

RENEWABLES 2016

GLOBAL STATUS REPORT



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

NGOs:

ALER, CURES, GFSE,
Gogla, Greenpeace,
ICLEI, ISEP, Renewable
Energy Institute,
RCREEE, SLoCaT,
WCRE, WFC, WRI,
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Industry Associations:

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EREF, GSC, GWEC, IGA,
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National

Governments:

Brazil,
Denmark,
Germany, India,
Norway, Spain,
UAE, US, UK



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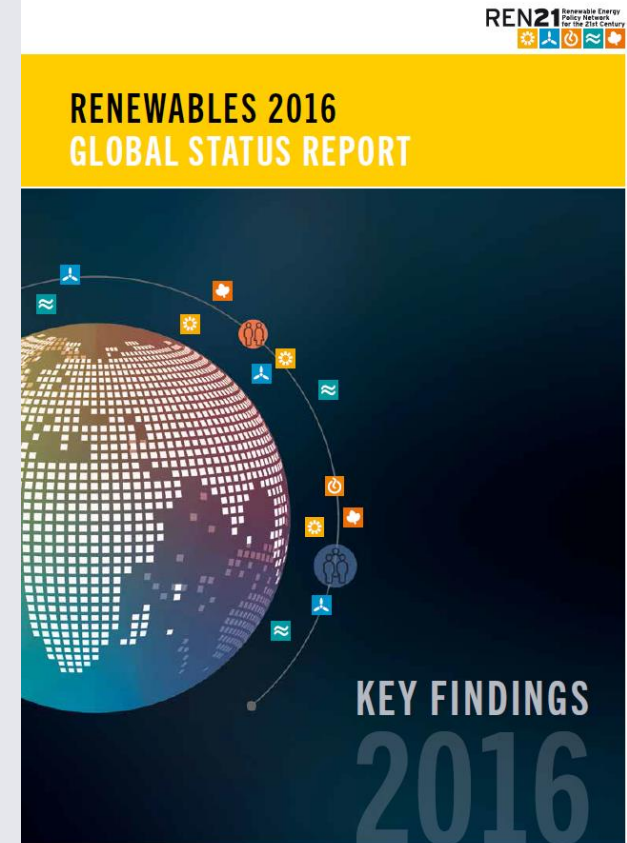
→ The report features:

- Global Overview
- Market & Industry Trends
- Distributed Renewable Energy for Energy Access
- Investment Flows
- Policy Landscape
- Energy Efficiency
- Feature: Community Energy

→ The report covers:

- All renewable energy technologies
- Power, heating & cooling, and transport sectors

→ **Country data** available on REN21 Renewables Interactive Map: www.ren21.net/map













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An extraordinary year for renewable energy

- **147 GW** of renewable power capacity added in 2015 – the largest annual increase ever
- Renewable heat capacity increased by **38 GW_{th}**
- Total biofuels production also rose

Renewable Energy Indicators 2015









		2014	2015
INVESTMENT			
New investment (annual) in renewable power and fuels ¹	billion USD	273	285.9
POWER			
Renewable power capacity (total, not including hydro)	GW	665	785
Renewable power capacity (total, including hydro)	GW	1,701	1,849
 Hydropower capacity ²	GW	1,036	1,064
 Bio-power capacity ³	GW	101	106
 Bio-power generation (annual)	TWh	429	464
 Geothermal power capacity	GW	12.9	13.2
 Solar PV capacity	GW	177	227
 Concentrating solar thermal power	GW	4.3	4.8
 Wind power capacity	GW	370	433
HEAT			
 Solar hot water capacity ⁴	GW _{th}	409	435
TRANSPORT			
 Ethanol production (annual)	billion litres	94.5	98.3
 Biodiesel production (annual)	billion litres	30.4	30.1

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Renewable Energy “Champions”

