

RE-CONSIDER: Renewable Energy as a Catalyser for a Green Recovery from COVID-19 Impacts in Nepal

Authors: Arati Khadgi, Prabin Man Singh, Shovana Maharjan

Contributors: Dipesh Joshi, Raju Pandit Chhetri



BACKGROUND

Nepal reported the first case of the coronavirus (COVID-19) on 23 January 2020. The government imposed a nationwide lockdown on 24 March 2020 to control the spread of the infectious disease. After three months of strict restrictions, the government lifted the lockdown with strict health advisory guidelines, to avoid further disruptions to the economy. However, in the course of one year, unmanaged inflow of seasonal migrants from India and other unchecked cross-border travel, inadequate testing and substandard and inadequate isolation facilities led to an increase in COVID-19 cases in Nepal. Although the restrictions are gradually being lifted, the tally in Nepal currently stands at a total of 280,028 cases, 2,961 infected and 3,040 deaths.¹

Although the rate of infection and active cases have decreased significantly in recent months, the widespread and long-term impacts of the COVID-19 pandemic have already emerged. The economy was at a standstill during the lockdown period and has struggled significantly to rebound thereafter. While all economic sectors have been affected, tourism, transportation, entertainment, education, wholesale and retail sectors are among the hardest hit. According to the Central Bureau of Statistics (CBS), Nepal's economic growth is expected to fall, with its Gross Domestic Production (GDP) for the current fiscal year (FY)² projected to be 2.27%, almost three-quarters lower than the 8.5% target (CBS, 2020). This is the lowest it has been in the past four years. Similarly, as per the assessment of the Asian Development Bank (ADB), the pandemic increased the debt-to-GDP ratio to 39% in FY 2020, from 30.1% in FY 2019, and remittances, which grew by 3.61% in FY 2019, declined by 50.7% in April 2020. The debt might

¹ As of April 12 2021. Based on COVID-19 information portal of Ministry of Health and Population of Nepal (<https://covid19.mohp.gov.np/>).

² In Nepal, the fiscal year starts from July and ends in June of the next calendar year.



further increase to 43.4% in FY 2021 as growth dips and the primary balance worsens as a result of measures and expenditures to fight the pandemic and support recovery. The ADB further projects that the economy may lose about 4.7% of total employment, or 997,000 jobs, in FY 2020–FY 2021 (ADB, 2020).

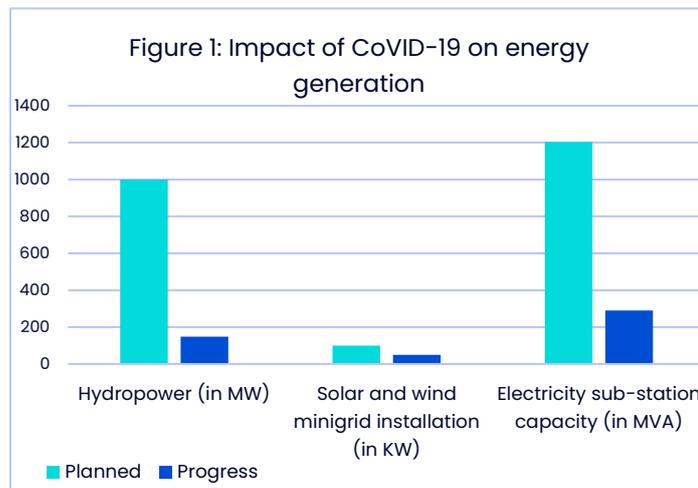
The Government of Nepal responded to the crisis through various policy, institutional, fiscal and monetary measures. Some of the major efforts are highlighted below:

