



# Nepal

Asia & Pacific

Ease of doing Solar classification



## Influencer

Electricity Consumption in kWh/capita (2020)

### 106.1

Average PVout in kWh/kWp/day (2020)

### 4.0

Cumulative Solar Capacity in MW (2021)

### 93.2

Getting Electricity Score (2020)

### 60.9

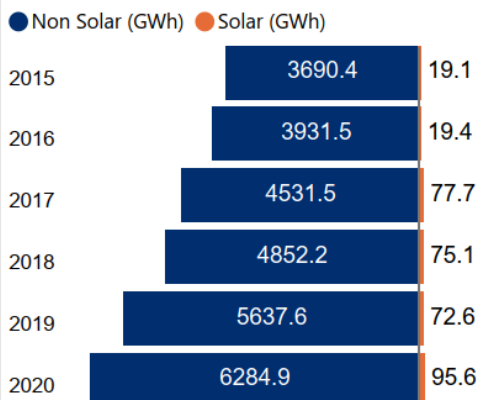
NDC Target by 2050

### Net zero

Human Development Index (2021)

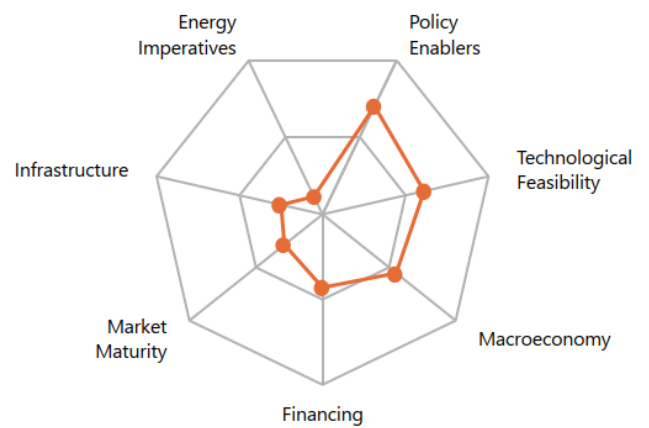
### 0.6

### Renewable Energy Generation by Source

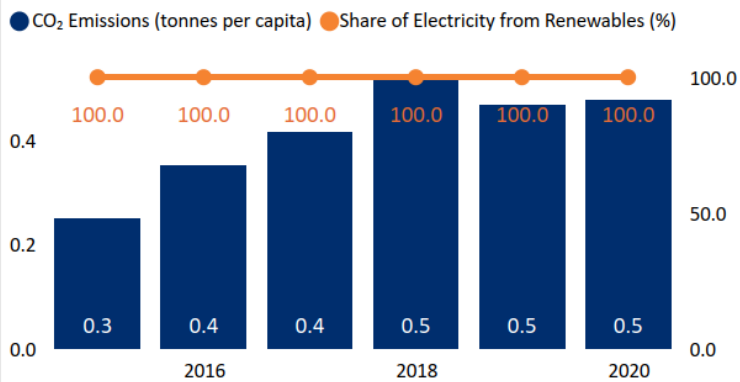


Non Solar RE includes Wind and Hydro;

