

Renewables in Latin America and the Caribbean

25 May 2016

HEADLINE FIGURES

212 GW

Renewable generation capacity at the end of 2015

6.6%

Growth in renewable capacity during 2015, the highest rate ever

13.1 GW

Increase in renewable generation capacity in the region in 2015

817 TWh

Renewable electricity generation in 2014

13%

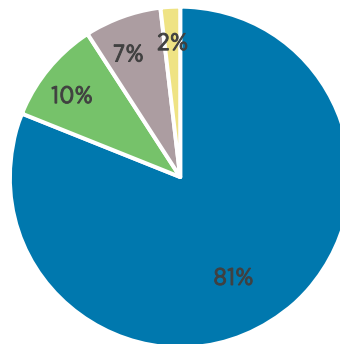
Growth in renewable generation in 2014, excluding large hydro

10%

Growth in liquid biofuel consumption in 2014

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

Renewable generation capacity by energy source



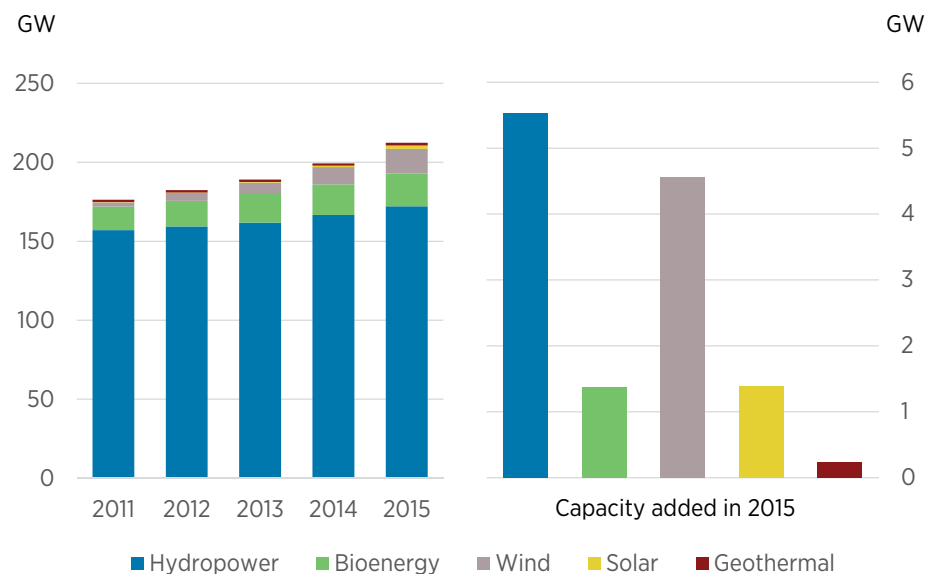
■ Hydro ■ Bioenergy ■ Wind ■ Others

At the end of 2015, renewable generation capacity in Latin America and the Caribbean amounted to 212.4 GW. Hydro accounted for the largest share of the regional total, with an installed capacity of 172 GW. The vast majority of this (95%) was in large-scale plants of over 10 MW.

Bioenergy and wind accounted for most of the remainder, with an installed capacity of 20.8 GW and 15.5 GW respectively.

Other renewables included 2.2 GW of solar photovoltaic energy, 1.7 GW of geothermal energy and about 50 kW of experimental marine energy.

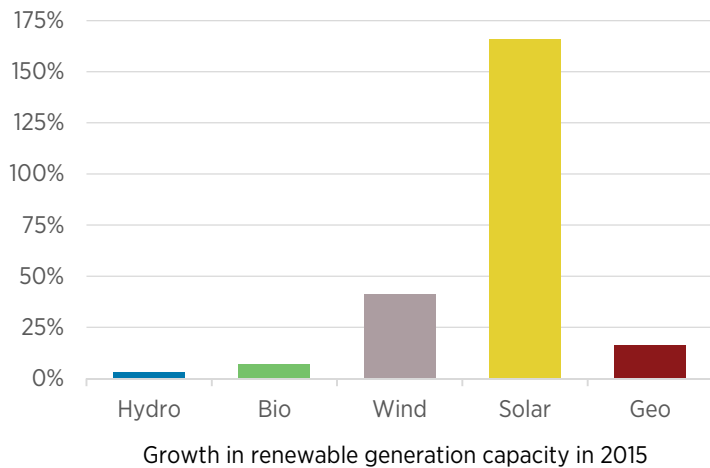
Capacity growth



Renewable generation capacity increased by 13.1 GW during 2015, the largest annual increase since the beginning of the time series (year 2000). Hydroelectric capacity increased by 5.5 GW followed by wind energy, with an increase of 4.6 GW. Both solar and bioenergy capacity increased by 1.4 GW, while geothermal energy experienced a slight increase of 0.2 GW.