- **Formation of COVID Crisis Management Centre (CCMC) led by the Deputy Prime Minister:** The CCMC was established with the objective to conduct all types of countermeasures against COVID-19 in a coordinated manner through joint efforts of civil servants, security agencies and all stakeholders at the central, provincial and local levels.
- **Formation of Nepal Relief, Resilience and Recovery Advisory Committee by the Ministry of Finance:** This Committee was tasked with advising the CCMC on the government’s resources mobilisation and funding requirements.
- **Preparation of National Recovery Plan:** The government assigned the National Planning Commission (NPC) to study the impact of the COVID-19 pandemic on economic, social, and other sectors and prepare policies and strategies to recover from the crisis. The NPC requested suggestions from experts in various fields, organisations (government and non-governmental agencies) as well as the private sector. Taking the suggestions on board, the NPC is in the process of preparing a plan, which will underpin next fiscal year’s annual plan. The draft version is not yet available for public review. However, for relief and recovery of different socio-economic sectors, the NPC has come up with five strategies:
 1. Resume the operation of industry and businesses affected by COVID-19;
 2. Create new employment opportunities and increase the income of citizens;
 3. Re-prioritise nationally important projects based on the impacts of COVID-19;
 4. Consider the pandemic as an opportunity to adopt modern technologies and new development methods for socio-economic transformation;
 5. Develop self-reliant internal production systems for sustaining the supply of goods and services.
- **Creation of a dedicated programme on public health and economic recovery:** Around NPR 90.69 billion (approx. USD 1 billion) has been allocated in this year’s fiscal plan for improving health services, such as the purchase of medicines, provision of financial incentives (temporary salary increase) and free health insurance for doctors and health workers serving at the frontline, construction of new hospitals and upgrading existing hospitals and increasing testing for COVID-19 infections. In addition, the government introduced an economic recovery package to revive industries and businesses affected by the pandemic, defer tax payments and provide concessional loan facilities to severely affected economic sectors (Ministry of Finance, 2020).
- **Establishment of “the Corona Virus Infection Prevention, Control and Treatment Fund (CPCTF)”:** The Federal government has established the CPCTF to provide emergency funds during the pandemic. The fund has received donations from various national/international organisations and individuals. The domestic sources of funding included the Nepal Oil Corporation, Nepal Telecom, offices under the Ministry of Finance, Nepal Stock Exchange, various banks, corporative and individual donations (Sapkota, et

al., 2020). According to the COVID-19 expenditure unveiled by the government, around USD 30 million from the CPCTF was spent on importing medical goods and equipment.³

COVID-19 AND ENERGY

As many other sectors of Nepal’s economy, COVID-19 has also severely affected energy generation and utilisation. The NPC has reported a significant gap in progress of energy generation in the last fiscal year (NPC, 2020). The Nepal Electricity Authority has reported a decline of about 20-25% in peak demand and around a 30-35% drop in energy demand during the lockdown. Even the decentralised energy services (mostly coming from renewables) have been adversely affected by the pandemic.



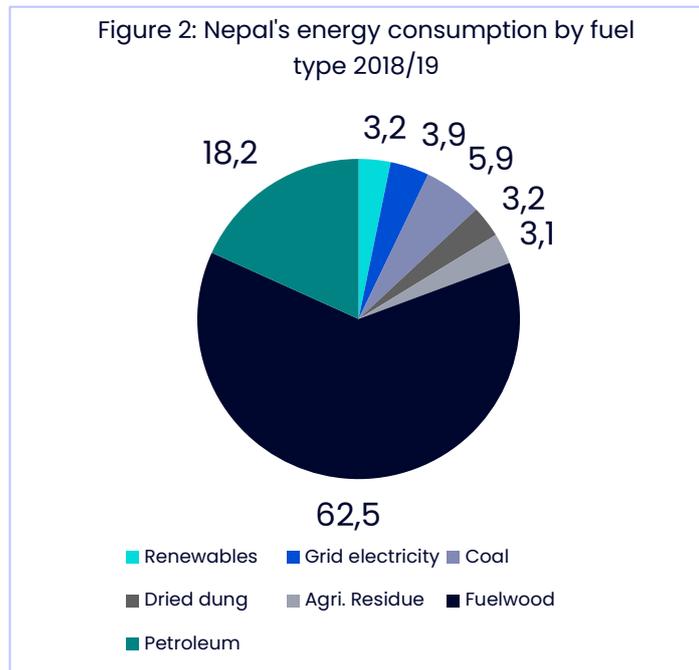
In rural areas, besides for lighting purposes, energy is consumed for running facilities for economic activities, such as mills for processing agricultural products, masonry, carpentry, and others. During the lockdown, these activities were shut down or halted. Thus, most of the entities supplying off-grid electricity at community level, such as micro-hydro, were either closed or running with minimal operation due to low demand. This, in turn, affected smallholder farmers and small enterprises and has had a major impact on poor people’s livelihoods and resilience to cope with further effects from the coronavirus crisis. On the contrary, decline (around 70%) in the imports of petrol, diesel, and aviation turbine fuels from India, due to restriction of movement across borders, had reduced the use of fossil fuels during the lockdown. The unavailability of petroleum products also brought the realisation that indigenous, reliable and locally available sources of energy in the country need to be tapped into. Thus, in order to build back from the COVID-19 impacts on the economy and to meet the increasing demand of energy arising from its repercussions on different facilities, additions to the ongoing energy supply should be explored.

