

# Ethiopia

## Sustainable Development Goal 7.2: Energy Indicators (2016)

Renewable energy (% of TFEC)	91.9	Access to electricity (% of population)	42.9
Energy efficiency (MJ per \$1 of GDP)	13.1	Access to clean cooking (% of population)	<5

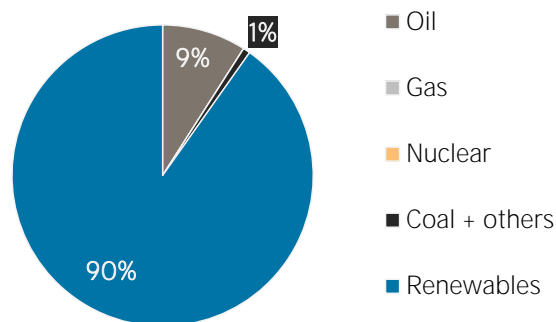
### TOTAL PRIMARY ENERGY SUPPLY (TPES)

TPES	2011	2016
Non-renewable (TJ)	84 119	147 332
Renewable (TJ)	1 239 227	1 355 660
<b>Total (TJ)</b>	<b>1 323 346</b>	<b>1 502 992</b>
Renewable share (%)	94	90

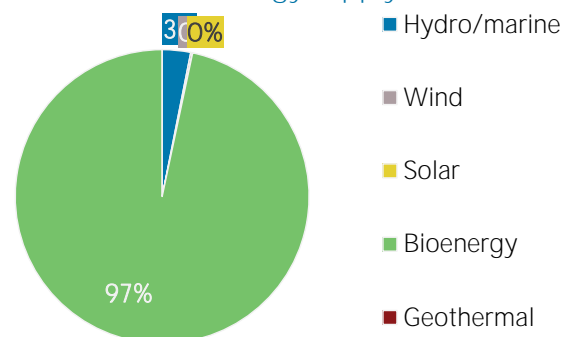
Growth in TPES	2011-16	2015-16
Non-renewable (%)	+75.1	+7.4
Renewable (%)	+9.4	+2.0
<b>Total (%)</b>	<b>+13.6</b>	<b>+2.5</b>

Primary energy trade	2011	2016
Imports (TJ)	101 822	166 525
Exports (TJ)	1 195	670
<b>Net trade (TJ)</b>	<b>- 100 627</b>	<b>- 165 855</b>
Imports (% of supply)	8	11
Exports (% of production)	0	0
Energy self-sufficiency (%)	94	90
<b>Net trade (USD million)</b>	<b>- 1 632</b>	<b>- 2 110</b>
<b>Net trade (% of GDP)</b>	<b>-5.1</b>	<b>-2.8</b>

Total primary energy supply in 2016



Renewable energy supply in 2016



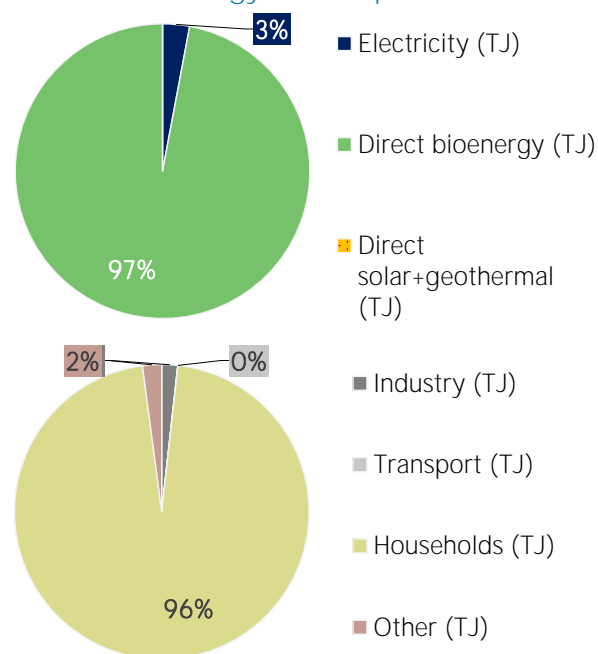
### RENEWABLE ENERGY CONSUMPTION

Consumption by source	2011	2016
Electricity (TJ)	20 723	36 590
Direct bioenergy (TJ)	1 115 967	1 201 853
Direct solar+geothermal (TJ)	0	0
<b>Total (TJ)</b>	<b>1 136 690</b>	<b>1 238 443</b>
Electricity share (%)	2	3

