

RENEWABLES 2018

GLOBAL STATUS REPORT



Arthouros Zervos
Chair, REN21

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

NGOs:

CAN, CEEW, FER, GACC, GFSE, Greenpeace International, ICLEI, IEC, ISEP, MFC, SLoCaT, REI, WCRE, WFC, WRI, WWF

Industry Associations:

ARE, ACORE, ALER, APREN, CREIA, CEC, EREF, GOGLA, GSC, GWEC, IREF, IGA, IHA, RES4MED, WBA, WWEA

Science & Academia:

Fundacion Bariloche, IIASA, ISES, NREL, SANEDI, TERI

International Organisations:

ADB, APERC, ECREEE, EC, GEF, IEA, IEC, IRENA, RCREEE, UNDP, UN Environment, UNIDO, World Bank

National Governments:

Afghanistan, Brazil, Denmark, Germany, India, Mexico, Norway, South Africa, Spain, UAE, USA



Renewables Global Status Report




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

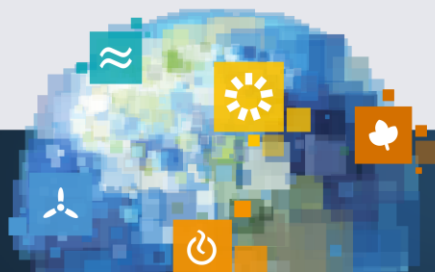
REN21 COMMUNITY INVOLVEMENT IN GSR:


60% new experts in the community every year


40% have been involved at least twice


Over **900** experts internationally


400 experts actively involved in 2018 edition



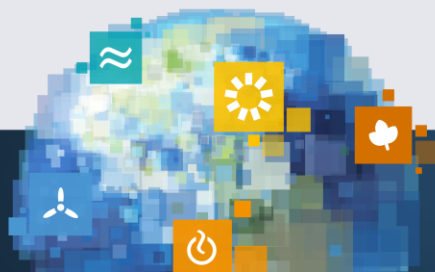
Another Extraordinary Year for Renewable Energy

- 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

		2016	2017
INVESTMENT			
New investment (annual) in renewable power and fuels ¹	billion USD	274	279.8
POWER			
Renewable power capacity (including hydro)	GW	2,017	2,195
Renewable power capacity (not including hydro)	GW	922	1,081
⚡ Hydropower capacity ²	GW	1,095	1,114
🌱 Bio-power capacity	GW	114	122
🌱 Bio-power generation (annual)	TWh	501	555
🔥 Geothermal power capacity	GW	12.1	12.8
☀️ Solar PV capacity ³	GW	303	402
☀️ Concentrating solar thermal power (CSP) capacity	GW	4.8	4.9
🌬️ Wind power capacity	GW	487	539
🌊 Ocean energy capacity	GW	0.5	0.5
HEAT			
☀️ Solar hot water capacity ⁴	GW _{th}	456	472
TRANSPORT			
🚗 Ethanol production (annual)	billion litres	103	106
🚗 FAME biodiesel production (annual)	billion litres	31	31
🚗 HVO production (annual)	billion litres	5.9	6.5

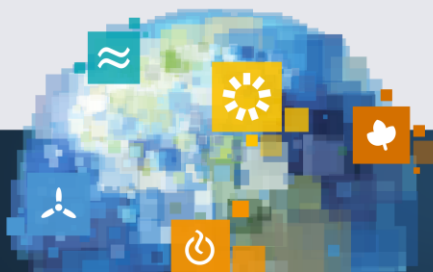
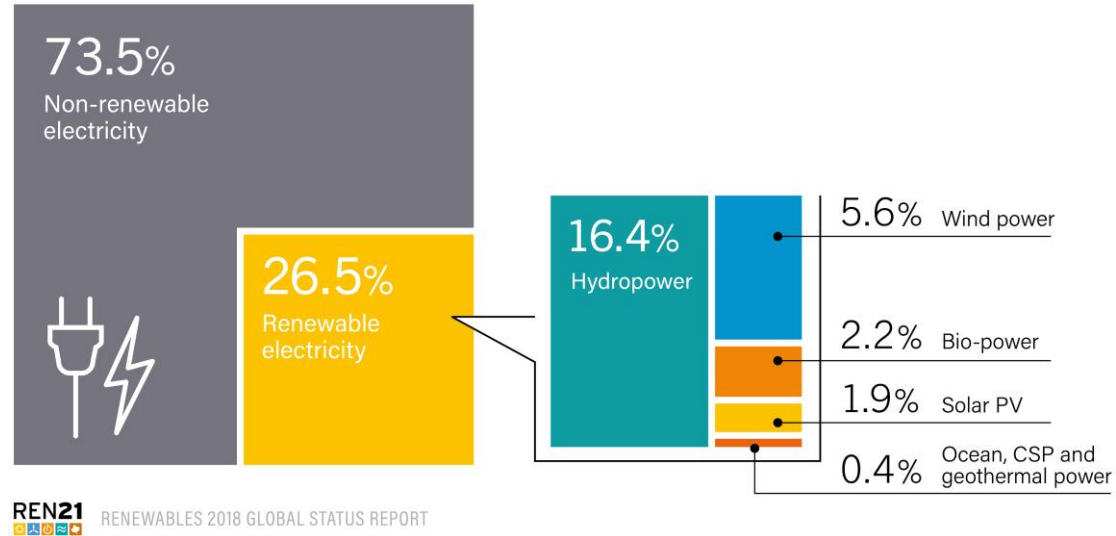
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Power Sector

