GLOBAL RENEWABLE ENERGY STATUS

FOCUS: TRACKING THE GLOBAL SOLAR MARKET

Martin Hullin
Project Manager
martin.hullin@ren21.net

ADB Headquarter
Manila
15 June 2015

2015

REN21 Renewable Energy Policy Network for the 21st Century

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

Science & Academia:
IIASA, ISES, SANEDI, TERI, Fundacion Bariloche

NGOs:
CURES, GFSE, Greenpeace, ICLEI, ISEP, JREF, RCREEE, WCRE, WFC, WRI, WWF

International Organisations:
ADB, EC, ECREEE, GEF, IEA, IRENA, UNDP, UNEP, UNIDO, World Bank

Industry Associations:
ACORE, ARE, CEC, CREIA, EREF, GWEC, IGA, IHA, IREF, WBA, WWEA

National Governments:
Brazil, Denmark, Germany, India, Norway, Spain, Uganda, UAE, UK

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REN21 Renewables 2015 Global Status Report

www.ren21.net/gsr

Launched at Vienna Energy Forum on 18 June 2015

Network of over 500 contributors, researchers & reviewers worldwide

The report features:

- Global Overview
- Market & Industry Trends
- Investment Flows
- Policy Landscape
- Distrbuted Renewable Energy for Energy Access
- Feature: Using Renewables for Climate Change Adaptation

The report covers:

- All renewable energy technologies
- The power, heating & cooling, and transport sector
- Energy Efficiency

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A Decade Of Renewable Energy Growth Surpassing Expectations

Projected levels of renewable energy for 2020 were already surpassed by 2010.

Global installed capacity and production from all renewable technologies **have increased substantially.**

Significant cost reductions for most technologies.

Supporting policies spread throughout the world.

		START 2004	2013	2014
INVESTMENT				
New investment (annual) in renewable power and fuels	billion USD	45	232	**270**
POWER				
Renewable power capacity (total, not including hydro)	GW	85	560	**657**
Renewable power capacity (total, including hydro)	GW	800	1,578	**1,712**
Hydropower capacity (total)	GW	715	1,018	**1,055**
Bio-power capacity	GW	<36	88	**93**
Bio-power generation	TWh	227	396	**433**
Geothermal power capacity	GW	8.9	12.1	**12.8**
Solar PV capacity (total)	GW	2.6	138	**177**
Concentrating solar thermal power (total)	GW	0.4	3.4	**4.4**
Wind power capacity (total)	GW	48	319	**370**
HEAT				
Solar hot water capacity (total)	GW_{th}	86	373	**406**
TRANSPORT				
Ethanol production (annual)	billion litres	28.5	87.8	**94**
Biodiesel production (annual)	billion litres	2.4	26.3	**29.7**

