

Renewable capacity highlights

30 March 2017

HEADLINE FIGURES

2,006 GW

Global renewable generation capacity at the end of 2016

8.7%

Growth in renewable capacity during 2016

161 GW

Increase in global renewable generation capacity in 2016

58%

Share of new renewable capacity installed in Asia in 2016

12.1%

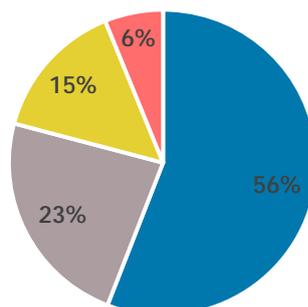
Renewable capacity growth in Africa in 2016

300 million

Number of people served by off-grid renewable electricity

IRENA's renewable energy statistics can be downloaded from resourceirena.irena.org

Renewable generation capacity by energy source



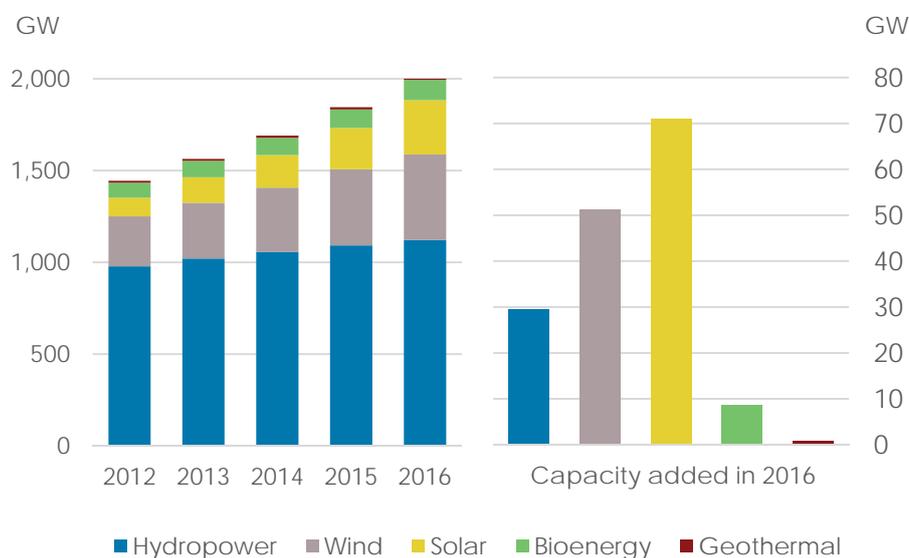
■ Hydro ■ Wind ■ Solar ■ Others

At the end of 2016, global renewable generation capacity amounted to 2,006 GW.* Hydro accounted for the largest share of the global total, with an installed capacity of 1,122 GW. Three-quarters of this was in large-scale plants of over 10 MW.

Wind and solar energy accounted for most of the remainder, with capacities of 467 GW and 296 GW respectively.

Other renewables included 110 GW of bioenergy, 13 GW of geothermal energy and about 500 MW of marine energy (tide, wave and ocean).

