

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