Annual investment/capacity additions/production

	1	2	3	4	5
Investment in renewable power and fuels (not including hydro > 50 MW)	China	United States	Japan	United Kingdom	India
Investment in renewable power and fuels per unit GDP ¹	Mauritania	Honduras	Uruguay	Morocco	Jamaica
 Geothermal power capacity	Turkey	United States	Mexico	Kenya	Germany/Japan
 Hydropower capacity	China	Brazil	Turkey	India	Vietnam
 Solar PV capacity	China	Japan	United States	United Kingdom	India
 Concentrating solar thermal power (CSP) capacity ²	Morocco	South Africa	United States	–	–
 Wind power capacity	China	United States	Germany	Brazil	India
 Solar water heating capacity	China	Turkey	Brazil	India	United States
 Biodiesel production	United States	Brazil	Germany	Argentina	France
 Fuel ethanol production	United States	Brazil	China	Canada	Thailand

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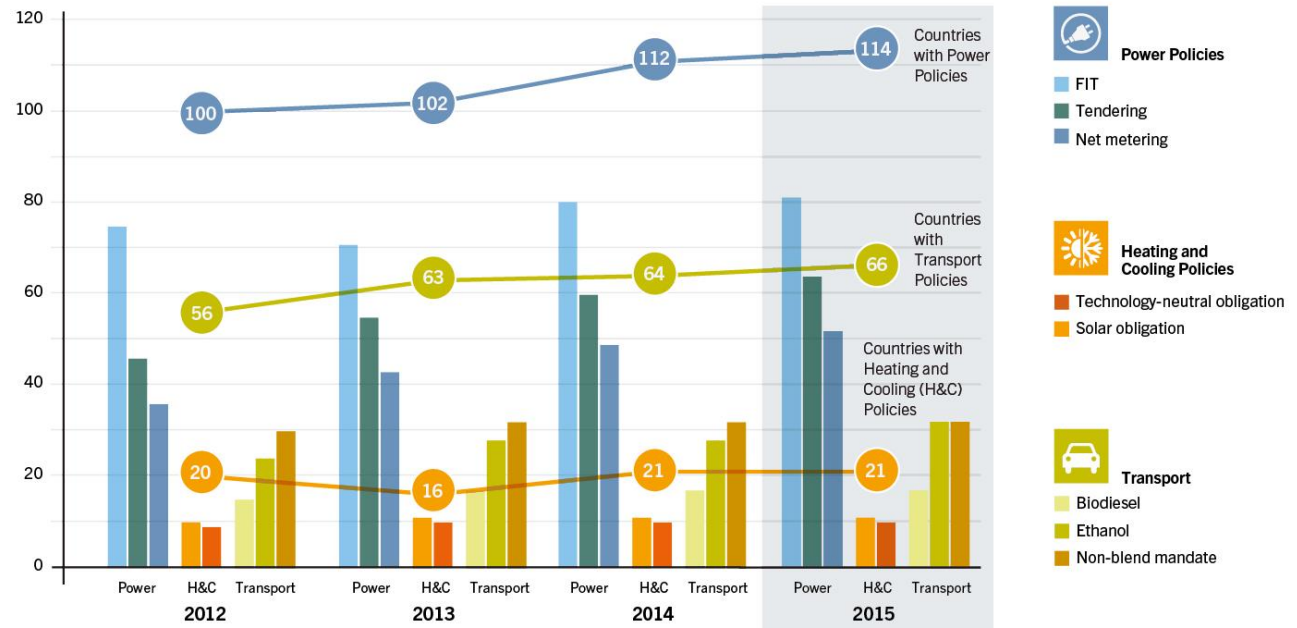


Renewable Energy Policy Landscape

173 countries had renewable energy **targets**, and an estimated **146** countries had renewable energy support **policies**:

- **114** countries with **power** policies
- **66** countries with **transport** policies
- **21** countries with **H&C** policies

Number of Renewable Energy Policies and Number of Countries with Policies, by Type, 2012–15



Note: Figure does not show all policy types in use. Countries are considered to have policies when at least one national or state/provincial-level policy is in place. Some transport policies include both biodiesel and ethanol; in this case, the policy is counted once in each category (biodiesel and ethanol).

