Introduction:

This report offers comprehensive insights into the quarterly performance of renewable energy generation in Sri Lanka. The data and analysis presented herein aim to guide investment decisions within the country’s electricity sector. The main focus is on Non-Conventional Renewable Energy (NCRE) sources, including Mini Hydro, Wind, Solar PV, Biomass, and Municipal Solid Waste.

Most solar PV systems tend to be either utility-scale installations with a capacity usually above 1 megawatt (MW) or rooftop PV typically below 1 MW. Residences may limited to small systems usually up to 20 kilowatts (kW), while larger public, commercial, and industrial buildings may have systems with a capacity as large as 1 MW or even more. Land based wind power projects have been implemented so far while offshore wind projects are considered in the pipeline.

In 2019, the Minister of Power, Energy, and Business Development published the National Energy Policy & Strategies of Sri Lanka, prepared after reviewing and revising the National Energy Policy and Strategies of Sri Lanka published in the Gazette Extraordinary No. 1553/10 of 10.06.2008. The primary objective of the energy policy is to ensure energy security through supplies that are cleaner, secure, economical, and reliable, and to provide convenient, affordable energy services to support the socially equitable development of Sri Lanka.

Policy guidelines such as the ‘General Policy Guidelines on the Electricity Industry’ as required under Sri Lanka Electricity Act No. 20 of 2009 statutorily required to be issued for each sub-sector, are expected to be prepared and issued, based on this national energy policy.

Sri Lanka’s power sector development is carried out based on the Long-term generation expansion plan (LTGEP) prepared by the Transmission Licensee (ie. Ceylon Electricity Board (CEB)) and approved by the Public Utilities Commission of Sri Lanka (PUCSL). LTGEP is a rolling plan prepared in every two years incorporating the changes introduced by the varying economic and technical parameters used in the planning process.

Target: To increase the renewable energy (RE) share from 50% to 70% by 2030.
Installed Capacity (MW) by Source - as at 31.03.2023

- Major Hydro, 1415, 29%
- Thermal Oil, 1027, 21%
- CEB Coal, 900, 18%
- NCRE, 1543, 32%

Total Generation by Source (GWh) - 01.01.2023 to 31.03.2023

- Major Hydro, 921, 24%
- Thermal Oil, 740, 20%
- CEB Coal, 1,523, 40%
- NCRE, 590, 16%
Renewable Energy Capacity (MW) as at 31.03.2023

- Major Hydro, 1415.0, 48%
- IPP Wind, 145.0, 5%
- CEB Wind, 103.5, 4%
- IPP Solar, 130.4, 4%
- Biomass, 40.1, 1%
- MSW, 10.0, 0%
- IPP Mini Hydro, 416.3, 14%
- Rooftop Solar-CEB, 563.6, 19%
- Rooftop Solar-LECO, 133.9, 5%

Cumulative Renewable Generation (GWh) as at 31.03.2023

- Major Hydro, 921, 61%
- IPP Mini hydro, 212, 14%
- MSW, 13, 1%
- Biomass, 21, 2%
- IPP Solar, 50, 3%
- CEB Wind, 60, 4%
- IPP Wind, 51, 3%
- Rooftop Solar, 183, 12%
Generation Mix (GWh) - 1st Quarter 2023

- Major Hydro, 921, 24%
- CEB Thermal Oil, 470, 13%
- CEB Coal, 1523, 40%
- IPP Thermal, 270, 7%
- IPP Wind, 51, 1%
- IPP Solar, 50, 1%
- Biomass, 21, 1%
- MSW, 13, 0%
- Rooftop Solar, 183, 5%
- IPP Mini hydro, 212, 6%

Renewable Generation Mix (GWh) - 1st Quarter 2023 (01.01.2023 to 31.03.2023)

- Major Hydro, 921, 61%
- Rooftop Solar, 183, 12%
- IPP Mini hydro, 212, 14%
- MSW, 13, 1%
- Biomass, 21, 2%
- IPP Solar, 50, 3%
- CEB Wind, 60, 4%
- IPP Wind, 51, 3%
MONTHLY GENERATION COMPARISON - 2023

