ENERGY PROFILE

Poland

COUNTRY INDICATORS AND SDGS

TOTAL ENERGY SUPPLY (TES)

<table>
<thead>
<tr>
<th>Total Energy Supply (TES)</th>
<th>2014</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable (TJ)</td>
<td>3 609 187</td>
<td>3 908 755</td>
</tr>
<tr>
<td>Renewable (TJ)</td>
<td>371 052</td>
<td>421 595</td>
</tr>
<tr>
<td>Total (TJ)</td>
<td>3 980 240</td>
<td>4 330 350</td>
</tr>
<tr>
<td>Renewable share (%)</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Growth in TES 2014-19 2018-19

<table>
<thead>
<tr>
<th></th>
<th>2014-19</th>
<th>2018-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable (%)</td>
<td>+8.3</td>
<td>-3.9</td>
</tr>
<tr>
<td>Renewable (%)</td>
<td>+13.6</td>
<td>+7.6</td>
</tr>
<tr>
<td>Total (%)</td>
<td>+8.8</td>
<td>-2.9</td>
</tr>
</tbody>
</table>

Primary energy trade

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports (TJ)</td>
<td>1 991 818</td>
<td>2 664 058</td>
</tr>
<tr>
<td>Exports (TJ)</td>
<td>787 532</td>
<td>594 478</td>
</tr>
<tr>
<td>Net trade (TJ)</td>
<td>-1 204 286</td>
<td>-2 069 580</td>
</tr>
</tbody>
</table>

Imports (% of supply) | 50 | 62 |
Exports (% of production) | 28 | 24 |
Energy self-sufficiency (%) | 71 | 58 |

Total energy supply in 2019

Renewable energy supply in 2019
## Renewable Energy Consumption (TFEC)

### Consumption by Sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>2014</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry (TJ)</td>
<td>82,581</td>
<td>116,127</td>
</tr>
<tr>
<td>Transport (TJ)</td>
<td>30,933</td>
<td>44,803</td>
</tr>
<tr>
<td>Households (TJ)</td>
<td>121,943</td>
<td>124,510</td>
</tr>
<tr>
<td>Other (TJ)</td>
<td>53,140</td>
<td>62,464</td>
</tr>
</tbody>
</table>

### Renewable Energy Consumption in 2019

- **Non-renewable**
  - 36,227 PJ
- **Renewable**
  - 16,872 PJ
  - **Hydro/marine**
    - 1,204 PJ
  - **Solar**
    - 7,665 PJ
  - **Wind**
    - 6,958 PJ
  - **Bioenergy**
    - 1,045 PJ
  - **Geothermal**
    - 0 PJ

### Capacity Change (%)

- **Non-renewable**: +20%, -2.3%
- **Renewable**: +114%, +37.4%
- **Hydro/marine**: +24%, +23.2%
- **Solar**: +3,994%, +93.8%
- **Wind**: +21%, +10.5%
- **Bioenergy**: +7%, 0.0%
- **Geothermal**: 0%, 0.0%

### Total Capacity Change (%)

- **Non-renewable**: +39%, +7.6%

### Geothermal Capacity Utilisation in 2020 (%)

- **Renewable energy consumption in 2019**
- **Renewable TFEC trend**
- **Electricity capacity**
- **Installed capacity trend**
- **Net capacity change (GW)**
- **Capacity utilisation in 2020 (%)**

### Installed Capacity Trend

- **Fossil fuels**: 32%
- **Nuclear**: 6%
- **Other Non-RE**: 7%
- **Hydro/marine**: 42%
- **Wind**: 10%
- **Solar**: 7%
- **Bioenergy**: 43%
- **Geothermal**: 3%

### Net Capacity Change in 2021 (MW)

- **Non-renewable**: -866 MW
- **Solar**: +3,710 MW
- **Bioenergy**: 0 MW
- **Hydro and marine**: +227 MW
- **Wind**: +660 MW
### Electricity Generation

<table>
<thead>
<tr>
<th>Generation in 2020</th>
<th>GWh</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable</td>
<td>129,816</td>
<td>82</td>
</tr>
<tr>
<td>Renewable</td>
<td>28,260</td>
<td>18</td>
</tr>
<tr>
<td>Hydro and marine</td>
<td>2,118</td>
<td>1</td>
</tr>
<tr>
<td>Solar</td>
<td>1,958</td>
<td>1</td>
</tr>
<tr>
<td>Wind</td>
<td>15,800</td>
<td>10</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>8,384</td>
<td>5</td>
</tr>
<tr>
<td>Geothermal</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>158,076</td>
<td>100</td>
</tr>
</tbody>
</table>

### Electricity Generation Trend

<table>
<thead>
<tr>
<th>Year</th>
<th>Fossil fuels</th>
<th>Nuclear</th>
<th>Other Non-RE</th>
<th>Hydro/marine</th>
<th>Wind</th>
<th>Solar</th>
<th>Bioenergy</th>
<th>Geothermal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>365</td>
<td>167</td>
<td>170</td>
<td>170</td>
<td>154</td>
<td>158</td>
<td>100</td>
<td>0</td>
<td>80%</td>
</tr>
<tr>
<td>2016</td>
<td>365</td>
<td>167</td>
<td>170</td>
<td>170</td>
<td>154</td>
<td>158</td>
<td>100</td>
<td>0</td>
<td>80%</td>
</tr>
<tr>
<td>2017</td>
<td>365</td>
<td>167</td>
<td>170</td>
<td>170</td>
<td>154</td>
<td>158</td>
<td>100</td>
<td>0</td>
<td>80%</td>
</tr>
<tr>
<td>2018</td>
<td>365</td>
<td>167</td>
<td>170</td>
<td>170</td>
<td>154</td>
<td>158</td>
<td>100</td>
<td>0</td>
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<td>154</td>
<td>158</td>
<td>100</td>
<td>0</td>
<td>80%</td>
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### LATEST POLICIES, PROGRAMMES AND LEGISLATION

1. Green Loan to support onshore wind farm projects
   - 2022
2. Biofuel Targets for 2021-2024
   - 2021
3. Energy Law - Amendment
   - 2021
4. Energy Policy of Poland until 2040 (PEP2040)
   - 2021
5. Green Public Transport Program
   - 2021

### Energy and Emissions

- **Energy-related CO₂ emissions by sector**
- **Avoided emissions from renewable elec. & heat**
- **CO₂ emission factor for elec. & heat generation**
- **Elec. & heat generation CO₂ emissions in GWh/GJ**
**RENEWABLE RESOURCE POTENTIAL**

**Biomass potential: net primary production**

- Annual generation per unit of installed PV capacity (MW/kWp)

**Distribution of solar potential**

- World
- Poland

**Distribution of wind potential**

- World
- Poland

**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 100m. 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.

**Sources:** IRENA statistics, plus data from the following sources: UN SDG Database (original sources: WHO, World Bank, IEA, IRENA, and UNSD); UN World Population Prospects; 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:** Capacity per capita and public investments SDGs only apply to developing areas. Energy self-sufficiency has been defined as total primary energy production divided by total primary energy supply. Energy trade includes all commodities in Chapter 27 of the Harmonised System (HS). Capacity utilisation is calculated as annual generation divided by year-end capacity x 8,760h/year. Avoided emissions from renewable power is 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.

These profiles have been produced to provide an overview of developments in renewable energy in different countries and areas. 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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