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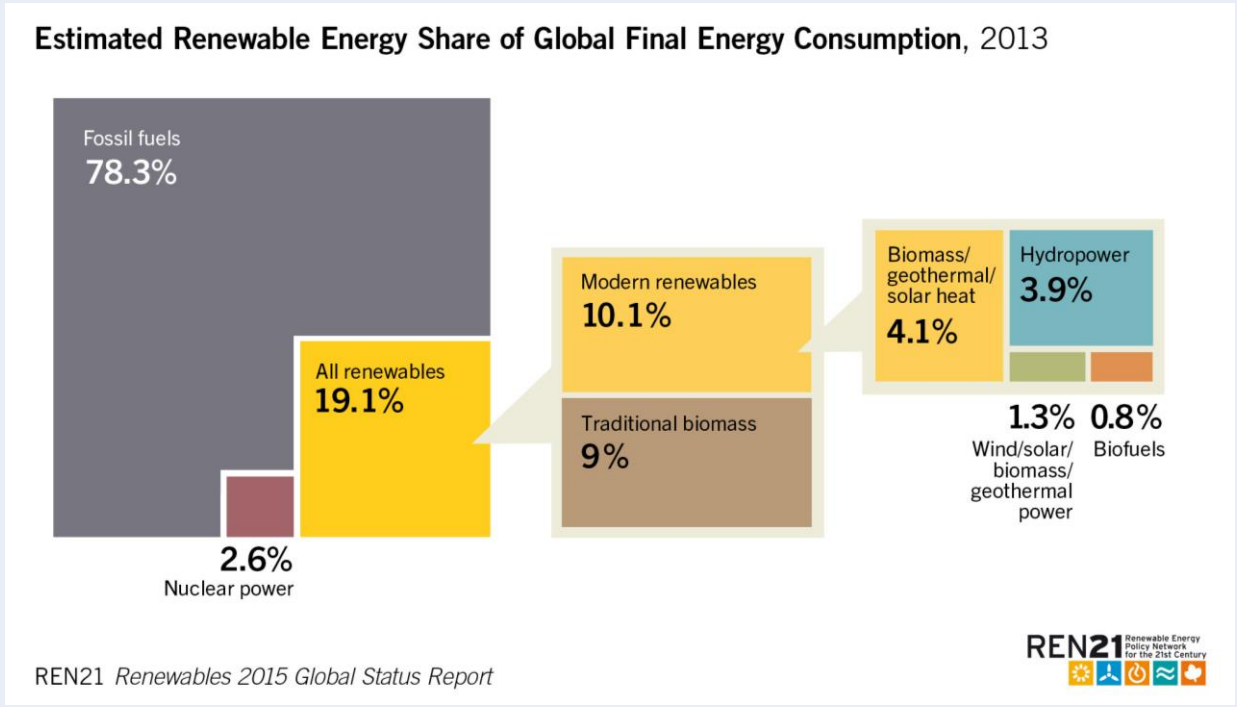
Renewable Energy in the World

Renewable energy provided an estimated **19.1%** of global final energy consumption in 2013.

The share of **modern renewable energy** increased to 10.1%.

The share of **traditional biomass** was of 9%, same in 2013.



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Renewable Energy “Champions“ - annual investment/capacity additions

ANNUAL INVESTMENT / NET CAPACITY ADDITIONS / PRODUCTION IN 2014

	1	2	3	4	5
Investment in renewable power and fuels (not including hydro > 50 MW)	**China**	United States	Japan	United Kingdom	Germany
Investment relative to annual GDP[1]	**Burundi**	Kenya	Honduras	Jordan	Uruguay
Geothermal power capacity	**Kenya**	Turkey	Indonesia	Philippines	Italy
Hydropower capacity	**China**	Brazil	Canada	Turkey	India
Solar PV capacity	**China**	Japan	United States	United Kingdom	Germany
CSP capacity	**United States**	India	–	–	–
Wind power capacity	**China**	Germany	United States	Brazil	India
Solar water heating capacity[2]	**China**	Turkey	Brazil	India	Germany
Biodiesel production	**United States**	Brazil	Germany	Indonesia	Argentina
Fuel ethanol production	**United States**	Brazil	China	Canada	Thailand

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Renewable Energy "Champions" – total capacity

TOTAL CAPACITY OR GENERATION AS OF END-2014

	1	2	3	4	5
POWER					
Renewable power (incl. hydro)	**China**	United States	Brazil	Germany	Canada
Renewable power (not incl. hydro)	**China**	United States	Germany	Spain / Italy	Japan / India
Renewable power capacity *per capita* (not incl. hydro) among the top 20[3]	**Denmark**	Germany	Sweden	Spain	Portugal
Biopower generation	**United States**	Germany	China	Brazil	Japan
Geothermal power capacity	**United States**	Philippines	Indonesia	Mexico	New Zealand
Hydropower capacity[4]	**China**	Brazil	United States	Canada	Russia
Hydropower generation[4]	**China**	Brazil	Canada	United States	Russia
Concentrating solar thermal power (CSP)	**Spain**	United States	India	United Arab Emirates	Algeria
Solar PV capacity	**Germany**	China	Japan	Italy	United States
Solar PV capacity *per capita*	**Germany**	Italy	Belgium	Greece	Czech Republic
Wind power capacity	**China**	United States	Germany	Spain	India
Wind power capacity *per capita*	**Denmark**	Sweden	Germany	Spain	Ireland
HEAT					
Solar water collector capacity[2]	**China**	United States	Germany	Turkey	Brazil
Solar water heating collector capacity *per capita*[2]	**Cyprus**	Austria	Israel	Barbados	Greece
Geothermal heat capacity[5]	**China**	Turkey	Japan	Iceland	India
Geothermal heat capacity *per capita*[5]	**Iceland**	New Zealand	Hungary	Turkey	Japan