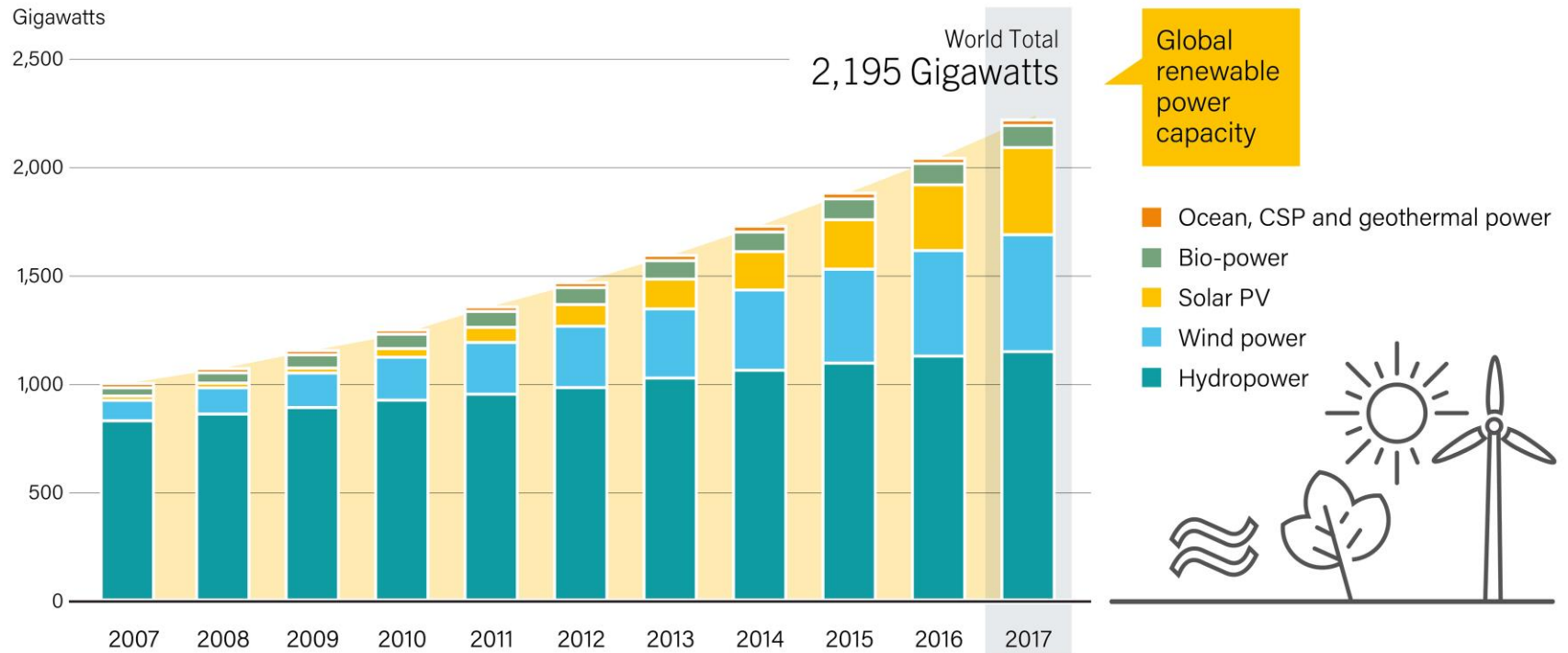
- In 2017, renewables accounted for: **70%** of net additions to global power generation capacity
- RE supplied an estimated **26.5% of global electricity**
- **Progress in the power sector shows that the transition to renewable energy is possible!**

Estimated Renewable Energy Share of Global Electricity Production, End-2017



Global Renewable Power Capacity

Global Renewable Power Capacity, 2007-2017



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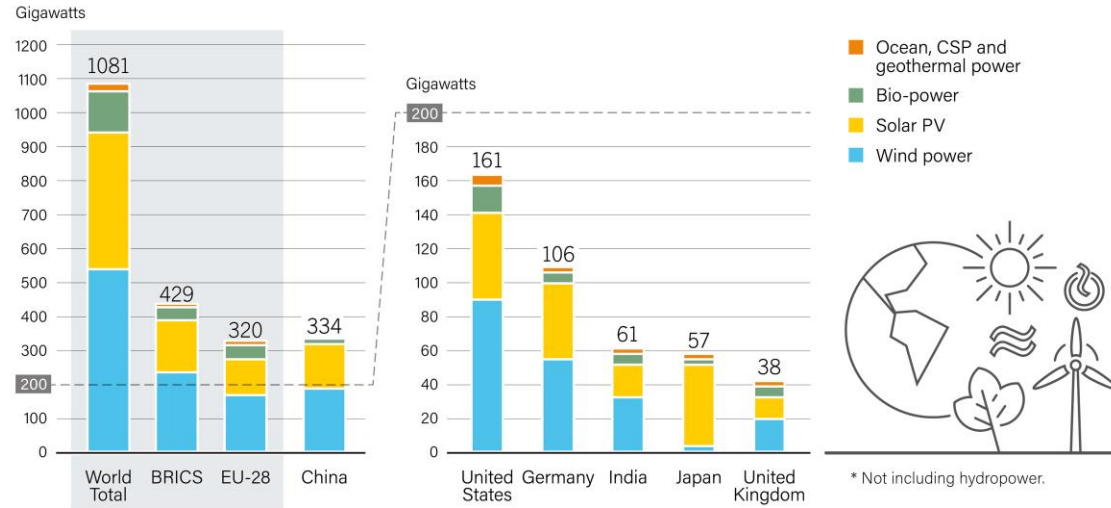
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Policy Network
for the 21st Century