Nepal's energy resources are classified into three categories: traditional, commercial and alternative. Traditional energy resources mostly consist of biomass, i.e. fuel wood from forests and tree resources, agricultural residues coming from agricultural crops and animal dung in dry form. Commercial energy resources include coal, hydroelectricity, and petroleum products. Renewable energy (RE) options in Nepal include a range of commercial, distributed and off-grid energy solutions based on alternative energy sources like wind, solar, hydro etc. These include biomass-related options (biogas, liquid biofuel, briquettes, improved cooking stoves, pellets etc.), solar, wind, geothermal and micro/pico hydropower. Of these renewable energy technologies, micro-hydro, biogas, improved cooking stove, solar photovoltaic (PV) home systems, and solar water heaters are becoming popular and are at varying stages of commercialisation. However, technologies such as solar cookers, solar dryers, briquettes, and

³ <https://english.khabarhub.com/2020/14/104350/>

resources such as wind and geothermal, are only still in the research and demonstration stage, and will thus need more time and investment for commercialisation.

The share of RE in Nepal is only 3.2% (MoF, 2020). Currently, Nepal's total installed electric capacity is 1,355 MW which includes 1,233 MW from hydro, 68 MW from renewables and 54 MW from thermal (uses coal and other fossil fuels). Electrification has already reached up to 90% of households, where 80% have been supplied by the grid and 10% by off-grid electrification. To date, 3.6 million households have benefitted through various clean energy options promoted by the government (AEP, 2019). However, only 8% of people in rural areas have access to



electricity due to challenges in rural electrification arising from topography and isolated settlements (WECS, 2010). Thus, for rural households, off-grid technologies seem attractive and economically feasible.

The estimated total potential of different RE sources in Nepal is as follows: 62.5 x 10³ MWp of solar energy; 3,000 MW of wind power; 2100 MW solar power potential for grid connection; 78.5 MW of Micro-hydro; and 1.3-2.9 million household level biogas plants (WECS, 2010). As a biofuel, biodiesel can be produced from non-edible oils and bioethanol from molasses. There is a huge potential to convert waste into energy from biomass to produce biomass briquetting, pellets and improved cooking stoves. Given the abundant hydro resources and surplus electricity during the wet season, production of hydrogen through water electrolysis is being considered in Nepal but it's still in the research phase. Despite the immense potential of RE in the country, Nepal largely relies on imported fossil fuels and biomass to meet its energy demand. Different available renewable energy technology options are not harvested and utilised across different economic sectors to the full extent. Despite the severe effects on public health and the economy, the COVID-19 pandemic can be an opportunity to explore the potential of RE in the country as a way of 'greening' the recovery plans and programmes and generate income opportunities for poor and marginalised people through RE development. RE can reduce the dependency on imports and tackle energy poverty, which can spur additional growth if also used for productive uses, thereby making Nepal's economy more resilient.

ROLE OF RE IN NATIONAL RECOVERY

The National Recovery Plan, which is currently being prepared by the National Planning Commission, has identified 14 specific areas that need to be prioritised in order to effectively recover from the negative impacts caused by the COVID-19 pandemic. These are: i) Public Health Service; ii) Sectors related to transport, aviation, hotel, recreation and tourism; iii) Small and Medium Scale Enterprises, including options for export promotion; iv) Provision of Social Security and Gender Inclusion and Social Inclusion for poor, vulnerable and marginalised

people; v) Agricultural Products; vi) Employment Generation; vii) Educational System; viii) Measures to Reduce Poverty, Inequality and Social Exclusion; ix) Options for Migration, Foreign Employment and Remittances; x) Sectors that face damage and loss due to COVID-19 and which are in need of rescue or relief; xi) Challenges and Opportunities presented by COVID-19; xii) Plan for Building Back Better; xiii) Macro Economy; xiv) Promotion of Economic Dynamics.

