ENERGY PROFILE
Costa Rica

COUNTRY INDICATORS AND SDGS

TOTAL ENERGY SUPPLY (TES)

<table>
<thead>
<tr>
<th>Total Energy Supply (TES)</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable (TJ)</td>
<td>98 530</td>
<td>93 439</td>
</tr>
<tr>
<td>Renewable (TJ)</td>
<td>107 619</td>
<td>114 117</td>
</tr>
<tr>
<td>Total (TJ)</td>
<td>206 149</td>
<td>207 556</td>
</tr>
<tr>
<td>Renewable share (%)</td>
<td>52</td>
<td>55</td>
</tr>
</tbody>
</table>

Growth in TES

<table>
<thead>
<tr>
<th>2015-20</th>
<th>2019-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable (%)</td>
<td>-5.2</td>
</tr>
<tr>
<td>Renewable (%)</td>
<td>+6.0</td>
</tr>
<tr>
<td>Total (%)</td>
<td>+0.7</td>
</tr>
</tbody>
</table>

Primary energy trade

<table>
<thead>
<tr>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports (TJ)</td>
<td>107 879</td>
</tr>
<tr>
<td>Exports (TJ)</td>
<td>2 950</td>
</tr>
<tr>
<td>Net trade (TJ)</td>
<td>-10 4929</td>
</tr>
<tr>
<td>Imports (% of supply)</td>
<td>52</td>
</tr>
<tr>
<td>Exports (% of production)</td>
<td>3</td>
</tr>
<tr>
<td>Energy self-sufficiency (%)</td>
<td>53</td>
</tr>
</tbody>
</table>

Total energy supply in 2020

Renewable energy supply in 2020
# Renewable Energy Consumption (TFEC)

### Consumption by sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry (TJ)</td>
<td>26,426</td>
<td>21,446</td>
</tr>
<tr>
<td>Transport (TJ)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Households (TJ)</td>
<td>19,856</td>
<td>21,651</td>
</tr>
<tr>
<td>Other (TJ)</td>
<td>10,110</td>
<td>11,744</td>
</tr>
</tbody>
</table>

### Renewable Energy Consumption in 2020

<table>
<thead>
<tr>
<th>Source</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro/marine</td>
<td>73%</td>
</tr>
<tr>
<td>Solar</td>
<td>13%</td>
</tr>
<tr>
<td>Wind</td>
<td>13%</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>13%</td>
</tr>
<tr>
<td>Geothermal</td>
<td>13%</td>
</tr>
</tbody>
</table>

### Capacity utilisation in 2021 (%)

<table>
<thead>
<tr>
<th>Source</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fossil fuels</td>
<td>0%</td>
</tr>
<tr>
<td>Nuclear</td>
<td>0%</td>
</tr>
<tr>
<td>Other Non-RE</td>
<td>46%</td>
</tr>
<tr>
<td>Hydro/marine</td>
<td>45%</td>
</tr>
<tr>
<td>Solar</td>
<td>19%</td>
</tr>
<tr>
<td>Wind</td>
<td>12%</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>12%</td>
</tr>
<tr>
<td>Geothermal</td>
<td>70%</td>
</tr>
</tbody>
</table>

### Installed capacity trend

<table>
<thead>
<tr>
<th>Year</th>
<th>Fossil fuels</th>
<th>Hydro/marine</th>
<th>Wind</th>
<th>Solar</th>
<th>Bioenergy</th>
<th>Other Non-RE</th>
<th>Renewable share</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3.1</td>
<td>3.5</td>
<td>3.6</td>
<td>3.7</td>
<td>3.6</td>
<td>3.6</td>
<td>89%</td>
</tr>
<tr>
<td>2016</td>
<td>3.5</td>
<td>3.6</td>
<td>3.7</td>
<td>3.6</td>
<td>3.7</td>
<td>3.6</td>
<td>89%</td>
</tr>
<tr>
<td>2017</td>
<td>3.6</td>
<td>3.7</td>
<td>3.6</td>
<td>3.7</td>
<td>3.7</td>
<td>3.6</td>
<td>89%</td>
</tr>
<tr>
<td>2018</td>
<td>3.7</td>
<td>3.8</td>
<td>3.7</td>
<td>3.7</td>
<td>3.7</td>
<td>3.6</td>
<td>89%</td>
</tr>
<tr>
<td>2019</td>
<td>3.8</td>
<td>3.9</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
<td>3.6</td>
<td>89%</td>
</tr>
<tr>
<td>2020</td>
<td>3.9</td>
<td>4.0</td>
<td>3.9</td>
<td>3.9</td>
<td>3.9</td>
<td>3.6</td>
<td>89%</td>
</tr>
<tr>
<td>2021</td>
<td>4.0</td>
<td>4.1</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>3.6</td>
<td>89%</td>
</tr>
<tr>
<td>2022</td>
<td>4.1</td>
<td>4.2</td>
<td>4.1</td>
<td>4.1</td>
<td>4.1</td>
<td>3.6</td>
<td>89%</td>
</tr>
</tbody>
</table>