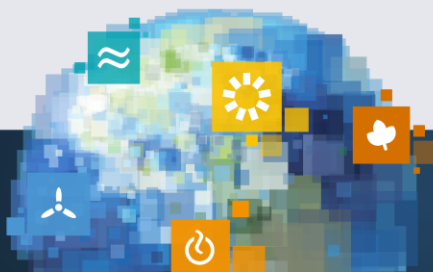
Renewable Power Capacities in the World

→ **China:** nearly **30%** of the world's renewable power capacity (approx. 647 GW)

Renewable Power Capacities in World, EU-28 and Top 6 Countries, 2017

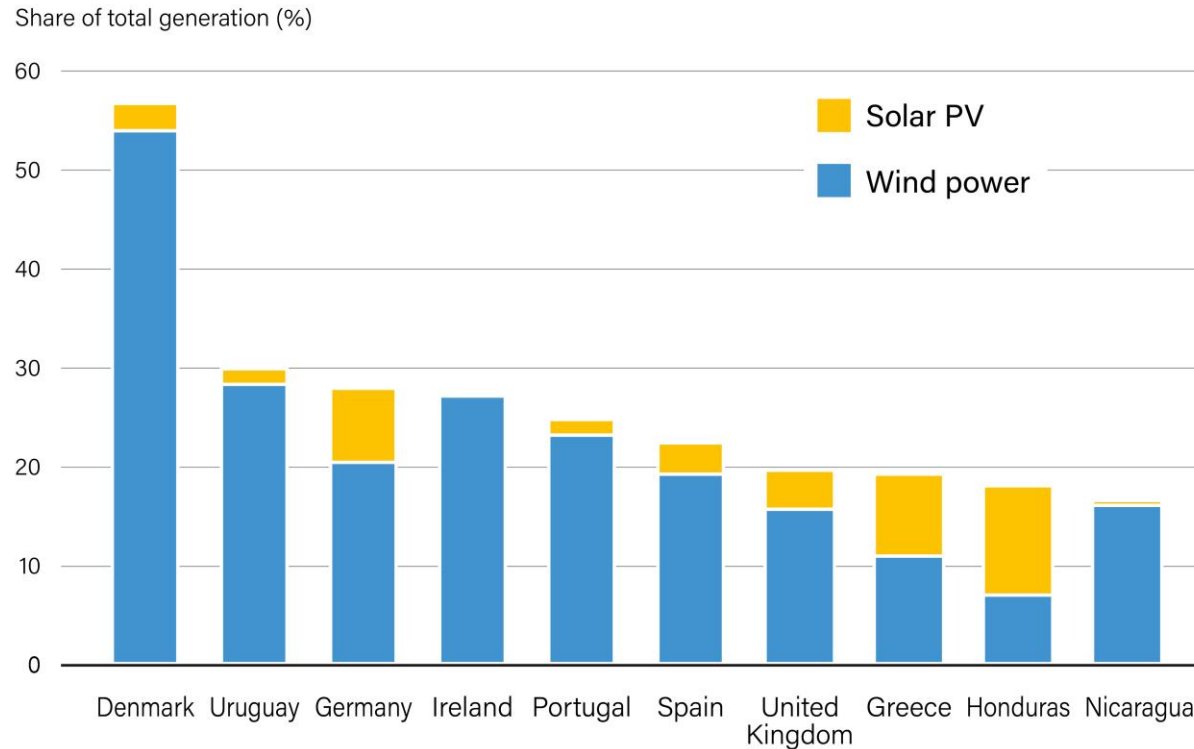


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High Shares of Variable Renewable Power on the Grid

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










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Asia Highlights

Capacity (GW)	Global		Asia	
	Added in 2017	Total at end-2017	Added in 2017	Total at end-2017
Renewable Energy (incl. hydropower)	178	2,195	106	919
Wind Power 	52	539	20	204
Bio-power 	8	122	3	33
Geothermal 	0.7	12.8	0.3	4.4
Hydropower 	19	1,114	12	530
Ocean Energy 	~0	0.5	~0	0.2
Solar PV 	99	402	72	211
Solar CSP 	0.1	4.9	0	~0
Investment (billion USD)		279.8		168