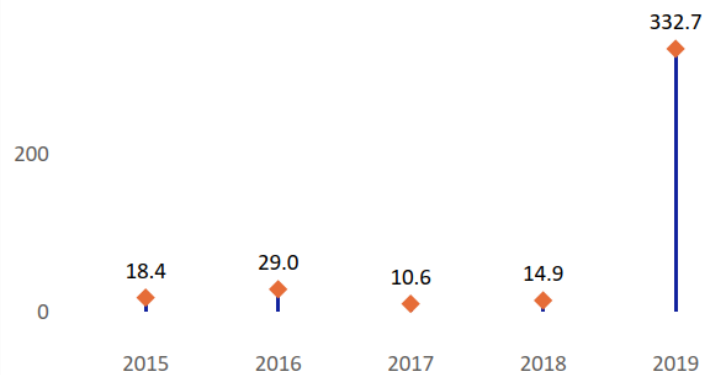
### Performance against 7 Drivers



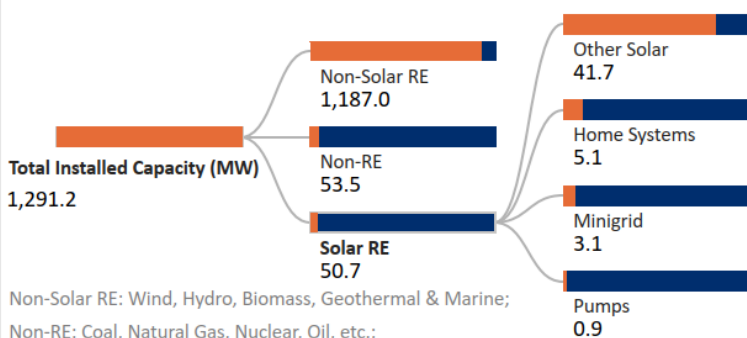
### CO<sub>2</sub> Emissions vs Electricity share from Renewables



### International Finance received for Clean Energy (Million US Dollars)

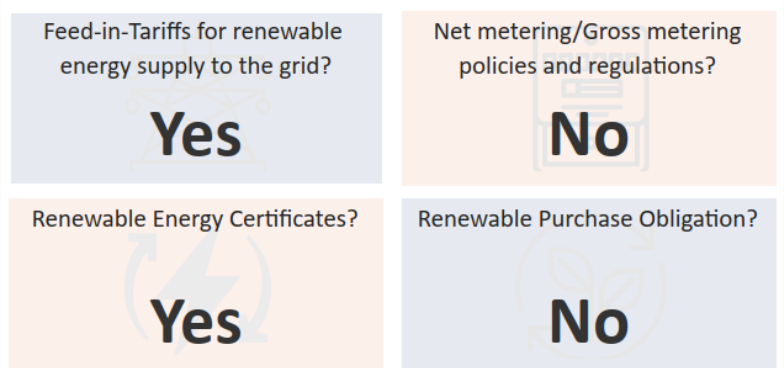


### Installed Capacity by Source (2019)

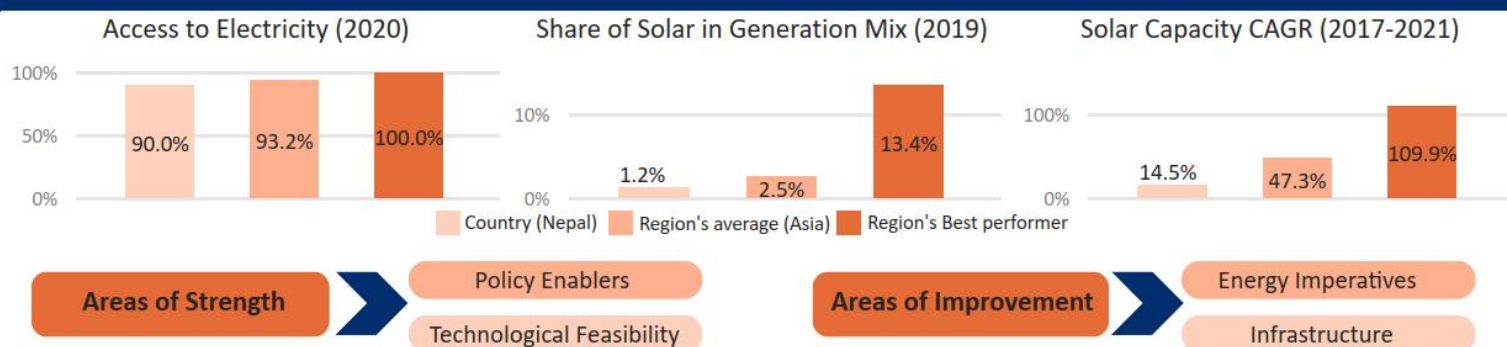


Non-Solar RE: Wind, Hydro, Biomass, Geothermal & Marine;  
 Non-RE: Coal, Natural Gas, Nuclear, Oil, etc.;  
 Other Solar: Utility Scale Solar, Rooftop etc.;

