RENEWABLES 2018
GLOBAL STATUS REPORT

Arthouros Zervos
Chair, REN21

2018
REN21 is a global multi stakeholder network dedicated to the rapid uptake of renewable energy worldwide.

**Industry Associations:**
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**Science & Academia:**
Fundacion Bariloche, IIASA, ISES, NREL, SANEDI, TERI

**International Organisations:**
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**National Governments:**
Afghanistan, Brazil, Denmark, Germany, India, Mexico, Norway, South Africa, Spain, UAE, USA

**NGOs:**
CAN, CEEW, FER, GACC, GFSE, Greenpeace International, ICLEI, IEC, ISEP, MFC, SLoCaT, REI, WCRE, WFC, WRI, WWF
Collaborative annual reporting since 2005 building on international expert community. The report features:

01. Global Overview  
02. Policy Landscape  
03. Market & Industry Trends  
04. Distributed Renewables for Energy Access  
05. Investment Flows  
06. Energy Systems Integration and Enabling Technologies  
07. Energy Efficiency  
08. Feature: Corporate Sourcing of Renewable Energy
Another Extraordinary Year for Renewable Energy

→ Total global capacity: up almost 9% compared to 2016, 2,195 GW at year’s end (1,081 GW not incl. hydro)

→ Share in newly installed renewable power capacity:
  • Solar PV: 55%
  • Wind: 29%
  • Hydropower: 11%
  • Bio-power: 4.6%

RENEWABLE ENERGY INDICATORS 2017

<table>
<thead>
<tr>
<th>INVESTMENT</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>New investment (annual) in renewable power and fuels</td>
<td>billion USD</td>
<td>274</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>POWER</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable power capacity (including hydro)</td>
<td>GW</td>
<td>2,017</td>
</tr>
<tr>
<td>Renewable power capacity (not including hydro)</td>
<td>GW</td>
<td>922</td>
</tr>
<tr>
<td>Hydropower capacity</td>
<td>GW</td>
<td>1,095</td>
</tr>
<tr>
<td>Bio-power capacity</td>
<td>GW</td>
<td>114</td>
</tr>
<tr>
<td>Bio-power generation (annual)</td>
<td>TWh</td>
<td>501</td>
</tr>
<tr>
<td>Geothermal power capacity</td>
<td>GW</td>
<td>12.1</td>
</tr>
<tr>
<td>Solar PV capacity</td>
<td>GW</td>
<td>303</td>
</tr>
<tr>
<td>Concentrating solar thermal power (CSP) capacity</td>
<td>GW</td>
<td>4.8</td>
</tr>
<tr>
<td>Wind power capacity</td>
<td>GW</td>
<td>487</td>
</tr>
<tr>
<td>Ocean energy capacity</td>
<td>GW</td>
<td>0.5</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>HEAT</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar hot water capacity</td>
<td>GW</td>
<td>456</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>TRANSPORT</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol production (annual)</td>
<td>billion litres</td>
<td>103</td>
</tr>
<tr>
<td>FAME biodiesel production (annual)</td>
<td>billion litres</td>
<td>31</td>
</tr>
<tr>
<td>HVO production (annual)</td>
<td>billion litres</td>
<td>5.9</td>
</tr>
</tbody>
</table>
In 2017, renewables accounted for **70%** of net additions to global power generation capacity.

RE supplied an estimated **26.5%** of global electricity.

Progress in the power sector shows that the transition to renewable energy is possible!
Global Renewable Power Capacity, 2007-2017

World Total: 2,195 Gigawatts

- Ocean, CSP and geothermal power
- Bio-power
- Solar PV
- Wind power
- Hydropower

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China: nearly 30% of the world's renewable power capacity (approx. 647 GW)
High Shares of Variable Renewable Power on the Grid

Share of Electricity Generation from Variable Renewable Energy, Top 10 Countries, 2017

Share of total generation (%)

- Denmark
- Uruguay
- Germany
- Ireland
- Portugal
- Spain
- United Kingdom
- Greece
- Honduras
- Nicaragua