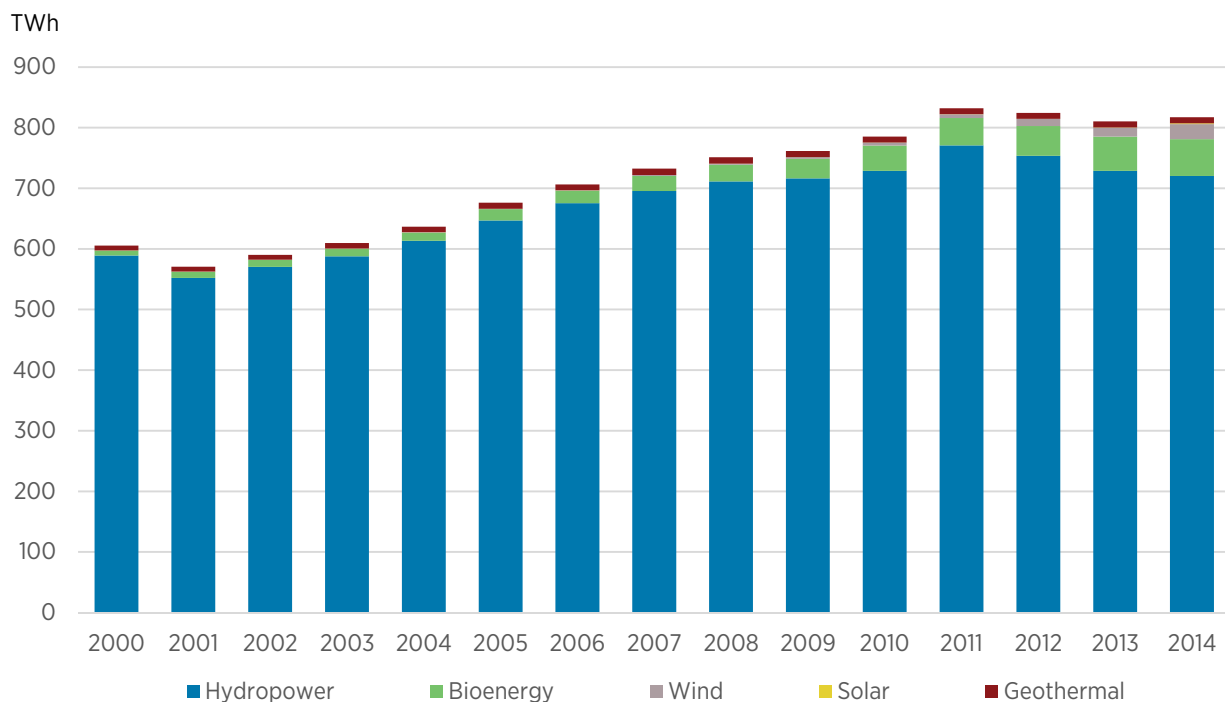
In relative terms, renewable generation capacity increased by 6.6% in 2015. Solar photovoltaic capacity increased the most (+166%), followed by wind energy (+42%) and geothermal energy (+17%). Bioenergy and hydroelectricity capacity increased by 7% and 3% respectively.

Overall, renewable generation capacity has increased by about one-quarter over the last five years (+40 MW), with most of this growth coming from new hydropower and wind energy installations. This increase is about the same as over the previous decade (2000 - 2010), indicating that capacity is now expanding at faster rate.



Renewable electricity generation

Renewable electricity generation in the region amounted to 817 TWh in 2014, with the majority of this coming from hydroelectricity (720 TWh). Bioenergy is the second largest source of renewable electricity (61 TWh), with most of this coming from sugar mills and the forest processing industries. Wind energy accounted for 25 TWh of electricity generation, followed by geothermal and solar energy (10 TWh and 1.5 TWh respectively).



Over the long-term, renewable electricity generation has increased by about one-third since 2000. Hydroelectricity generation has declined in recent years, but this has been offset by growth in electricity generation from other renewables, resulting in a similar level of total renewable generation in the last four years. Excluding large hydro, electricity generation from these other sources increased by 13% in 2014.

The diversity of renewables used to generate electricity has also increased between 2000 and 2014. In 2000, hydroelectricity accounted for 97% of total generation, but by 2014 its share had fallen to 88%. Over the same period, the share of bioenergy increased from 1.4% to 7.4% and wind energy, which was almost absent in 2000, has increased to account for 3% of renewable electricity generation in 2014. Solar and geothermal energy only accounted for 1.4% of generation in 2014, but production of solar energy has doubled every year since 2010.