Consumption growth	2011-16	2015-16
Renewable electricity (%)	+76.6	+23.1
Other renewables (%)	+7.7	+1.3
<b>Total (%)</b>	<b>+9.0</b>	<b>+1.8</b>

Consumption by sector	2011	2016
Industry (TJ)	15 648	21 551
Transport (TJ)	188	268
Households (TJ)	1 103 633	1 190 769
Other (TJ)	17 220	25 855
Renewable share of TFEC	94.0	91.9

Renewable energy consumption in 2016

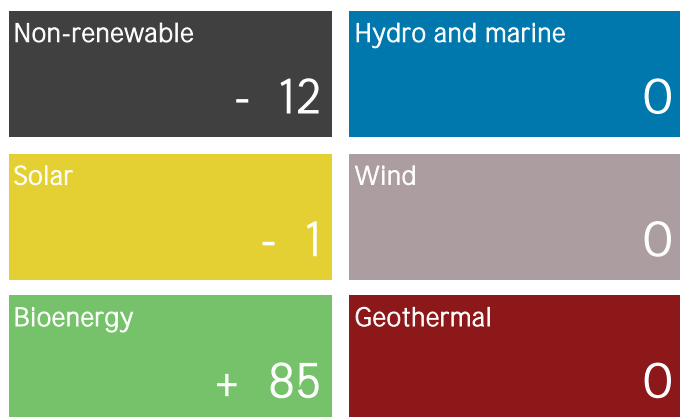


## ELECTRICITY CAPACITY AND GENERATION

Capacity in 2018	MW	%
<b>Non-renewable</b>	<b>87</b>	<b>2</b>
<b>Renewable</b>	<b>4 450</b>	<b>98</b>
Hydro/marine	3 817	84
Solar	11	0
Wind	324	7
Bioenergy	290	6
Geothermal	7	0
<b>Total</b>	<b>4 537</b>	<b>100</b>

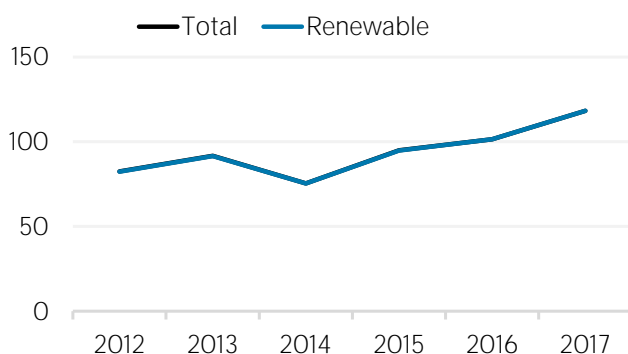
Capacity change (%)	2013-18	2017-18
<b>Non-renewable</b>	<b>- 54</b>	<b>- 12.3</b>
<b>Renewable</b>	<b>+ 100</b>	<b>+ 1.9</b>
Hydro/marine	+ 94	0.0
Solar	+ 234	- 9.7
Wind	+ 89	0.0
Bioenergy	+ 308	+ 41.5
Geothermal	0	0.0
<b>Total</b>	<b>+ 88</b>	<b>+ 1.6</b>

