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3.3 South Asia

3.3.8 Sri Lanka
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Key Facts

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Population</td>
<td>21,481,334</td>
</tr>
<tr>
<td>Area</td>
<td>65,610 km²</td>
</tr>
<tr>
<td>Climate</td>
<td>Tropical monsoon; northeast monsoon (December to March); southwest monsoon (June to October)</td>
</tr>
<tr>
<td>Topography</td>
<td>Mostly low, flat to rolling plain; mountains in south-central interior</td>
</tr>
<tr>
<td>Rain pattern</td>
<td>Mean annual rainfall varies from under 900 mm in the driest parts (southeastern and northwestern) to over 5,000 mm in the wettest parts (western slopes of the central highlands).</td>
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Electricity sector overview
The installed electricity generation capacity in Sri Lanka reached 3,141 MW in 2011, with 66 per cent owned by the state and 34 per cent in possession of independent power producers. Gross electricity generation in Sri Lanka was 11,528 GWh in 2011. Figure 1 below depicts the breakdown of the different energy sources used.

Figure 1 Electricity generation in Sri Lanka
Source: Ceylon Electricity Board

Small hydropower sector overview and potential
Sri Lanka adheres to the small hydropower definition of 10 MW upper capacity limit. There are 90 small hydropower plants in Sri Lanka, with an aggregated installed capacity of 194 MW, most of which are owned by Independent Power Producers (IPPs). According to Sri Lanka’s Sustainable Energy Authority (SEA), the total economically feasible small hydropower potential in Sri Lanka is 400 MW (figure 2).

Renewable energy policy
The Government of Sri Lanka envisages developing NRE technologies to reach a 10 per cent target in power generation by 2015. The Mahinda Chintana Idiri Dekma, the Government’s vision for national development, envisions further extending this goal to reach 20 per cent by 2020.

Standardized Power Purchase Agreements (SPPA) are considered the key driver of the early success of the small hydropower sector in Sri Lanka, also applicable to other renewable sources and waste or co-generation facilities with capacities up to 10 MW. Main features of the SPPAs include:

- A complete avoidance of market risk: the Ceylon Electricity Board assures the purchase of all that is produced by a small hydropower project.
- A floor price of 90 per cent of the tariff: ensuring a steady and predictable cash-flow.
- A long term commitment: the SPPA lasts 15 years and is based on sound legal provisions.

The SPPA was well received due to its relative simplicity. It was also acceptable to banks and had low transition costs.

The Sri Lankan small hydropower sector followed a natural evolution until year 2005, with no formal policy framework. The tariff on offer was based on avoided costs, and escalating oil prices forced the small hydropower tariff to climb up towards an almost unsustainable level. Furthermore, the loosely regulated resource allocation process has left many good sites in the hands of non-serious licensees where their licences have yet to be cancelled and transferred to the more premium developers. Although the small

The chart below indicates the development of New Renewable Energy (NRE), of which the major share comes from small hydro plants.

According to figure 3, the rate of increase in capacity additions, especially small hydro, accelerated after year 2007 with the establishment of SEA in 2007. The acceleration can be attributed to the transparent resource allocation process introduced by SEA which is based on a 20-year permit to use a particular new renewable energy source granted to private sector developers through a ‘first come first served’ principle.

Figure 2 Small hydropower capacities in Sri Lanka
Source: Ceylon Electricity Board

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hydropower in Sri Lanka has created a conducive investment environment with the necessary legal framework and financing mechanisms in place, a too expeditious development could create harm by connecting more small generators to the grid in an unregulated manner, potentially warranting a number of technical issues.\(^6\)

![Figure 3 Cumulative capacity additions of new renewable energy in Sri Lanka, 1996 – 2010](Image)

To address this issue, the Sri Lankan Government proposed an adjusted a three-tiered, technology-specific, cost-based tariff for NRE developers, eliminating the drawbacks of the previous tariff based on avoided cost. \(^6\)\(^8\)

In general, the Sri Lankan Government has successfully provided policy support to the industry over the past years, creating a conducive environment for the development of small hydropower in the country.

Currently, the leading Sri Lankan small hydropower businesses are very active in the African continent in consulting and project development. The country has a well-developed small hydropower value chain.

**Legislation on small hydropower**

The primary legislation on small hydropower sector in Sri Lanka is Sustainable Energy Authority Act No.35 of 2007. The provisions of this act are resource neutral and apply not only to small hydropower, but equally on all renewable energy resources. The primary legislation is supported by subsidiary legislation identified as ‘regulations’ with the publication of *Energy Development Areas* through a regulation where the SEA can exercise control over the hydropower resource, land requirement for the project and access. The applications received to develop any small hydropower site are treated in the first come, first served basis, as detailed out in another subsidiary legislation. The detailed information on the project development process is contained in a publication titled *A Guide to the Project Approval Process for On-Grid Renewable Energy Project Development* and is cited in the subsidiary legislation as a binding acceptance, making the guide a part of the small hydropower legislation.\(^9\)

**Barriers to small hydropower development**

The small hydropower sector in Sri Lanka has reached its maturity state, however the industry is still experiencing barriers to implementation in the following areas:

- Absence of a dedicated transmission solution for uptake of power from small hydropower plants;
- Limitations at local grid sub-station level and at national power system level for adding more small hydropower to the grid;
- Public opposition at regional level arising out of conflicting use of water resources;
- Absence of dispatch control strategies such as advance forecasting and on-line monitoring and regression.

**References**

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