Norway

Sustainable Development Goal 7.2: Energy Indicators (2016)

Renewable energy (% of TFEC) 59.5
Energy efficiency (MJ per $1 of GDP) 3.4

Access to electricity (% of population) 100.0
Access to clean cooking (% of population) >95

**TOTAL PRIMARY ENERGY SUPPLY (TPES)**

<table>
<thead>
<tr>
<th>TPES</th>
<th>2011</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable (TJ)</td>
<td>632 384</td>
<td>610 761</td>
</tr>
<tr>
<td>Renewable (TJ)</td>
<td>569 291</td>
<td>524 230</td>
</tr>
<tr>
<td>Total (TJ)</td>
<td>1201675</td>
<td>1134991</td>
</tr>
<tr>
<td>Renewable share (%)</td>
<td>47</td>
<td>46</td>
</tr>
</tbody>
</table>

**Growth in TPES**

<table>
<thead>
<tr>
<th>2011-16</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable (%)</td>
<td>-3.4</td>
</tr>
<tr>
<td>Renewable (%)</td>
<td>-7.9</td>
</tr>
<tr>
<td>Total (%)</td>
<td>-5.5</td>
</tr>
</tbody>
</table>

**Primary energy trade**

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports (TJ)</td>
<td>318 917</td>
<td>353 197</td>
</tr>
<tr>
<td>Exports (TJ)</td>
<td>7 467 601</td>
<td>7 896 710</td>
</tr>
<tr>
<td>Net trade (TJ)</td>
<td>7 148 684</td>
<td>7 543 513</td>
</tr>
<tr>
<td>Imports (% of supply)</td>
<td>27</td>
<td>31</td>
</tr>
<tr>
<td>Exports (% of production)</td>
<td>89</td>
<td>91</td>
</tr>
<tr>
<td>Energy self-sufficiency (%)</td>
<td>700</td>
<td>768</td>
</tr>
<tr>
<td>Net trade (USD million)</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Net trade (% of GDP)</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

**RENEWABLE ENERGY CONSUMPTION**

<table>
<thead>
<tr>
<th>Consumption by source</th>
<th>2011</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity (TJ)</td>
<td>455 227</td>
<td>403 306</td>
</tr>
<tr>
<td>Direct bioenergy (TJ)</td>
<td>53 639</td>
<td>46 023</td>
</tr>
<tr>
<td>Direct solar+geothermal (TJ)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total (TJ)</td>
<td>508 866</td>
<td>449 329</td>
</tr>
<tr>
<td>Electricity share (%)</td>
<td>89</td>
<td>90</td>
</tr>
</tbody>
</table>

**Consumption growth**

<table>
<thead>
<tr>
<th>2011-16</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable electricity (%)</td>
<td>-11.4</td>
</tr>
<tr>
<td>Other renewables (%)</td>
<td>-14.2</td>
</tr>
<tr>
<td>Total (%)</td>
<td>-11.7</td>
</tr>
</tbody>
</table>

**Consumption by sector**

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry (TJ)</td>
<td>207 688</td>
<td>171 675</td>
</tr>
<tr>
<td>Transport (TJ)</td>
<td>7 089</td>
<td>17 894</td>
</tr>
<tr>
<td>Households (TJ)</td>
<td>179 068</td>
<td>158 316</td>
</tr>
<tr>
<td>Other (TJ)</td>
<td>115 022</td>
<td>101 443</td>
</tr>
</tbody>
</table>

Renewable share of TFEC 56.5 59.5
### Electric Capacity and Generation

#### Capacity in 2018

<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable</td>
<td>1021</td>
<td>3</td>
</tr>
<tr>
<td>Renewable</td>
<td>34,396</td>
<td>97</td>
</tr>
<tr>
<td>Hydro/marine</td>
<td>32,530</td>
<td>92</td>
</tr>
<tr>
<td>Solar</td>
<td>68</td>
<td>0</td>
</tr>
<tr>
<td>Wind</td>
<td>1,710</td>
<td>5</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>87</td>
<td>0</td>
</tr>
<tr>
<td>Geothermal</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>35,417</td>
<td>100</td>
</tr>
</tbody>
</table>

#### Capacity change (%)

<table>
<thead>
<tr>
<th>Type</th>
<th>2013-18</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable</td>
<td>-32.0</td>
<td>-0.1</td>
</tr>
<tr>
<td>Renewable</td>
<td>+7.0</td>
<td>+3.4</td>
</tr>
<tr>
<td>Hydro/marine</td>
<td>+5.0</td>
<td>+19.0</td>
</tr>
<tr>
<td>Solar</td>
<td>+522.0</td>
<td>+52.3</td>
</tr>
<tr>
<td>Wind</td>
<td>+109.0</td>
<td>+417.0</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>-38.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Geothermal</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>+6.0</td>
<td>+3.3</td>
</tr>
</tbody>
</table>

#### Net capacity change in 2018 (MW)

<table>
<thead>
<tr>
<th>Type</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable</td>
<td>-1.0</td>
</tr>
<tr>
<td>Renewable</td>
<td>+600.0</td>
</tr>
<tr>
<td>Solar</td>
<td>+24.0</td>
</tr>
<tr>
<td>Wind</td>
<td>+503.0</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>0.0</td>
</tr>
<tr>
<td>Geothermal</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>+6.0</td>
</tr>
</tbody>
</table>