### Renewable energy capacity in 2022

<table>
<thead>
<tr>
<th>Source</th>
<th>Capacity utilisation (GW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro/marine</td>
<td>0.1</td>
</tr>
<tr>
<td>Solar</td>
<td>0.1</td>
</tr>
<tr>
<td>Wind</td>
<td>0.0</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>0.0</td>
</tr>
<tr>
<td>Geothermal</td>
<td>0.0</td>
</tr>
</tbody>
</table>

### Net capacity change in 2022 (MW)

<table>
<thead>
<tr>
<th>Source</th>
<th>Change (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable</td>
<td>-45</td>
</tr>
<tr>
<td>Solar</td>
<td>0</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>+0</td>
</tr>
<tr>
<td>Hydro and marine</td>
<td>-48</td>
</tr>
</tbody>
</table>
### Electricity Generation

#### Generation in 2021

<table>
<thead>
<tr>
<th>Type</th>
<th>GWh</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Renewable</td>
<td>12 656</td>
<td>100%</td>
</tr>
<tr>
<td>Hydro and marine</td>
<td>9 287</td>
<td>73%</td>
</tr>
<tr>
<td>Solar</td>
<td>107</td>
<td>1%</td>
</tr>
<tr>
<td>Wind</td>
<td>1573</td>
<td>1%</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>87</td>
<td>1%</td>
</tr>
<tr>
<td>Geothermal</td>
<td>1602</td>
<td>13%</td>
</tr>
<tr>
<td>Total</td>
<td>12 659</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Per capita electricity generation (kWh)

- **Total**: [Graph showing electricity generation per capita for years 2016 to 2021.]
- **Renewable**:

#### Electricity generation trend

- [Graph showing trends for different energy sources: Fossil fuels, Nuclear, Other Non-RE, Hydro/marine, Wind, Solar, Bioenergy, Geothermal, Renewable share.

### Energy and Emissions

#### Energy-related CO₂ emissions by sector

- [Graph showing CO₂ emissions by sector for years 2016 to 2021: Elec. & heat, Other Industrial, Transport, Other, Buildings.

#### Elec. & heat generation CO₂ emissions in

- [Pie chart showing CO₂ emissions from different sources: Coal, Gas, Oil.

#### CO₂ emission factor for elec. & heat generation

- [Graph showing CO₂ emission factors for different regions: CRI, Central America and the Caribbean, World.

### Latest Policies, Programmes and Legislation

1. Exemption excise tax 2018
2. Law 9518 - Incentives and promotion for electric transport 2018
4. Costa Rica Regulation of liquid biofuels and their mixtures 2017
Distribution of solar potential

<table>
<thead>
<tr>
<th>Annual generation per unit of installed PV capacity (MWh/kWp)</th>
<th>Proportion of land area</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;12</td>
<td>&lt;20%</td>
</tr>
<tr>
<td>12 - 14</td>
<td>20%</td>
</tr>
<tr>
<td>14 - 16</td>
<td>40%</td>
</tr>
<tr>
<td>16 - 18</td>
<td>60%</td>
</tr>
<tr>
<td>18 - 19</td>
<td>80%</td>
</tr>
<tr>
<td>19 - 2.0</td>
<td>100%</td>
</tr>
<tr>
<td>&gt;2.0</td>
<td></td>
</tr>
</tbody>
</table>

Distribution of wind potential

<table>
<thead>
<tr>
<th>Wind power density at 100m height (W/m²)</th>
<th>Proportion of land area</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;260</td>
<td>&lt;20%</td>
</tr>
<tr>
<td>260 - 420</td>
<td>20%</td>
</tr>
<tr>
<td>420 - 560</td>
<td>40%</td>
</tr>
<tr>
<td>560 - 820</td>
<td>60%</td>
</tr>
<tr>
<td>820 - 1060</td>
<td>80%</td>
</tr>
<tr>
<td>&gt;1060</td>
<td>100%</td>
</tr>
</tbody>
</table>

Biomass potential: net primary production

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.