### Net capacity change in 2018 (MW)

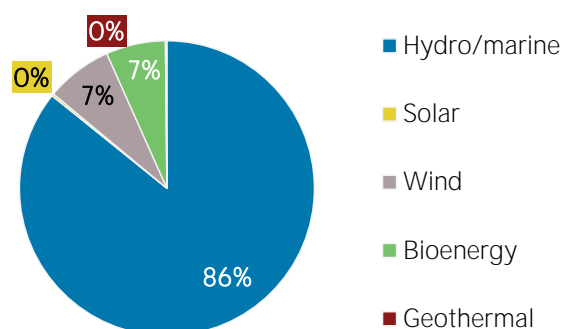


Generation in 2017	GWh	%
<b>Non-renewable</b>	<b>1</b>	<b>0</b>
<b>Renewable</b>	<b>12 585</b>	<b>100</b>
Hydro and marine	11 753	93
Solar	22	0
Wind	782	6
Bioenergy	28	0
Geothermal	0	0
<b>Total</b>	<b>12 586</b>	<b>100</b>

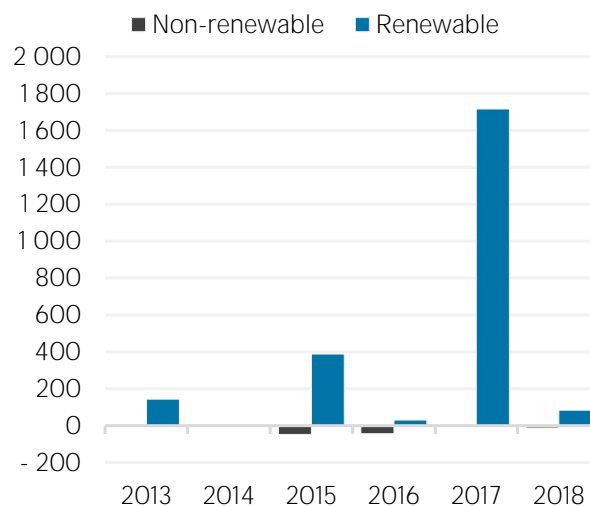
### Per capita electricity generation (kWh)



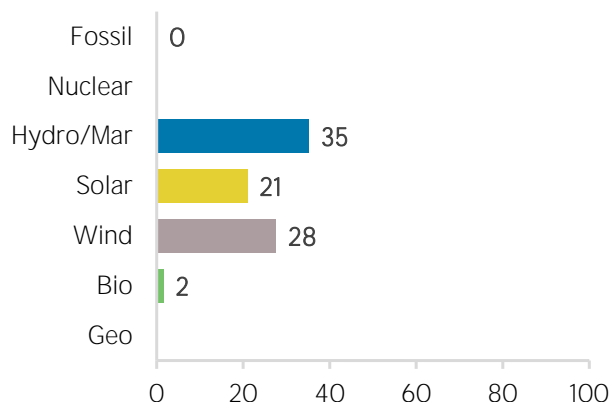
### Renewable capacity in 2018



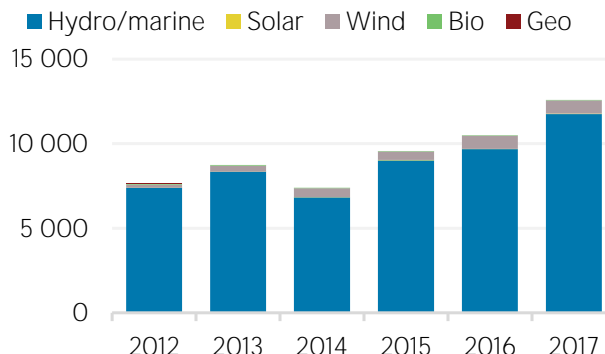
### Net capacity change (MW)



### Capacity utilisation in 2017 (%)



### Renewable generation (GWh)



Most immediate clean energy targets & NDCs

	year	target	unit
<b>Renewable energy:</b>	2050	100	%
Renewable electricity:			
Renewable capacity:			
Renewable transport:			
Liquid Biofuel blending mandate:			
Other transport targets:			
Renewable heating/cooling:			
Renewable Hydropower	2030	4	USD billion
Off-grid renewable technologies:			