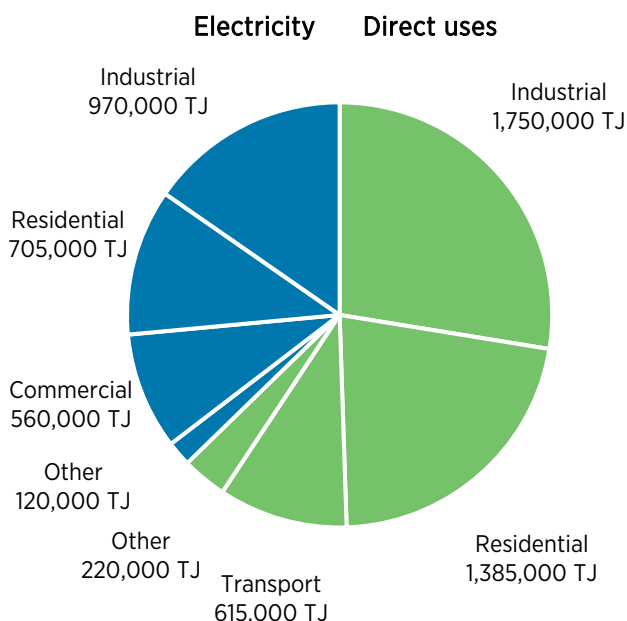
Renewable energy balance

The renewable energy balance for 2014 shows that 8.3 million TJ of renewable energy was supplied in the region in 2014, with 2.7 million TJ (30%) coming from hydro, wind and solar photovoltaic energy, 5.4 million TJ (65%) coming from biofuels and the remaining 5% coming from geothermal and solar thermal energy.

About one-quarter of this supply was used in transformation, leaving 6.3 million TJ that was consumed either directly or as renewable electricity. The pie-chart to the right shows this final consumption by end-use sector and type of use.

About two-thirds of renewable energy was used directly, with 27% used in industry, 22% used by households and 10% used in transport. Industrial use of renewable electricity accounted for 15% of final consumption, with residential and commercial use accounting for 11% and 9% respectively.

Combining direct uses and renewable electricity, the industrial sector consumed 42% of all renewable energy in the region and households consumed 33%. The transport and commercial sectors each accounted for about 10% of final renewable energy consumption, while 5% was used in agriculture, forestry and fishing.



Highlights by technology



Hydropower: In 2015, nearly half of new hydro capacity was installed in Brazil. Over 500 MW of new capacity was also installed in Chile, Colombia and Peru. Large-scale hydro plants (>10MW) accounted for 94% of total hydroelectricity generation in 2014.



Wind energy: Four countries (Brazil, Mexico, Panama and Uruguay) accounted for 88% of all new wind capacity installed in 2015, with a combined total of 4 GW of new capacity. Electricity generation from wind energy increased by 70% in 2014 compared to 2013, with Brazil accounting for about two-thirds of this increase in generation.



Bioenergy: Three quarters of bioenergy capacity is currently installed in Brazil and Brazil also accounted for 80% of all new bioenergy capacity installed in 2015. About two-thirds of capacity is in sugar mills and one-third in the forest processing sector (mainly pulp mills), with only about 2% of capacity based on electricity generation from biogas (almost all located in Brazil and Mexico).

Electricity generation shows the same pattern, with bagasse accounting for 68% of bioenergy generation in 2014 (41 TWh) and other solid biofuels accounting for 31% (17 TWh). The remaining 1% came from biogas and the region's only two waste incineration plants in Martinique and Uruguay.

A comparison of the energy balances for 2014 and 2013 shows that the direct uses of bioenergy are also changing in the region. Industrial use of solid biofuels hardly changed in the two years, but residential use of solid biofuels declined by just over 5%. In contrast, liquid biofuel consumption increased by almost 10%.



Solar energy: Chile and Honduras accounted for 78% of the new solar capacity installed in 2015. Uruguay was another country where solar capacity increased significantly, from 4 MW in 2014 to 68 MW in 2015. Two countries (Chile and Mexico) accounted for 61% of all solar photovoltaic energy generated in the region in 2014.

Solar thermal energy is not used for electricity generation at present, but solar water heaters do make a small contribution to the regional energy balance (11,000 TJ in 2014). This direct use of solar thermal energy may be under-stated, due to a lack of data.



Geothermal energy: Around two-thirds of installed geothermal capacity in the region is in Mexico. The rest is all located in Central America and a few Caribbean islands. Geothermal generation remains relatively stable, having increased by only 1.9% since 2010.