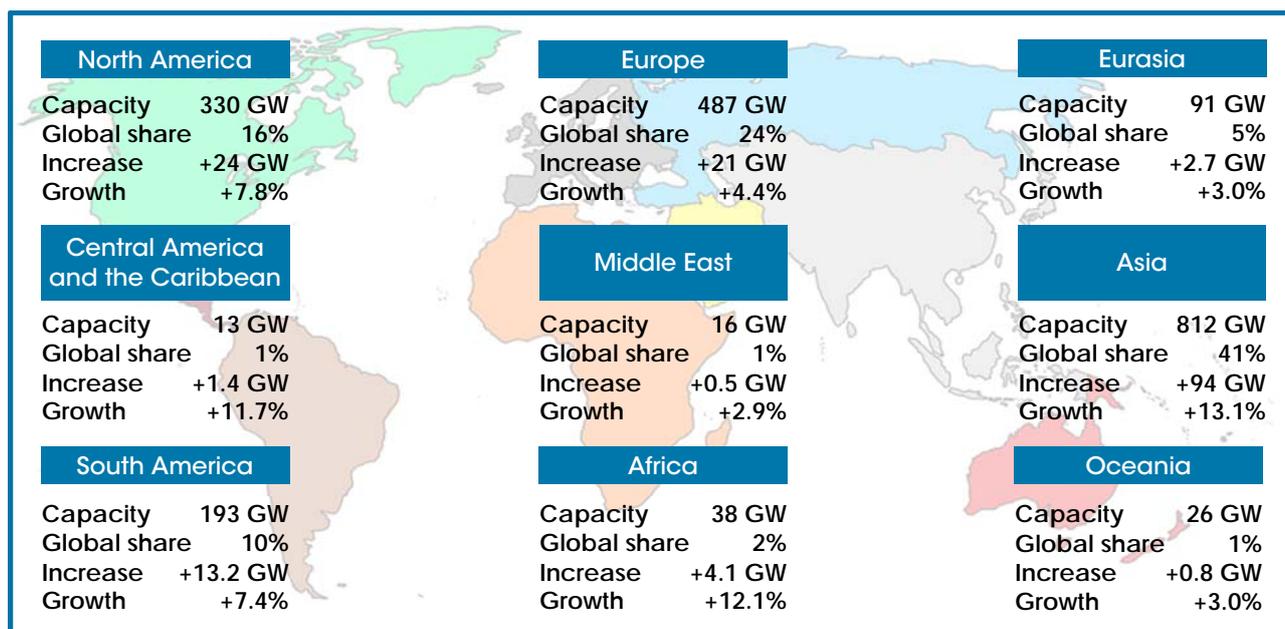
Capacity growth



Similar to last year, renewable generation capacity increased by 161 GW or +8.7% during 2016, continuing the trend since 2009 of about 8-9% annual capacity growth. Solar energy took first place, with a capacity increase of 71 GW (+32%), followed by wind energy with an increase of 51 GW (+12%). Hydropower and bioenergy capacities increased by 30 GW (+3%) and 9 GW (+9%) respectively. Geothermal energy increased by just under 1 GW. Renewable capacity expansion continues to be driven mostly by new installations of solar and wind energy, although 2016 was the best ever year for growth in bioenergy generating capacity.

* Note: these figures exclude pure pumped hydro capacity (which was included in previous reports). Pure pumped hydro capacity at end-2016 was an additional 122 GW.

Renewable generation capacity at the regional level



For the complete dataset see: IRENA (2017), *Renewable capacity statistics 2017*, available at: www.irena.org/publications.

Asia accounted for 58% of new capacity again in 2016, resulting in a total of 812 GW (41% of global capacity). Asia was also the fastest growing region, with a +13.1% increase in renewable capacity. North America overtook Europe in capacity expansion, with an increase of 24 GW (+7.8%) compared to an increase of 21 GW (+4.4%) in Europe. Renewable capacity growth in Europe remains subdued, with more than half of European countries reporting little or no expansion in 2016. The other notable development was the installation of 4.1 GW of new renewable capacity in Africa (twice as much as last year), giving it second place in capacity growth in 2016.

Highlights by technology



Hydropower: In 2016, about 50% of new hydro capacity was installed in Brazil and China (+14.6 GW in total). Other countries with major hydro expansion (over 1 GW) included: Canada; Ecuador; Ethiopia and India.



Wind energy: Almost three-quarters of new wind energy capacity was installed in just four countries: China (+19 GW); USA (+9 GW); Germany (+5 GW); and India (+4 GW). Brazil also continued to show strong growth, with an increase of +2 GW in 2016.



Bioenergy: The majority of bioenergy capacity expansion occurred in Asia last year (+5.9 GW) and Asia is fast approaching Europe in terms of its share of global bioenergy capacity (32% of the global total, compared to 34% in Europe). Europe (+1.3 GW) and South America (+0.9 GW) were the other two regions where bioenergy capacity expanded significantly.



Solar energy: Asia also took first place in global solar capacity last year, reaching a total of 139 GW (+50 GW). Almost half of all new solar capacity was installed in China in 2016 (+34 GW). Other countries with significant expansion included: USA (+11 GW); Japan (+8 GW) and India

(+4 GW). European capacity increased to 104 GW (+5 GW), with most expansion in Germany and UK.



Geothermal energy: Geothermal power capacity increased by +780 MW in 2016, with expansions in Kenya (+485 MW), Turkey (+150 MW), Indonesia (+95 MW) and Italy (+55 MW).



Off-grid electricity: Capacity statistics from IRENA now also present information about renewable off-grid electricity supply. Although many of these figures are estimates, they give a useful indication of trends and IRENA will work with countries to improve the data in future years.

The data shows that off-grid renewable electricity capacity reached 2,800 MW at the end of 2016. By technology, hydropower accounted for about 10% of off-grid electricity capacity, solar energy (including lights, lighting kits and home solar systems) accounted for 40% of capacity and bioenergy accounted for most of the remainder (small-scale gasifiers, biogas plants and isolated industrial facilities).

From these figures, IRENA estimates that the number of households served by off-grid renewable electricity may be around 60 million households or 300 million people.