### Support for Renewables (2020)



## Country's regional performance and characteristics



## Key Insights

### Drivers

### Insights



Macro-economy

- Nepal is a lower middle-income country with a GDP per capita (PPP) of USD 4,210 in 2021.<sup>1,2</sup>
- Due to COVID-19 Pandemic, the GDP (Real) had declined by 6.6% in 2020. However, in 2021, the GDP bounced back recording an annual growth rate of 4.2%.<sup>3</sup>
- The inflation rate (CPI) of Nepal has decreased to 3.6% in 2021 from 6.1% levels in 2020.<sup>4</sup>
- The general government gross debt to GDP has increased to 45.8% in 2021 from 42.4% levels in 2020.<sup>5</sup>



Policy enablers

- Nepal, in its NDC, has committed to reduce GHG emission to achieve net zero emissions by 2050.<sup>6</sup>
- Nepal has committed to expand clean energy generation from approximately 1,400 MW to 15,000 MW out of which 5,000 MW will be built using national resources.<sup>6</sup>
- Nepal has prepared a roadmap to achieve universal access to electricity by 2024 which is 3 years earlier than the timeline mentioned in the Sustainable Development Goals Status and Roadmap 2016-2030.<sup>7</sup>
- Nepal government with its initiative Green, Resilient, and Inclusive Development (GRID) has primarily focussed on RE and sustainable development.<sup>8</sup>



Technological Feasibility

- Nepal receives high levels of solar irradiation (GHI) of 4.5 kWh/m<sup>2</sup>/day and specific yield 4.0 kWh/kWp/day indicating a high level of technical feasibility for solar in the country.<sup>8</sup>
- Alternative Energy Promotion Centre (AEPC) in Nepal has launched Mini Grid Special Programme to implement solar mini grid projects.<sup>10</sup>
- Nepal has established a Green Hydrogen Lab with a vision to enable Nepalese industries specialized in producing, storing, transporting, and using green hydrogen energy at a commercial level.<sup>11</sup>



Market Maturity

- 90% of the population in Nepal had access to electricity as of 2020.<sup>12</sup>
- Nepal Electricity Authority is responsible for generation, transmission, and distribution of electricity.<sup>13</sup>
- Nepal Electricity Regulatory Commission is responsible for formulating regulations across generation-transmission-distribution, protecting rights of consumer, tariff etc.<sup>14</sup>



Infrastructure

- Power Transmission Company of Nepal Limited (PTCN) maintains and operate transmission system between Nepal and India for the purpose of export and import of electricity.<sup>15</sup>
- Electricity transmission lines in Nepal operate at 11 KV, 33 KV, 66 KV and 132 kV voltage levels.<sup>16</sup>
- A 400 KV D/C, 120 km long line will be laid connecting India and Nepal of which 20 km will fall in Nepal and the remaining 100 Km is in Indian territory (from Butwal in Nepal to Gorakhpur in UP, India). This line will have the capacity to handle a load of up to 2,000 MW.<sup>17</sup>



Financing

- Asian Development Bank (ADB), with a corpus of USD 150 Mn, is funding Nepal to enhance its power transmission and distribution efficiency.<sup>18</sup>
- The Government of Nepal and the World Bank has signed a concessional financing agreement for USD 100 Mn toward a green, climate-resilient, and inclusive development.<sup>19</sup>



Energy Imperatives

- In 2020, the per capita consumption of electricity is 0.106 MWh, which is significantly lower as compared to the global average of 3.31 MWh.<sup>20</sup>
- The total installed capacity of Solar PV witnessed a CAGR of 14.5% between 2017-2021 growing from 54.3 MW in 2017 to 93.2 MW in 2021.<sup>21</sup>
- The demand for electricity in the country was recorded as 3.09 TWh in 2021 remaining similar to that in 2020.<sup>22</sup>
- In 2021, the total installed capacity in the country has reached 2.03 GW with a significant share coming from hydro (~95%).<sup>23</sup>