Of the various economic sectors that the Plan identifies as needing support and revival, this policy brief focuses on health and the tourism sector, as there is considerable scope of integration of RE in these two sectors. During the pandemic, it became apparent that Nepal's health sector needs to be significantly more resilient, and the tourism sector was hit particularly hard by the impacts of the restrictions due to COVID-19.

I. Health

The unprecedented situation caused by COVID-19 has exposed the unpreparedness of the Nepalese health system to manage such a pandemic. The lack of human resources, inadequate logistic chain management and insufficient and inadequate laboratory facilities for testing COVID-19 have jeopardised the public health system and escalated the pandemic in Nepal (Shrestha, et al., 2020). Furthermore, COVID-19 has also disrupted healthcare services for emergency and regular health services due to the shift in priorities. Nepal already faces high maternal mortality (239 maternal deaths per 100 000 live births) and child mortality (39 deaths per 1000 live births) and COVID-19 has compounded challenges in accessing emergency and regular health services for all (Ministry of Health, New ERA, & IFC, 2017). Despite the government's efforts to set up hospitals for treating COVID-19 patients, most private health care services have halted their services, severely affecting reproductive, maternal, and child health services and those with chronic health conditions and non-communicable diseases.

The government's response action under health and medical support includes: building additional quarantine and hospital bed capacity; establishing laboratories with testing capacity; allocation of isolation wards in private hospitals; scaling up critical care capacity; introduction of health insurance; and provision of additional financial incentives to medical and health personnel.

However, a prompt emergency response to COVID-19 depends on reliable energy access. Health facilities have many energy requirements, including: electricity for health services and medical equipment (such as ventilators); thermal requirements related to sterilisation; space and water heating; and incineration. As COVID-19 cases are growing, the demand for these health services is also increasing (UNDP, 2020). The ability of frontline facilities to treat infected populations is based on the assumption that hospitals, medical equipment and medicines are fully functioning and safe, with access to sufficient, uninterrupted and reliable electricity (Ogunbiyi, 2020). Many health facilities located in remote locations do not have access to reliable power supply. This makes cold chain and refrigeration for certain types of treatment and vaccine impossible for rural populations who are already vulnerable due to socio-economic conditions.

With exponential growth of cases, the current supply of electricity, which is based on hydropower, will not be sufficient. Apart from the mainstream source of electricity, Nepal should focus on harnessing RE to meet the increasing demand posed by the pandemic or, indeed, future pandemics. Introduction of a hybrid system (solar and hydropower) can improve healthcare provision by supplying additional electricity for preserving vaccines and

antibiotics or for operation of intensive care units (ICU) with ventilators. Each hospital could have its own solar-powered refrigerators or basic power backup to improve its preparedness to fight against the pandemic and any similar future circumstances. Furthermore, off-grid RE solutions (stand-alone and mini-grid systems) could provide cost-effective, rapidly deployable, reliable options for the electrification of healthcare facilities in rural areas. Thus, shifting towards REs could transform the ability and capacity of the health service in the current crisis, as well as support recovery.

II. Tourism

The tourism sector contributes nearly 8% of the country's GDP and generates nearly 7% of the total employment in the country. It is the most attractive sector for private investment, accounting for 22% of the total number of industries registered and 7.6% of total investment made in FY 2019/20. However, the COVID-19 pandemic has hit tourism sector hard and has forced a re-evaluation of the country's tourism plans and programmes. The government has postponed its 'Visit Nepal Year 2020' campaign, which had set a target of welcoming 2 million tourists into the country.

A rapid assessment conducted by the Institute for Integrated Development Studies and UNDP projected a negative growth rate for accommodation and food services, transport, storage and communication sectors in FY 2019/20. These sectors form the backbone of the tourism industry. India, China and the United States of America are the top three origin countries for tourist arrivals in Nepal. Yet, these are among the worst affected countries by the COVID-19 pandemic. Three-quarters of tourists come to Nepal for holidays, recreation and trekking and mountaineering and most of these will get postponed, if not cancelled, during the pandemic. It was estimated that the foreign currency loss from the decline of tourist inflows will increase to USD 400 million in 2020 (UNDP, 2020). Many associated sub-sectors to tourism, such as hotels, restaurants and bars, handicrafts, tours and travels, and trekking and mountaineering reported losses due to pandemic. The Hotel Association of Nepal estimated a loss of at least NPR 3 billion (approx. USD 25 million). These losses continue to mount while the pandemic has not yet been brought under control and it is proving to take more time for the tourism industry to bounce back to its 'business as usual' situation. One immediate effect of this has been a deterioration of employment in the tourism sector as many businesses failed to pay their workers' salaries. It is estimated that 25% will lose their job in the sector. Apart from this, many tourism-linked sectors, such as agriculture, retail, entertainment etc., have also experienced spill-over impacts.