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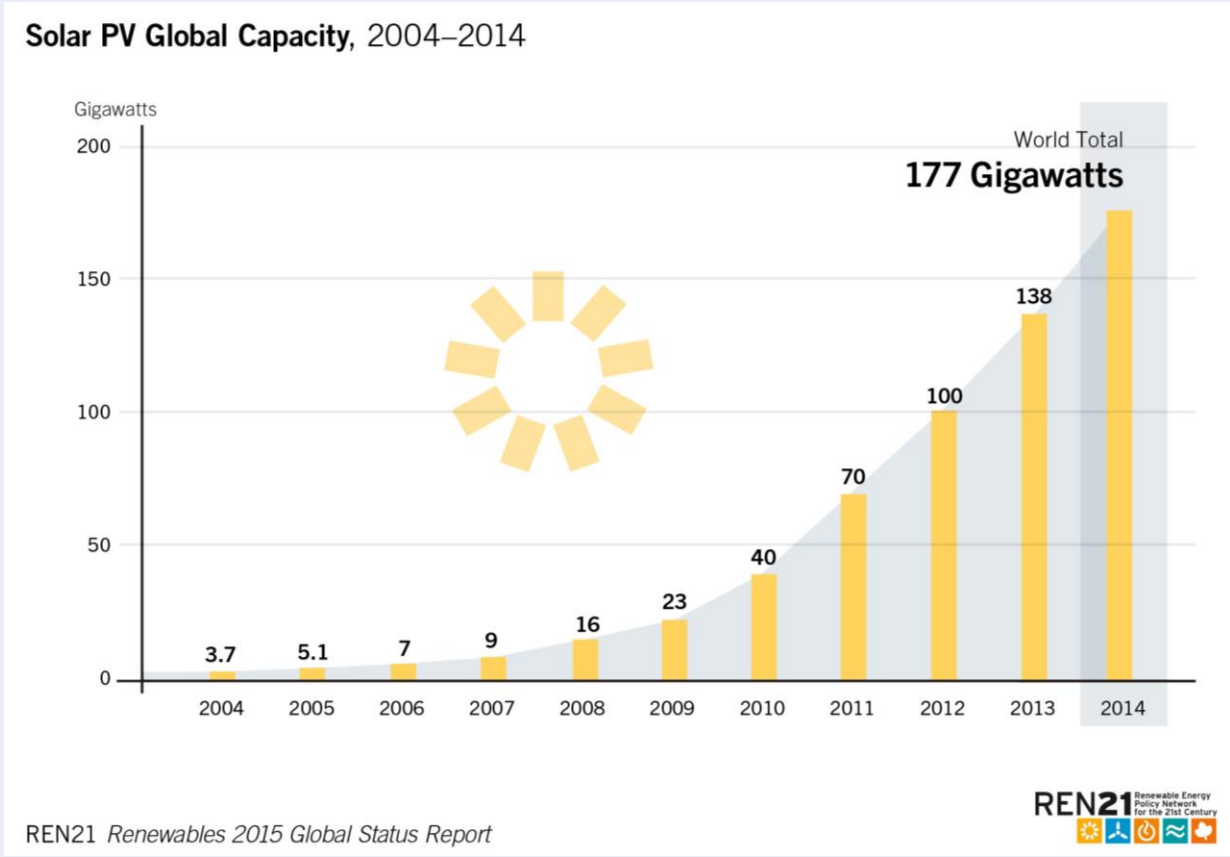
Solar Photovoltaics (PV) – total global capacity

Solar PV:

- **+40 GW** added
- Total capacity: **177 GW**

Top three markets, **China, Japan and the United States**

Asia eclipsed all other markets, accounting for almost **60%** of global additions.

