4 Europe

4.2 Northern Europe

4.2.1 Denmark

European Small Hydropower Association, Stream Map

Key facts

<table>
<thead>
<tr>
<th>Key</th>
<th>Fact</th>
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<tbody>
<tr>
<td>Population</td>
<td>5,543,453</td>
</tr>
<tr>
<td>Area</td>
<td>43,094 km²</td>
</tr>
<tr>
<td>Climate</td>
<td>Temperate; humid and overcast; mild, windy winters and cool summers</td>
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<tr>
<td>Topography</td>
<td>Low and flat to gently rolling plains</td>
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<tr>
<td>Rain Pattern</td>
<td>The average annual precipitation over land is 712 mm but varies greatly from year to year and from place to place. On average, it rains most in the central parts of Jutland with over 900 mm and least in the Kattegat and Bornholm with some 500 mm.</td>
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Electricity sector overview

Denmark was the only energy self-sufficient country in the European Union in 2011 with 40.7 per cent of electricity coming from renewable energy sources (figure 1). Wind is the most important renewable energy source in Denmark. Operation of the second largest hydropower plant (Karlsgårdeværket) has been suspended until 2016 to allow wetlands restoration. Thermal power stations provide heat simultaneously for some district heating networks (i.e 76.3 per cent of district heating is produced by combined heat and power plants).

![Electricity generation in Denmark](image)

**Source:** Danish Energy Agency

Small hydropower sector overview and potential

In 2010, Denmark had 35 small hydropower plants with a total installed capacity of 9.3 MW (28 GWh/year). Due to environmental constraints, no further hydropower potential is available, the aim is to maintain the number of already installed plants.

**Renewable energy policy**

The new Danish Energy Agreement for 2020 includes the following targets: more than 35 per cent renewable energy in final energy consumption, 50 per cent of electricity consumption to be supplied by wind power and gross energy consumption reduced by 7.6 per cent in relation to 2010. For 2050, the consumption target is 100 per cent renewable energy in the energy and transport sectors. Electricity production from renewable resources is supported through price premiums and fixed feed-in tariffs. There is a high level of certainty about future support as the support scheme applies to the normal lifetime of the plant.

**Legislation on small hydropower**

There is support available for hydropower stations of less than 10 MW through the Promotion of Renewable Energy Act (No. 1392 of 27 December 2008). The economic support scheme for small hydropower is the feed-in-tariff of approximately 8 euro cents/kWh. The additional charge for electricity generated by hydropower cannot exceed DKK 1.5 million annually (about US$263,000), from Articles 47 and 48 of the Law on Renewable Energy.

**Barriers to small hydropower development**

Residual flow requirements are judged individually for each project.

**References**