#### Generation in 2017

<table>
<thead>
<tr>
<th>Type</th>
<th>GWh</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable</td>
<td>4,001</td>
<td>3</td>
</tr>
<tr>
<td>Renewable</td>
<td>144,989</td>
<td>97</td>
</tr>
<tr>
<td>Hydro/marine</td>
<td>141,836</td>
<td>95</td>
</tr>
<tr>
<td>Solar</td>
<td>40</td>
<td>0.25</td>
</tr>
<tr>
<td>Wind</td>
<td>2,854</td>
<td>2</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>259</td>
<td>0.21</td>
</tr>
<tr>
<td>Geothermal</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>148,990</td>
<td>100</td>
</tr>
</tbody>
</table>

#### Per capita electricity generation (kWh)

- **Total**
- **Renewable**

#### Renewable generation (GWh)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Renewable</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>145,000</td>
<td>155,000</td>
</tr>
<tr>
<td>2013</td>
<td>140,000</td>
<td>150,000</td>
</tr>
<tr>
<td>2014</td>
<td>135,000</td>
<td>145,000</td>
</tr>
<tr>
<td>2015</td>
<td>130,000</td>
<td>140,000</td>
</tr>
<tr>
<td>2016</td>
<td>125,000</td>
<td>135,000</td>
</tr>
<tr>
<td>2017</td>
<td>120,000</td>
<td>130,000</td>
</tr>
<tr>
<td>2018</td>
<td>115,000</td>
<td>125,000</td>
</tr>
</tbody>
</table>
**Most immediate clean energy targets & NDCs**

<table>
<thead>
<tr>
<th>Renewable energy:</th>
<th>year</th>
<th>target</th>
<th>unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable electricity:</td>
<td>2020</td>
<td>68</td>
<td>%</td>
</tr>
<tr>
<td>Renewable capacity:</td>
<td>2020</td>
<td>114</td>
<td>%</td>
</tr>
<tr>
<td>Renewable transport:</td>
<td>2020</td>
<td>10</td>
<td>%</td>
</tr>
<tr>
<td>Liquid Biofuel blending mandate:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other transport targets:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewable heating/cooling:</td>
<td>2020</td>
<td>43</td>
<td>%</td>
</tr>
<tr>
<td>Renewable Hydropower</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off-grid renewable technologies:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Energy efficiency (Energy):**

**Energy efficiency (Electricity):**

**Latest policies, programmes and legislation**

1. Duty of negotiations on third party access to district heating networks 2013
2. Investment aid for Energy measures in households though Enova SF 2013
3. Renewable heat production 2013
4. ENERGIX Programme 2012
5. Investment aid and conditional loans to innovative energy and climate technology though Enova SF 2012

**References to sustainable energy in Nationally Determined Contribution (NDC)**

- Renewable energy
  - electricity
  - transport
  - heating/cooling
- Energy efficiency

**ENERGY AND EMISSIONS**

**Energy-related CO₂ emissions by sector**

**Elec. & heat generation CO₂ emissions in 2017**

- Coal + others
- Gas
- Oil

**Avoided emissions from renewable power**

**Reduction in power emissions due to RE in 2017**

- Other Countries
- Norway
- Average

Avoided emissions based on fossil fuel mix used for power

Reduction is RE Avoided divided by sum of avoided and emitted
Indicators of renewable resource potential

**Solar PV**: Solar resource potential has been divided into seven classes, each representing a range of annual PV output per unit of capacity (kWh/kWp/yr). The bar chart shows the proportion of a country’s land area in each of these classes and the global distribution of land area across the classes (for comparison).

**Onshore wind**: Potential wind power density (W/m²) is shown in the seven classes used by NREL, measured at a height of 100 m. The bar chart shows the distribution of the country’s land area in each of these classes compared to the global distribution of wind resources. Areas in the third class or above are considered to be a good wind resource.

**Biomass**: Net primary production (NPP) is the amount of carbon fixed by plants and accumulated as biomass each year. It is a basic measure of biomass productivity. The chart shows the average NPP in the country (tC/ha/yr), compared to the global average NPP of 3-4 tonnes of carbon per year.

Sources: IRENA statistics, plus data from the following sources: UN SDG Indicators Database (original sources: WHO; World Bank; IEA; IRENA; and UNSD); UNSD Energy Balances; UN COMTRADE; World Bank World Development Indicators; EDGAR; REN21 Global Status Report; IEA-IRENA Joint Policies and Measures Database; IRENA Global Atlas; and World Bank Global Solar Atlas and Global Wind Atlas.

Additional notes: Energy self-sufficiency has been defined as total primary energy production divided by total primary energy supply. The value of energy trade has been defined as including all commodities in Chapter 27 of the Harmonised System (HS). Capacity utilisation has been calculated as annual generation divided by capacity x 8,760. Avoided emissions from renewable power have been calculated as renewable generation divided by fossil fuel generation multiplied by reported emissions from the power sector. This assumes that, if renewable power did not exist, fossil fuels would be used in its place to generate the same amount of power and using the same mix of fossil fuels. In countries and years where no fossil fuel generation occurs, an average fossil fuel emission factor has been used to calculate the avoided emissions.

This note has been produced to provide policy makers with a brief overview of developments in renewable energy in a country. The IRENA statistics team would welcome comments and feedback on its structure and content, which can be sent to statistics@irena.org.

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