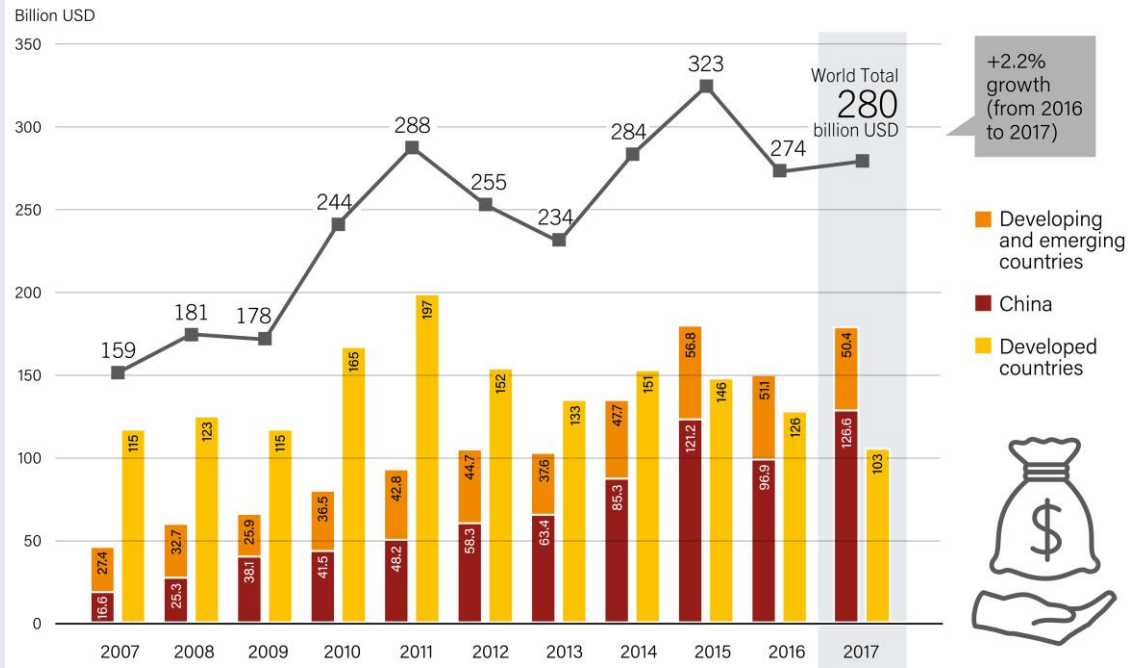


Global Investment in Renewable Energy

→ Global new investment in renewable power and fuels in 2017: **USD 279.8 billion (+2.2%)** (USD 319.8 billion incl. large hydropower)

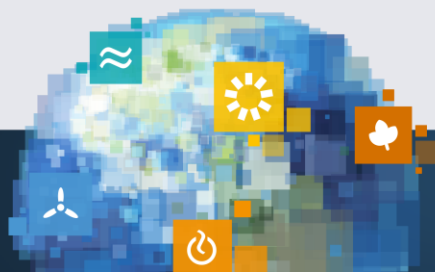
→ Investment in new renewable power capacity roughly three times that in new fossil fuel capacity

Global New Investment in Renewable Power and Fuels in Developed, Emerging and Developing Countries, 2007-2017



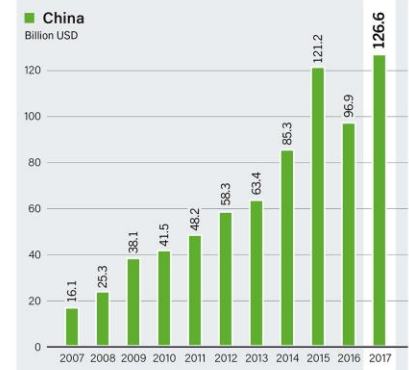
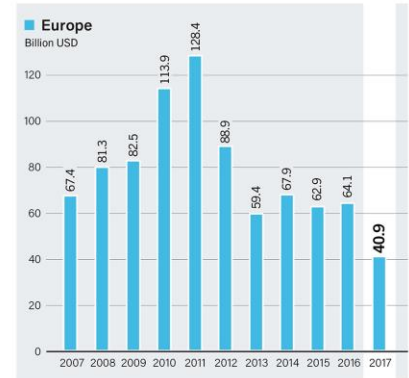
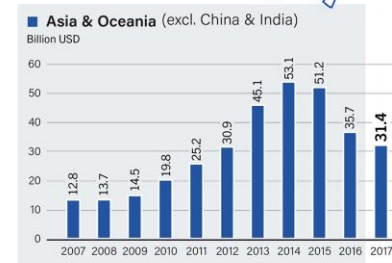
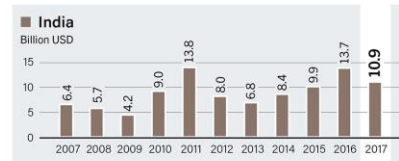
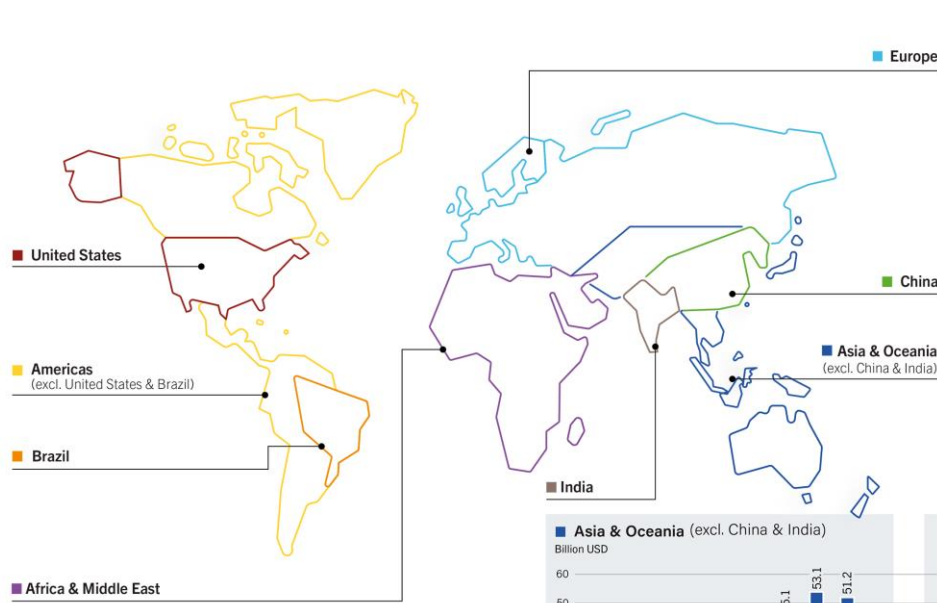
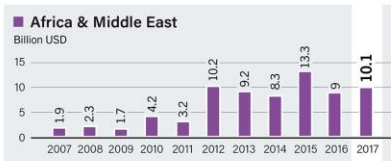
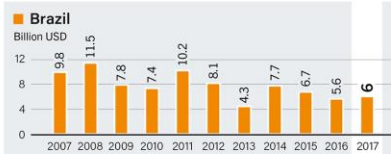
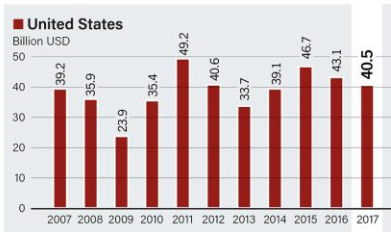
Source: BNEF