The government has introduced a recovery programme to revive the country's economy and provide relief. A total of NPR 150 billion (approx. USD 1.5 billion) is allocated in this fiscal year to support COVID-19 affected small and medium tourism-based industries through concessional loans (Ministry of Finance, 2020). Similarly, investments are allocated for building tourism infrastructure across Nepal and to introduce subsidies on tax, fees and interest. These concessions aim to increase the self-reliance of Nepal and might possible extent indirectly to the energy sector.

The tourism sector is characterised by high levels of energy consumption. Transportation, including aviation and shipping, hotels and accommodation and food and beverages distribution are energy intensive sectors. Transportation alone accounts for nearly 25% of greenhouse gas (GHG) emissions in the world (Sims & Schaeffer, 2014) and for around 45% in

Nepal.⁴ Lighting and heating in hotels and the production and supply of food and beverages for travellers consumes large amounts of energy. These sectors are mainly powered by fossil fuels, which are costly and a major source of GHG emissions. In Nepal, tourism is mainly based on exploration of nature, adventure and mountaineering, and largely run by small and medium-scale businesses. There is considerable potential to switch energy consumption from fossil fuels to RE in transportation and heating and lighting in hotels and restaurants. This could add value to the industry in terms of lower costs for energy supply, a degree of self-sufficiency among operators, and the benefits of being labelled as “green” or “eco-friendly” tourism.

Conclusion and Recommendations

Although Nepal has abundant sources of RE, it is not being explored or harnessed due to various technological and economic barriers. As energy is the basic resource for economic development of any country, Nepal should consider RE for reviving the economic sectors and making it resilient to stresses and shocks, such as pandemics, for now and in the future. The government is contemplating plans and strategies to build back better from COVID-19. There is a huge opportunity for mainstreaming renewable energy in all the five strategies of the NPC described in the preceding section. Moreover, the fifth strategy, i.e. the development of self-reliant internal production systems for sustaining the supply of goods and services, is very closely linked to, and dependent on, the production of and consumption of locally available energy sources for domestic (energy) services. Thus, research and innovation in the field of RE should be prioritised to sustain the supply of renewable energy services. In order to integrate RE into all development sectors, it is firstly important to comprehend the role of energy in all the sectors and amend plans and budgets accordingly. However, the government has so far not done this. For instance, while costs are allocated for increasing and improving medical facilities, there is no mention of the energy and investment needs in the current budget speech for additional electricity supply that increased medical appliances will require to operate.

To support the sectors hit hardest and revitalise Nepal’s economy, the government should consider increasing the RE share in general and, more specifically, deploy RE to revive the health and tourism sector.

I. General:

Integrate energy into all development sectors: Revival of key economic sectors demands extensive use of energy. The post COVID-19 recovery plans and programmes must promote and integrate RE to drive the economic revitalisation across different impacted sectors. The government must account for COVID-19 impacts to the energy sector and for secondary and tertiary impacts to the different sectors in the National Recovery Plan being formulated by the NPC. In addition, connecting the recovery issue with the issue of energy poverty can boost development and make the country and its people more resilient.

- **Invest in RE technologies:** The government must invest in, and build technical capacity to harness, all types of RE sources, including solar, wind and pico/micro hydropower, to their full potential to better prepare and protect the economy from future pandemics and other economic shocks and disruption.

⁴ <https://www.iea.org/countries/nepal>

- **Minimise damage:** The government should support those sectors hit hardest by the economic breakdown to minimise the number of bankruptcies and other adverse social impacts.
- **Revitalise the economy:** By investing in the future, the government can revitalise the economy, create innovation and spur sustainable growth. RE is an effective tool to revitalise the economy because: it provides energy, which is desperately needed; it creates jobs and innovation; it decreases import dependency; and it makes the economy more resilient. This should include setting up training programmes for installation and maintenance of solar home systems (SHS) and off-grid solutions.
- **Partnership:** The government should look for ways to expand international cooperation, green recovery partnerships, climate partnerships, etc. for increasing investment and technology and skills transfers.
- **Set targets:** Setting a 100% RE target makes sense as it gives a clear signal and creates certainty for investors on where the energy journey of Nepal is heading.