Energy efficiency (Energy):

Energy efficiency (Electricity):

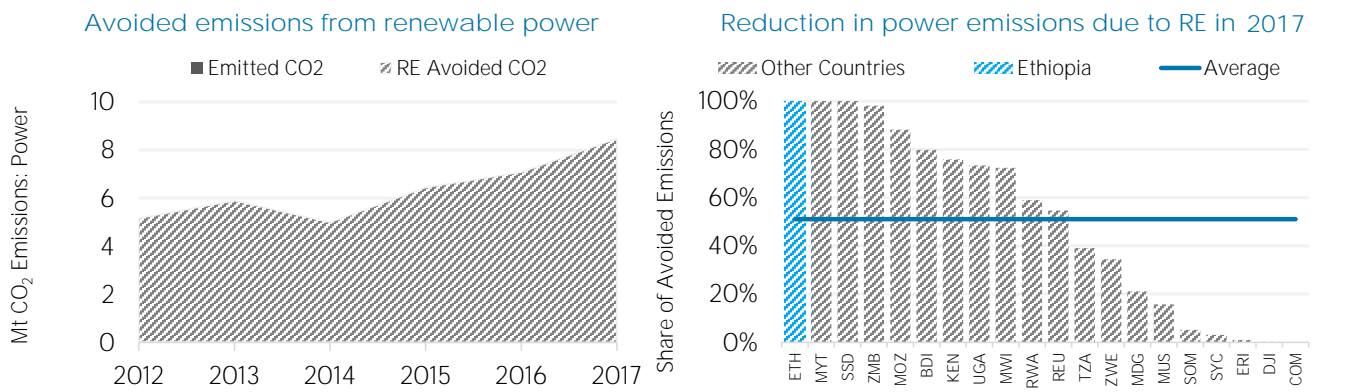
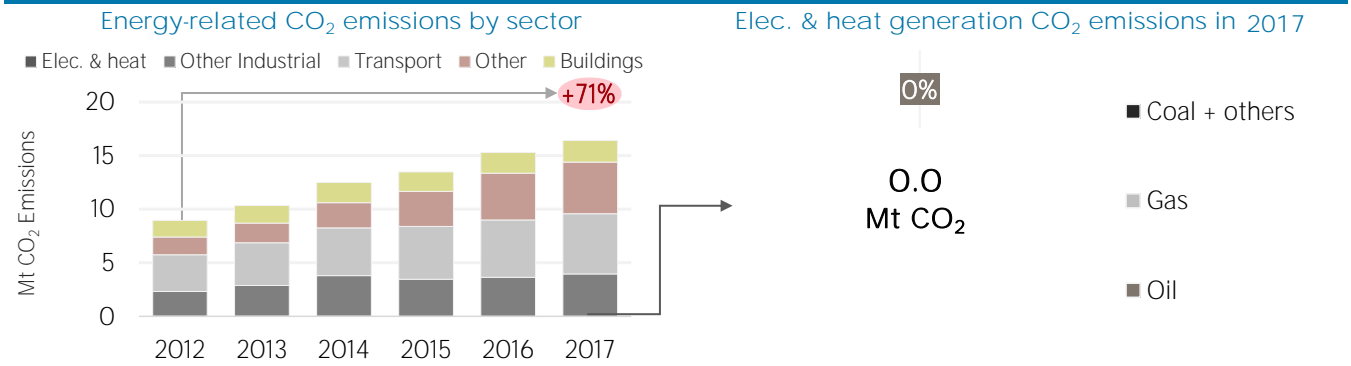
Latest policies, programmes and legislation

1 Ethiopia Solar Auctions	2017
2 Growth and Transformation Plan II (GTP II) 2016-2020	2016
3 National Energy Policy 2013	2013
4 Climate Resilience and Green Economy Strategy (CRGE)	2012
5 Scaling-Up Renewable Energy Program for Ethiopia (SREP)	2012

References to sustainable energy in Nationally Determined Contribution (NDC)