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Investment in Renewable Energy

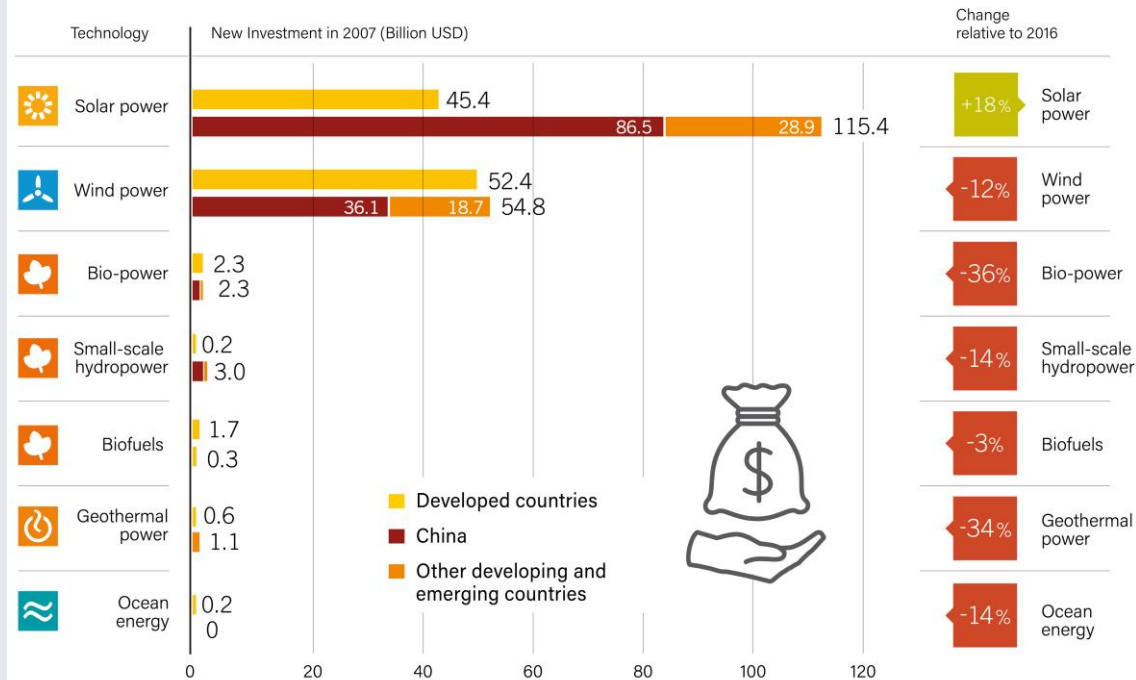
Global New Investment in Renewable Power and Fuels, by Country or Region, 2007-2017



Global Investment in Renewable Energy by Technology

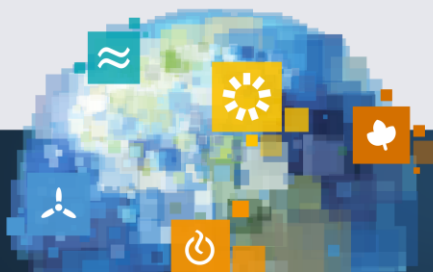
- Nearly all of the investment in 2017 was in **solar PV (57%)** and **wind power (38%)**
- **Solar PV**: only technology to witness an increase in new investment (+18% compared to 2016)
- Investment in all other technologies was down in 2017 relative to 2016

Global New Investment in Renewable Energy by Technology in Developed, Emerging and Developing Countries, 2017