Orange: Solar PV  
Blue: Wind power
# Asia Highlights

<table>
<thead>
<tr>
<th>Capacity (GW)</th>
<th>Global</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Added in 2017</td>
<td>Total at end-2017</td>
</tr>
<tr>
<td><strong>Renewable Energy (incl. hydropower)</strong></td>
<td>178</td>
<td>2,195</td>
</tr>
<tr>
<td>Wind Power</td>
<td>52</td>
<td>539</td>
</tr>
<tr>
<td>Bio-power</td>
<td>8</td>
<td>122</td>
</tr>
<tr>
<td>Geothermal</td>
<td>0.7</td>
<td>12.8</td>
</tr>
<tr>
<td>Hydropower</td>
<td>19</td>
<td>1,114</td>
</tr>
<tr>
<td>Ocean Energy</td>
<td>~0</td>
<td>0.5</td>
</tr>
<tr>
<td>Solar PV</td>
<td>99</td>
<td>402</td>
</tr>
<tr>
<td>Solar CSP</td>
<td>0.1</td>
<td>4.9</td>
</tr>
<tr>
<td><strong>Investment (billion USD)</strong></td>
<td>279.8</td>
<td></td>
</tr>
</tbody>
</table>
Global investment in renewable power and fuels in 2017: USD 279.8 billion (+2.2%) (USD 319.8 billion incl. large hydropower)

Investment in new renewable power capacity roughly three times that in new fossil fuel capacity
Investment in Renewable Energy

Global New Investment in Renewable Power and Fuels, by Country or Region, 2007-2017

- United States
- Americas (excl. United States & Brazil)
- Brazil
- Africa & Middle East
- India
- Asia & Oceania (excl. China & India)
- China
- Europe
Nearly all of the investment in 2017 was in solar PV (57%) and wind power (38%).

Solar PV: only technology to witness an increase in new investment (+18% compared to 2016).

Investment in all other technologies was down in 2017 relative to 2016.
The “Sectoral Disconnect”

- **We consume the most energy for heating, cooling, and transport.**
  - Heating and Cooling: 48%
  - Transport: 32%
  - Electricity: 20%

Modern Renewable Energy in Final Energy Use by Sector, 2015

- 39% of total annual energy-related CO₂ emissions come from heat consumption.
- 10% modern renewable energy. Additional 16% from traditional biomass.
- 3% renewable energy for electricity.
- 25% renewable energy.
128 countries had renewable power policies

70 countries had renewable transport policies

24 countries had renewable heating and cooling policies
By end-2017, at least **145 countries** had enacted some kind of **energy efficiency policy**

At least **157 countries**: one or more energy efficiency target

Mandatory and voluntary **energy codes for buildings** exist in **>60 countries** worldwide

Source: REN21 Policy Database
Transport

- New or revised **ethanol and biodiesel blend mandates** enacted in 2017
- Biofuel promotion policies incl. **specific requirements for use of next-generation cellulosic biofuels**
- **Fiscal incentives** for biofuel production and **grants** for the development of second-generation biofuels
- **Other jurisdictions:** **goals or incentives for electric or fuel-efficient vehicles**
Global Passenger EV Market

→ Electrification trend in 2017
→ Global sales of electric passenger cars (including PHEVs): **1.2 million units**, up about **58%** over 2016
→ >3 million electric passenger vehicles on the road (+70% relative to 2016, but still only representing **1%** of light vehicle market)
→ Potential to create a new market for RE and facilitate integration of VRE
Conclusions

→ Global renewable power transition advancing with record capacity additions and rapidly falling costs – The transition is possible!

→ However, progress not fast enough to reach Paris Agreement goals and SDGs

→ Better-integrated sectors needed: planning, policies and regulatory frameworks

→ Systems approach necessary: link energy efficiency and renewable energy, employ sector coupling

→ Create a level playing field for renewables and decentralised off-grid renewables
Renewable Energy Policy Network for the 21st Century

Global Status Report: yearly publication since 2005
Regional Reports
Global Futures Reports
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SAVE THE DATE:
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