- Renewable energy
    - electricity
    - transport
    - heating/cooling
  - Energy efficiency
- Conditional      Unconditional      unit

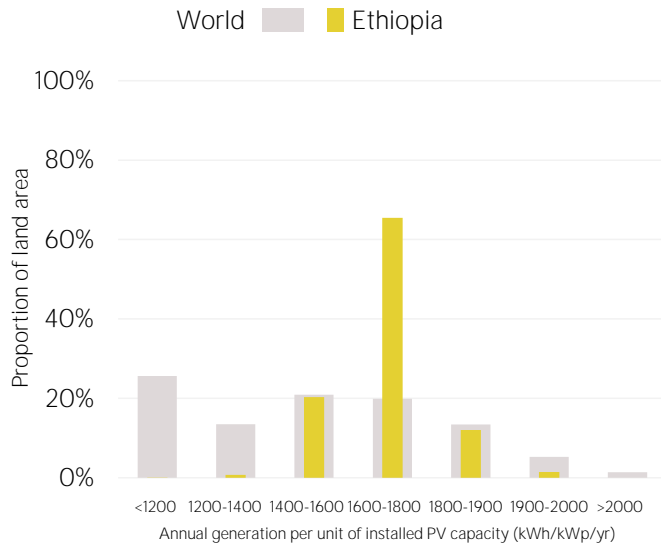
ENERGY AND EMISSIONS



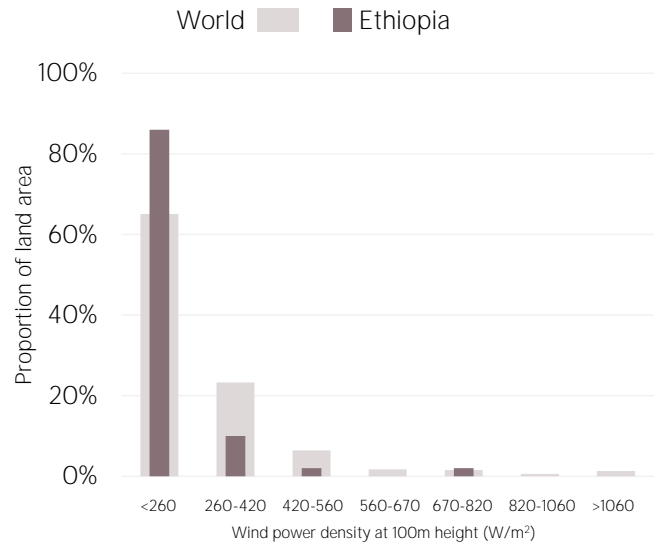
Avoided emissions based on fossil fuel mix used for power

Reduction is RE Avoided divided by sum of avoided and emitted

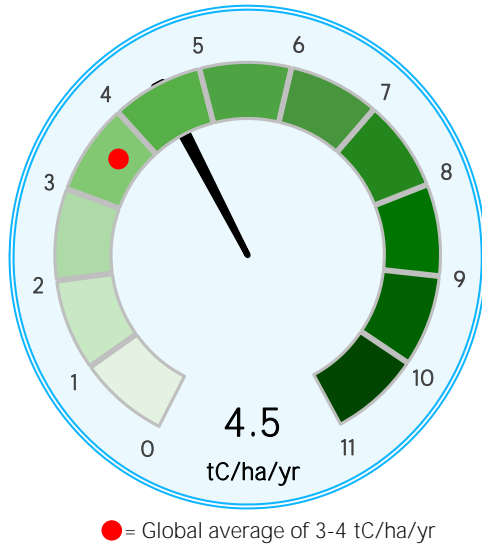
Distribution of solar potential



Distribution of wind potential



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/m<sup>2</sup>) 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 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](mailto:statistics@irena.org).

Last updated on: 26th May, 2020



IRENA Headquarters  
Masdar City  
P.O. Box 236, Abu Dhabi  
United Arab Emirates  
[www.irena.org](http://www.irena.org)