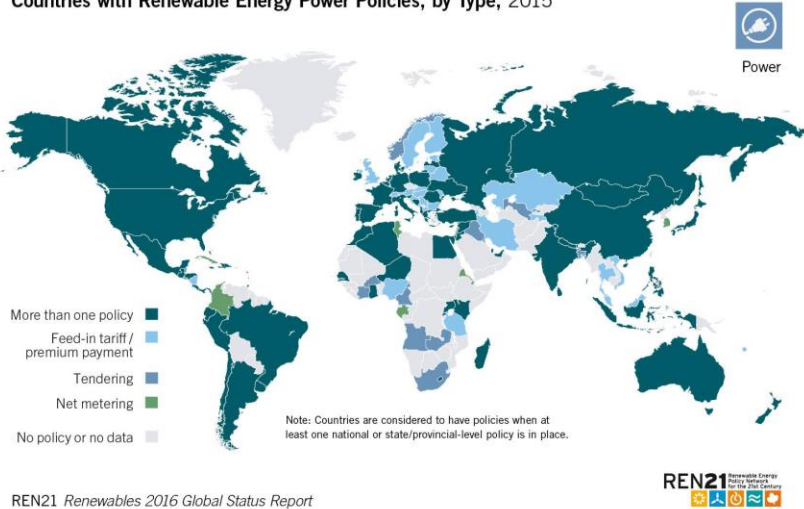
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Source: REN21 Policy Database



Renewable Energy Policy Landscape

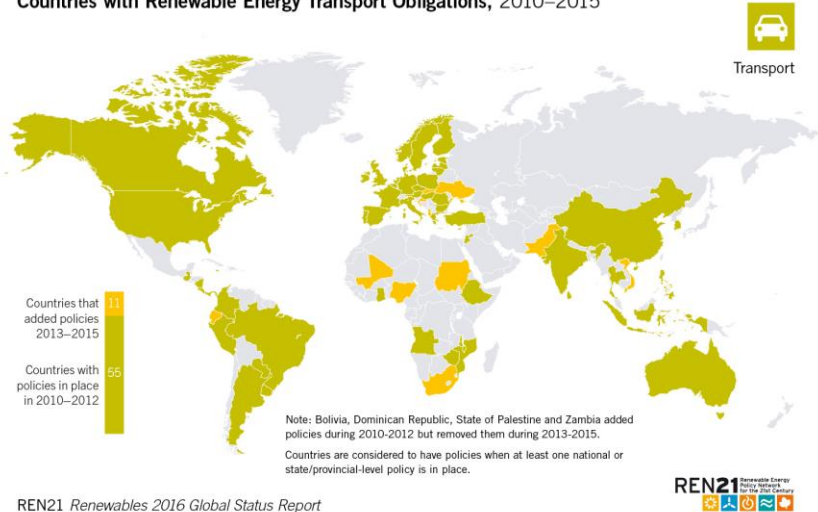
Countries with Renewable Energy Power Policies, by Type, 2015



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Source: REN21 Policy Database

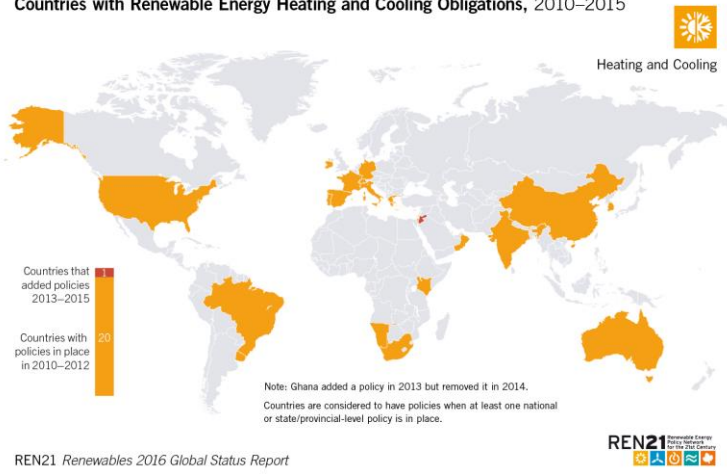
Countries with Renewable Energy Transport Obligations, 2010–2015