Source: BNEF

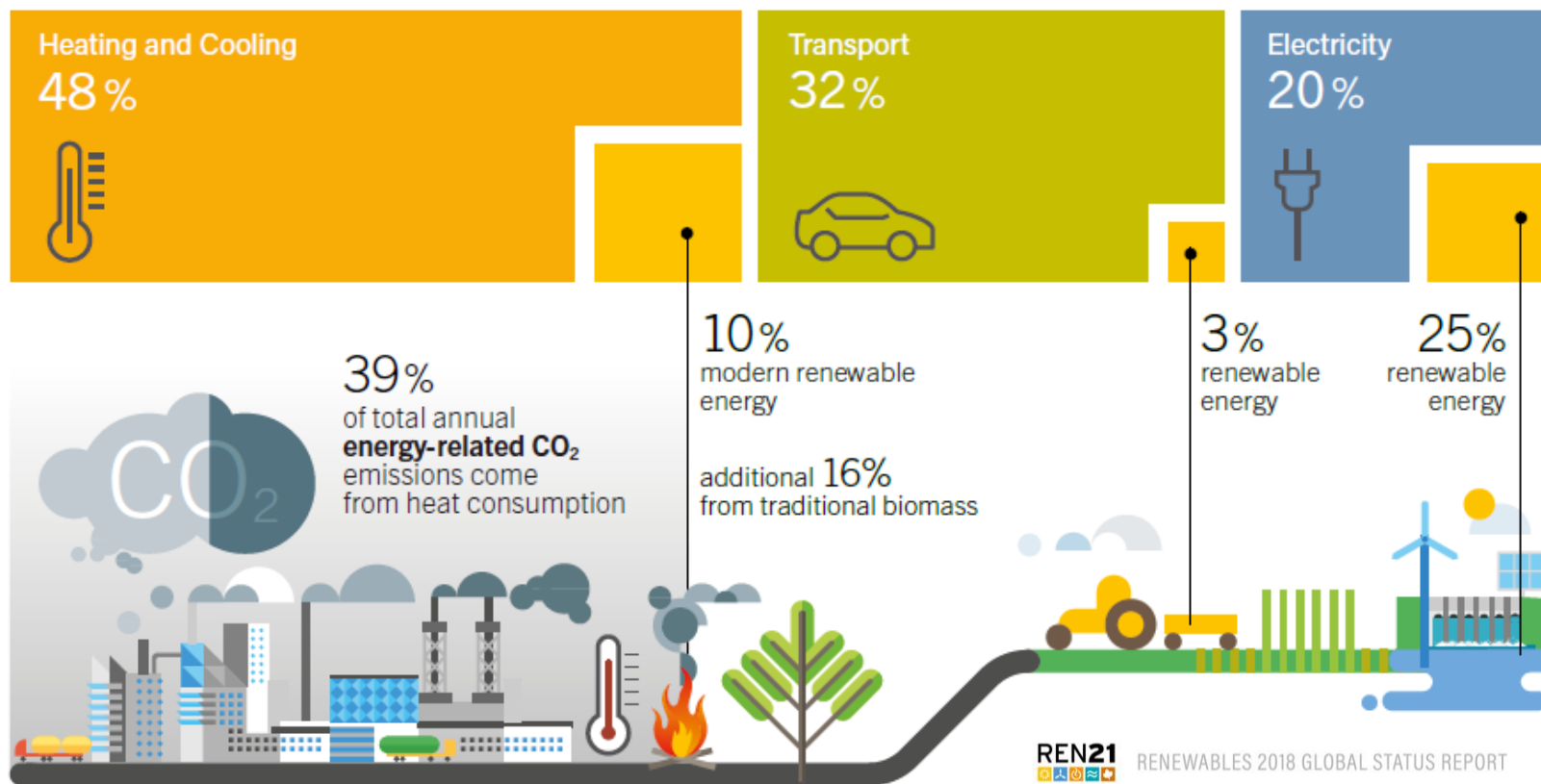
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The “Sectoral Disconnect”

■ WE CONSUME THE MOST ENERGY FOR HEATING, COOLING, AND TRANSPORT

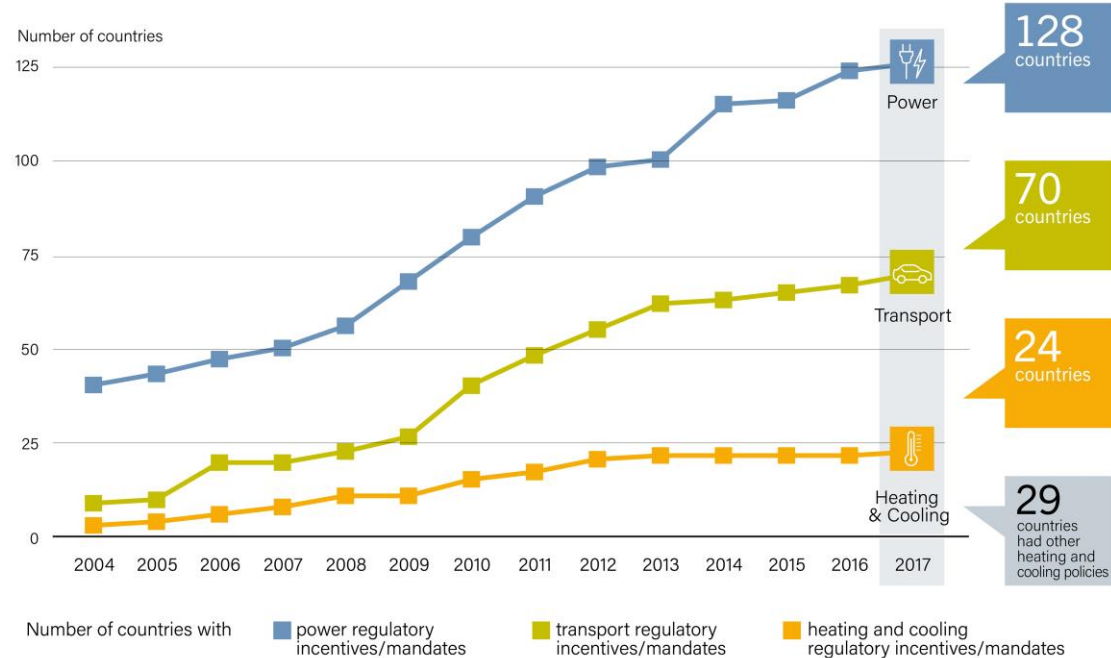
Modern Renewable Energy in Final Energy Use by Sector, 2015