Thermal Generation GWh
RE Generation GWh

<table>
<thead>
<tr>
<th>MONTH</th>
<th>Thermal Generation GWh</th>
<th>RE Generation GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAN</td>
<td>695.50 GWh</td>
<td>56.28%</td>
</tr>
<tr>
<td>FEB</td>
<td>716.97 GWh</td>
<td>61.11%</td>
</tr>
<tr>
<td>MAR</td>
<td>850.31 GWh</td>
<td>540.31 GWh</td>
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</table>

Decreased by 38% as compared to Q4 2022

Renewable Generation

<table>
<thead>
<tr>
<th>Q4 - 2022</th>
<th>Q1 - 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,426</td>
<td>1,511.66</td>
</tr>
</tbody>
</table>
### Renewable Generation – 4th Quarter 2022 Vs 1st Quarter 2023

<table>
<thead>
<tr>
<th>Technology</th>
<th>Q4 - 2022</th>
<th>Q1 - 2023</th>
<th>Deviation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Hydro</td>
<td>1,677</td>
<td>921</td>
<td>-45%</td>
</tr>
<tr>
<td>CEB Wind</td>
<td>55</td>
<td>60</td>
<td>9%</td>
</tr>
<tr>
<td>IPP Wind</td>
<td>56</td>
<td>51</td>
<td>-8%</td>
</tr>
<tr>
<td>Mini Hydro</td>
<td>438</td>
<td>212</td>
<td>-52%</td>
</tr>
<tr>
<td>IPP Solar</td>
<td>44</td>
<td>50</td>
<td>15%</td>
</tr>
<tr>
<td>Rooftop Solar</td>
<td>152</td>
<td>183</td>
<td>21%</td>
</tr>
<tr>
<td>Biomass</td>
<td>11</td>
<td>21</td>
<td>91%</td>
</tr>
<tr>
<td>MSW</td>
<td>15</td>
<td>13</td>
<td>-14%</td>
</tr>
</tbody>
</table>

#### Q4 - 2022 and Q1 - 2023 (with Major Hydro)

![Bar chart comparing Q4 - 2022 and Q1 - 2023 production for different technologies](chart.png)
Renewable Generation – 1st Quarter 2022 vs 1st Quarter 2023

<table>
<thead>
<tr>
<th>Technology</th>
<th>Q1 - 2022</th>
<th>Q1 - 2023</th>
<th>Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Hydro</td>
<td>926</td>
<td>921</td>
<td>-1%</td>
</tr>
<tr>
<td>CEB Wind</td>
<td>54</td>
<td>60</td>
<td>12%</td>
</tr>
<tr>
<td>IPP Wind</td>
<td>50</td>
<td>51</td>
<td>3%</td>
</tr>
<tr>
<td>Mini Hydro</td>
<td>175</td>
<td>212</td>
<td>21%</td>
</tr>
<tr>
<td>IPP Solar</td>
<td>43</td>
<td>50</td>
<td>16%</td>
</tr>
<tr>
<td>Rooftop Solar</td>
<td>152</td>
<td>183</td>
<td>20%</td>
</tr>
<tr>
<td>Biomass</td>
<td>18</td>
<td>21</td>
<td>15%</td>
</tr>
<tr>
<td>MSW</td>
<td>18</td>
<td>13</td>
<td>-26%</td>
</tr>
</tbody>
</table>
Variation of Renewable Generation – Technology Wise

**Major Hydro**

![Bar chart showing comparison of Major Hydro generation in 2022 and 2023 for January, February, and March.](image)

**CEB Wind**

![Bar chart showing comparison of CEB Wind generation in 2022 and 2023 for January, February, and March.](image)
Source: CEB monthly Review Report
Daily Demand Variation

Note: Rooftop Solar PV, IPP Solar (1MW), and Non-telemetered Mini Hydro daily generation for Load Curves are calculated relative to actual monthly generations.
Note: Rooftop Solar PV, IPP Solar (1MW), and Non-telemetered Mini Hydro daily generation for Load Curves are calculated relative to actual monthly generations.
Note: Rooftop Solar PV, IPP Solar (1MW), and Non-telemetered Mini Hydro daily generation for Load Curves are calculated relative to actual monthly generations.

Renewable Generation Power Plants in Sri Lanka
Locations of the Renewable Power plants can be found via the following link.