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Source: REN21 Policy Database

Countries with Renewable Energy Heating and Cooling Obligations, 2010–2015



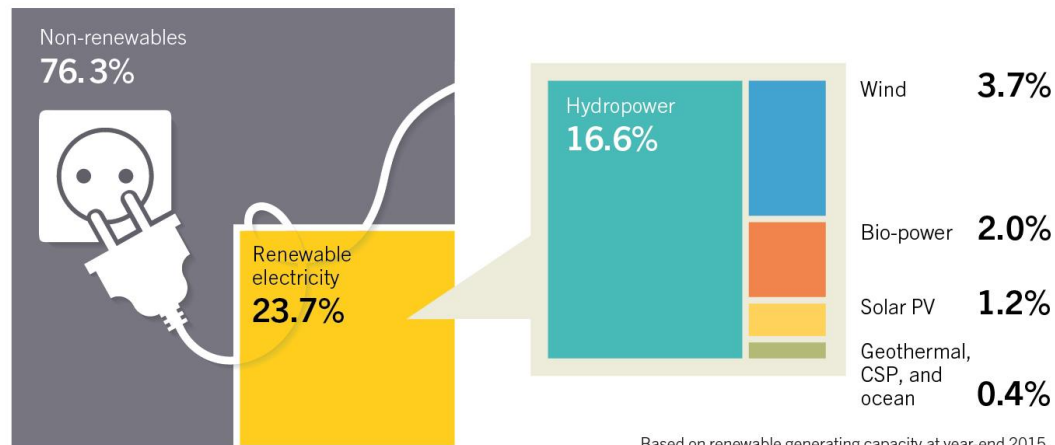
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Source: REN21 Policy Database



Power Sector

Estimated Renewable Energy Share of Global Electricity Production, End-2015



Based on renewable generating capacity at year-end 2015.
Percentages do not add up internally due to rounding.

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- Renewables accounted **28.9%** of global power generation capacity and **23.7%** of global electricity demand
- Renewables made up for **60%** of net additions to global power capacity
- Total RE power capacity: **1,849 GW**, an increase of almost 9% over 2014

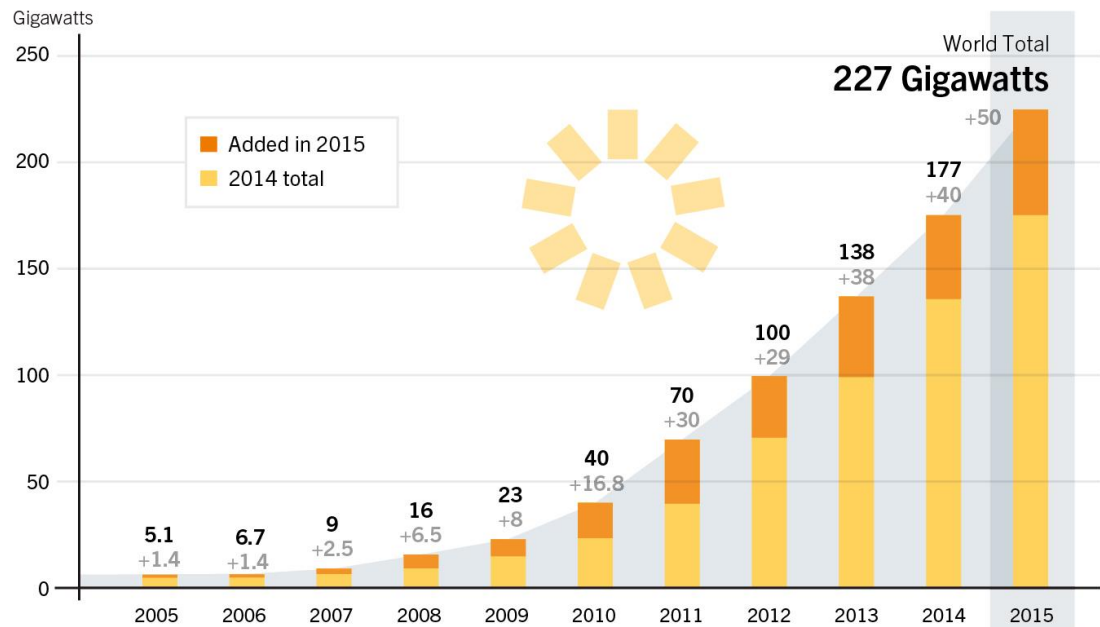
Solar PV

Capacity added:
+50 GW

Total capacity:
227 GW

Annual PV market in 2015 was nearly **10 times** the world's cumulative solar PV capacity of a decade earlier