Renewable Energy Policies

- **128** countries had renewable **power** policies
- **70** countries had renewable **transport** policies
- **24** countries had renewable **heating and cooling** policies

Number of Countries with Renewable Energy Regulatory Policies, by Sector, 2004-2017



Source: REN21 Policy Database

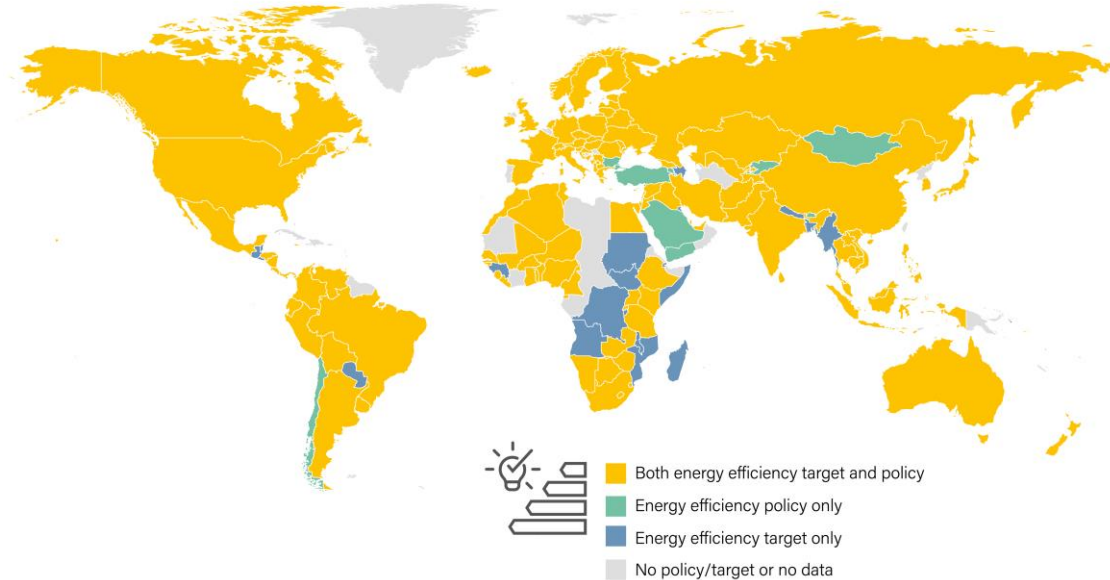
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Heating and Cooling

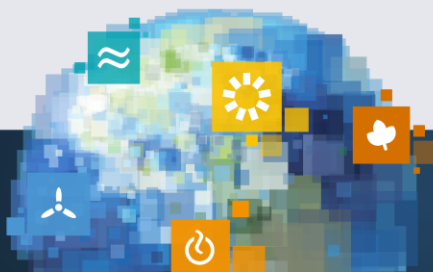
- By end-2017, at least **145 countries** had enacted some kind of **energy efficiency policy**
- At least **157 countries**: one or more energy efficiency target
- Mandatory and voluntary **energy codes for buildings** exist in **>60 countries** worldwide

Countries with Energy Efficiency Policies and Targets, End-2017



Source: REN21 Policy Database

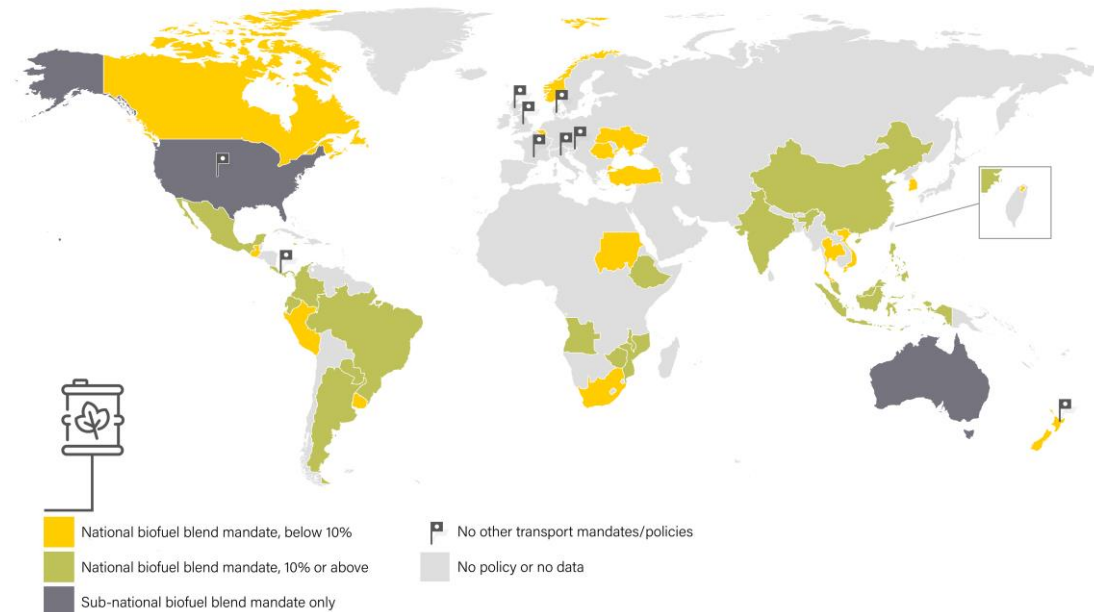
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Transport