II. Health:

- Government and private sector investments into the health sector must prioritise RE solutions to support health facilities and services. This could include mini-grid installation or SHS.
- In urban areas, solar PV systems could be integrated with the existing grid electricity to fulfil the increasing demand for electricity for refrigeration or operation of ICUs and ventilators.
- In rural areas, off-grid electricity should be generated from solar to run health posts and to deliver basic services.
- The government should introduce subsidies or concessions to private healthcare centres that are powered by RE; especially in rural areas.

III. Tourism:

- Post COVID-19 tourism recovery plans and programmes must promote nature-based tourism.
- To revive the tourism sector, the government can provide special incentives (in the form of subsidies, tax leverages, etc.) to sub-sectors described above (such as hotels, restaurants, homestays, etc.) which integrate RE options (electric cooling, integrated collector storage, solar) in their day-to-day services.
- Promotion of RE must be tied to concessional loan programmes for small and medium-sized enterprises in tourism sectors in relief, concession, and economic recovery plans.
- Major touristic destinations in Nepal, such as Lumbini, Pokhara, and protected areas, should be declared as zero emission zones by promoting e-transportation and RE-generated lighting and heating.
- All trekking and hiking routes should be powered by renewable energy for lighting, cooking and heating.

REFERENCE

- ADB. (2020). *Proposed Countercyclical Support Facility Loan Nepal: COVID-19 Active Response and Expenditure Support Program*. Asian Development Bank.
- AEPC. (2019). *Progress at a glance: A Year in Review FY 2075/76 (2018/19)*. Mid Banehwar, Kathamandu, Nepal: Alternative Energy Promotion Centre, Ministry of Energy, Water Resource and Irrigation, Government of Nepal.
- CBS. (2020). *National Accounts of Nepal 2019/20*. (Central Bureau of Statistics) Retrieved from <https://cbs.gov.np/national-accounts-of-nepal-2019-20/>.
- Dhakal, N. R. (2020, September 27). Nepal's Policy and Priorities for Sustainable Energy for all. Kathmandu, Nepal.
- Ministry of Finance. (2020). *Budget Speech of FY 2077/78*. The Government of Nepal.
- Ministry of Health and Population (MoHP). (2020, December 4). Retrieved from <https://covid19.mohp.gov.np/>.
- Ministry of Health, N., New ERA, & IFC. (2017). *Nepal Demographic and Health Survey Key Findings*. 2016.
- MoF. (2020). *Economic Survey 2019/20*. Kathmandu, Nepal: Ministry of Finance, Government of Nepal.
- NPC. (2020). *Annual Report of Fiscal year 2076/77*. Kathmandu, Nepal: National Planning Commission, Government of Nepal.
- Ogunbiyi, D. (2020). *Here's why energy security is a vital tool in tackling a pandemic*. The World Economic Forum COVID Action Platform. Retrieved from <https://www.weforum.org/agenda/2020/04/pandemic-energy-access-coronavirus>
- Sapkota, K., Dangal, G., Koirala, M., Sapkota, K., Poudel, A., & Dhital, S. R. (2020). Strategies for prevention and control of COVID-19 in Nepal. *Journal of Patan Academy of Health Sciences*, 85-88.
- Shrestha, N., Mishra, S. R., Ghimire, S., Gyawali, B., Marahatta, S. B., Maskey, S., . . . Adhikari, B. (2020). Health System Preparedness in Tackling the COVID19 in Nepal: a Qualitative Study Among Frontline. *Research Square*. doi:<https://doi.org/10.21203/rs.3.rs-49448/v1>
- Sims, R., & Schaeffer, R. (2014). *2014: Transport*. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, United Kingdom and New York, NY, USA.: Cambridge University Press.
- UNDP. (2020). *Rapid Assessment of Socio Economic Impact Of COVID-19 In Nepal*. UN House, Pulchowk, Lalitpur, Nepal: United Nations Development Programme.
- WECS. (2010). *Energy Sector Synopsis Report*. Singdurbar, Kathmandu, Nepal: Water and Energy Commission Secretariat, Government of Nepal.
- World Bank. (2020, December). *Nepal Development Update*. Retrieved from <https://www.worldbank.org/en/country/nepal/publication/nepaldevelopmentupdate>.