Solar PV Total Global Capacity Annual Additions and Capacity, 2005–2015



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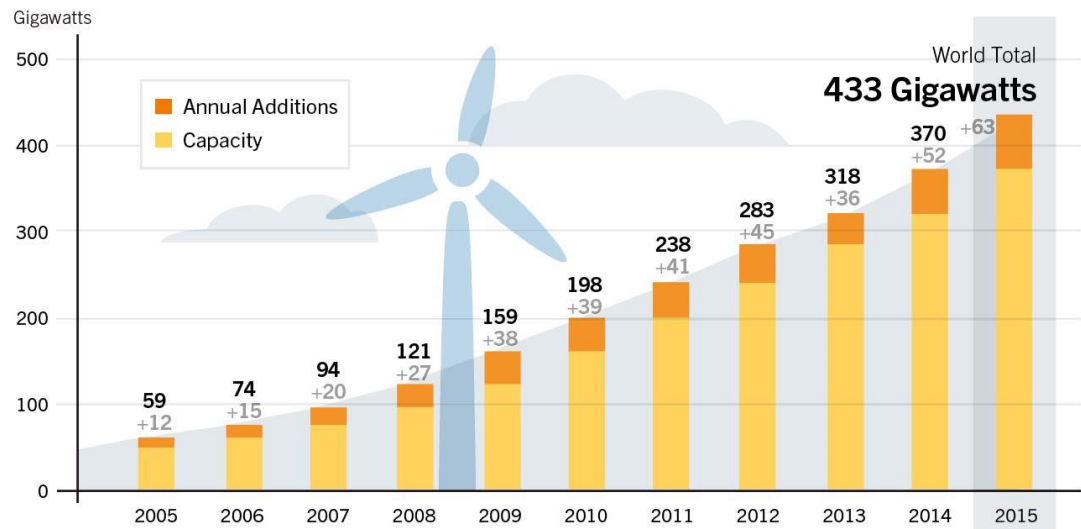
Wind Power

63 GW of capacity were added

Total capacity: **433 GW**

Offshore, an estimated **3.4 GW** of grid-connected capacity was added in 2015, for a world total exceeding **12 GW**

Wind Power Global Annual Additions and Capacity, 2005–2015



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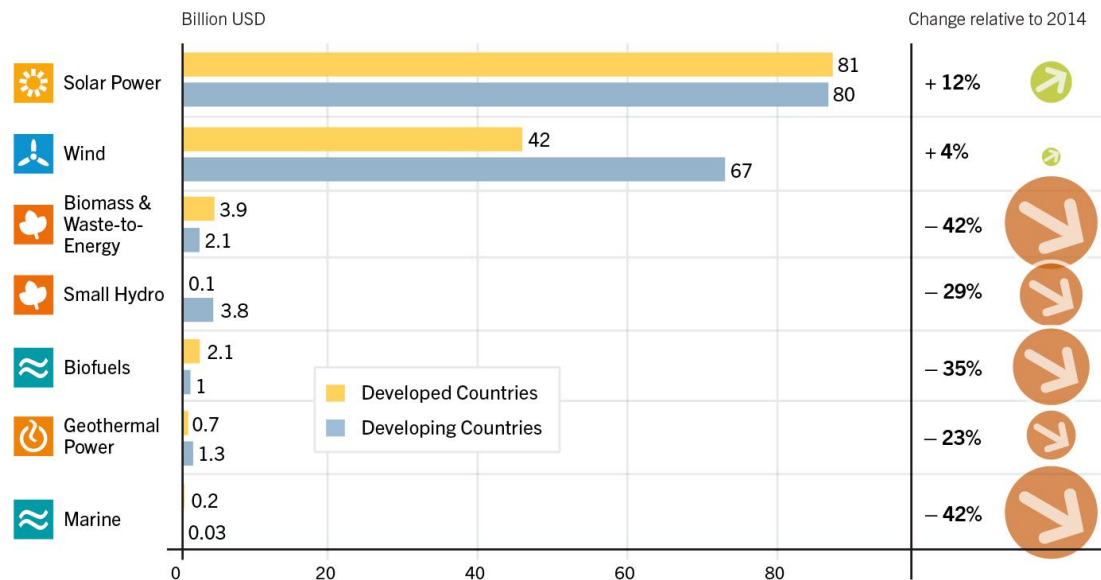