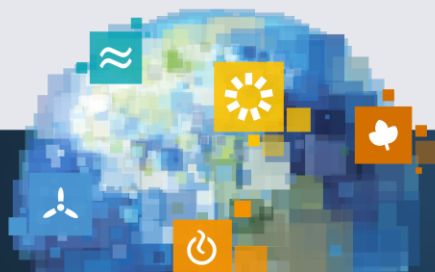
- New or revised **ethanol and biodiesel blend mandates** enacted in 2017
- Biofuel promotion policies incl. **specific requirements for use of next-generation cellulosic biofuels**
- **Fiscal incentives** for biofuel production and **grants** for the development of second-generation biofuels
- Other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

National and Sub-National Renewable Transport Mandates, End-2017



Source: REN21 Policy Database

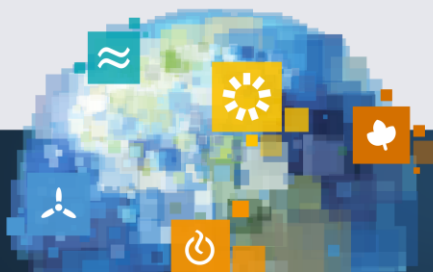
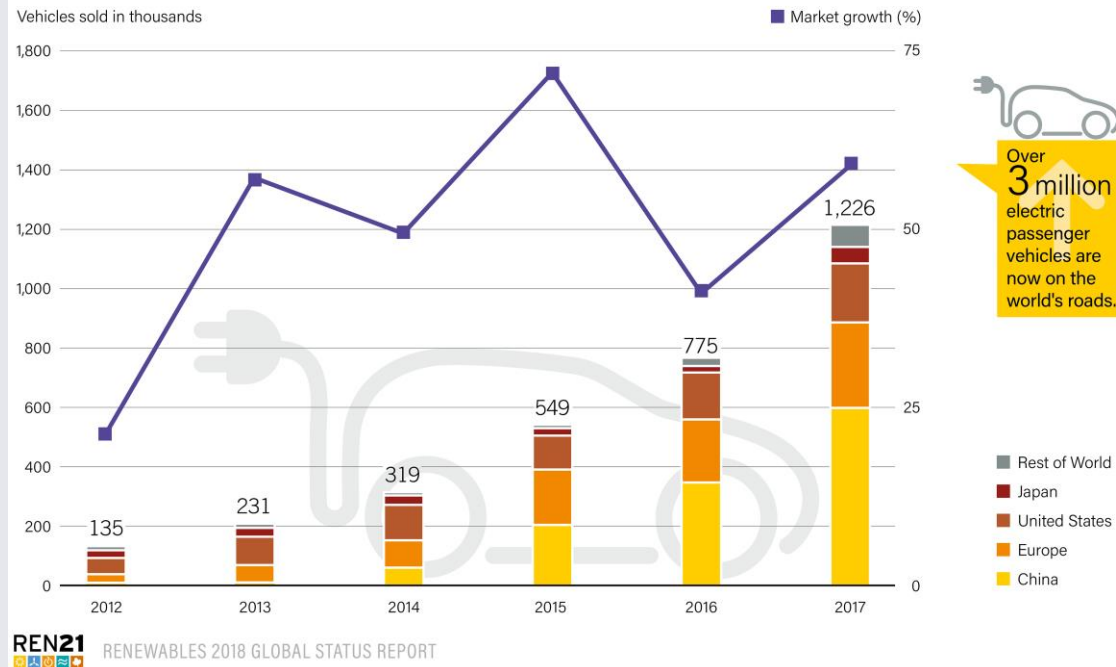
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Global Passenger EV Market

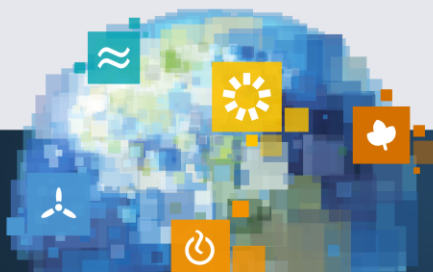
- **Electrification trend in 2017**
- Global sales of electric passenger cars (including PHEVs): **1.2 million units**, up about **58%** over 2016
- **>3 million electric passenger vehicles on the road** (+70% relative to 2016, but still only representing **1%** of light vehicle market)
- **Potential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

Global Passenger Electric Vehicle Market (including PHEVs), 2012-2017



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



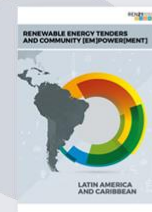
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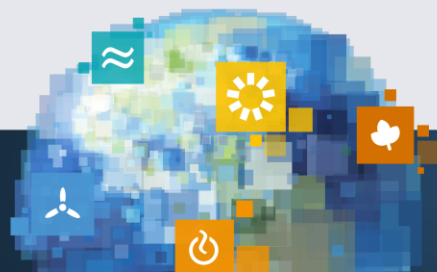


*International
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