Global Investment in Renewable Energy

Solar power leading sector for money committed during 2015, receiving more than 56% (USD 161 billion) of total new investment in RE

Wind power followed with USD 109.6 billion (38.3% of total, up 4%)

Global New Investment in Renewable Energy by Technology, Developed and Developing Countries, 2015



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Source: BNEF

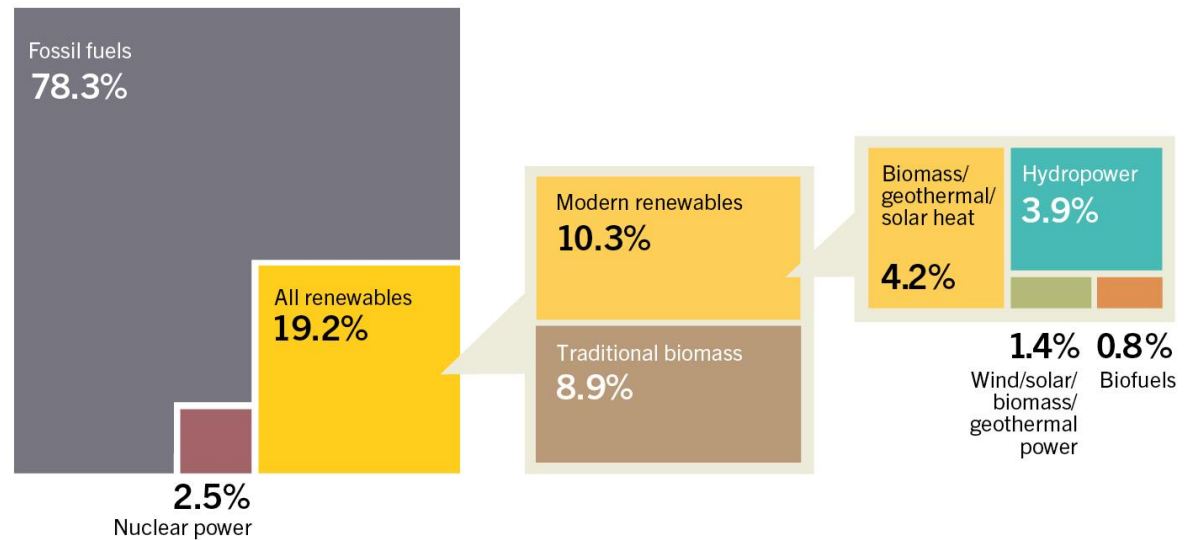


Renewable Energy in the World

Renewable energy provided an estimated **19.2% of global final energy consumption** in 2014

Share of modern renewable energy increased to 10.3% while the share of traditional biomass was of 8.9%

Estimated Renewable Energy Share of Global Final Energy Consumption, 2014



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Conclusions

- **Largest global capacity additions** from renewables to date
- For the second year in a row, **global carbon emissions** associated with energy consumption **remained stable in 2015** while the global economy grew.
- **Majority of remaining fossil fuel reserves** will have to be kept in the ground in order to reach 2° climate target
- **More emphasis on renewable energy in the heating and cooling as well as transport sectors** and on sector-coupling
- **Need to build a smarter, more flexible system** that accommodates both centralised as well as decentralised generation



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