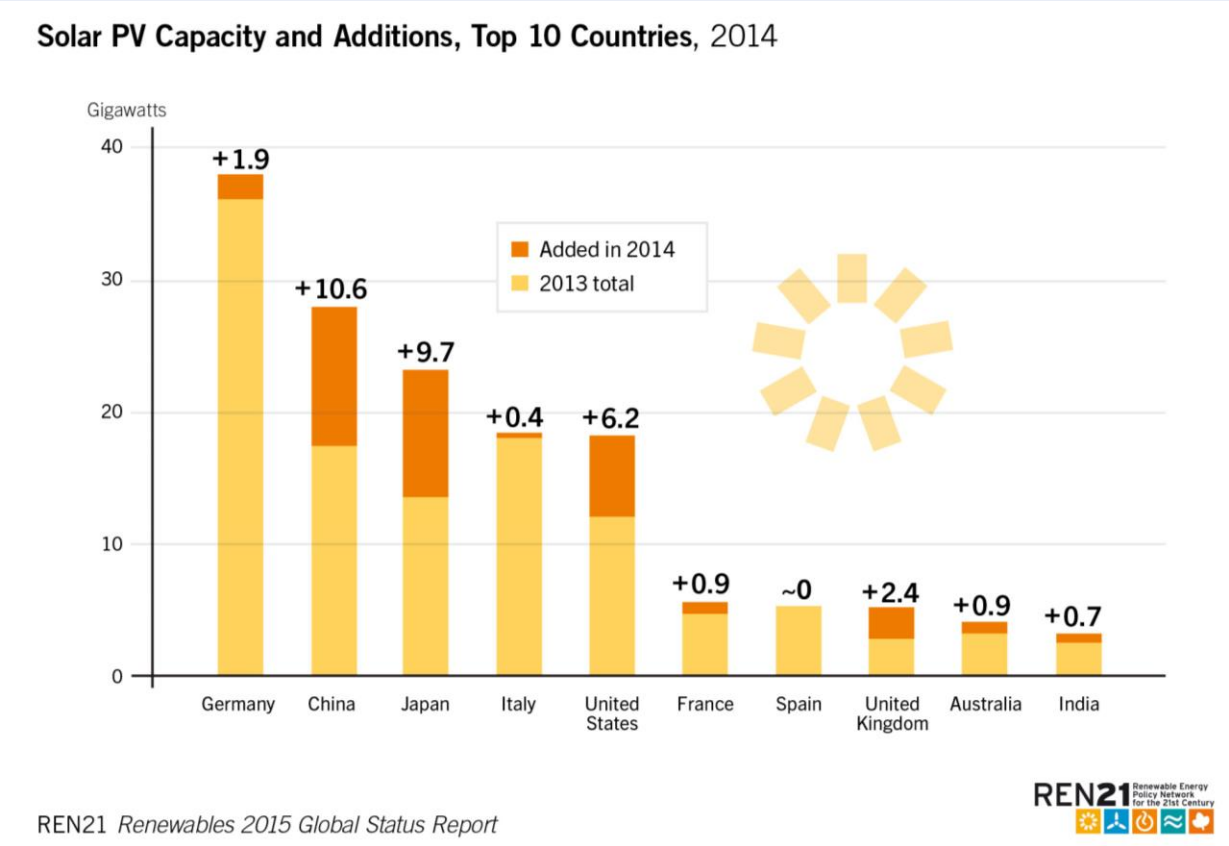


Solar Photovoltaics (PV) – top countries

China accounted for a **third** of global capacity additions, followed by Japan & the U.S

Annual investment/net capcity additions in 2013:

- China
- Japan
- United States
- Germany
- United Kingdom



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Concentrating Solar Power (CSP) – global capacity

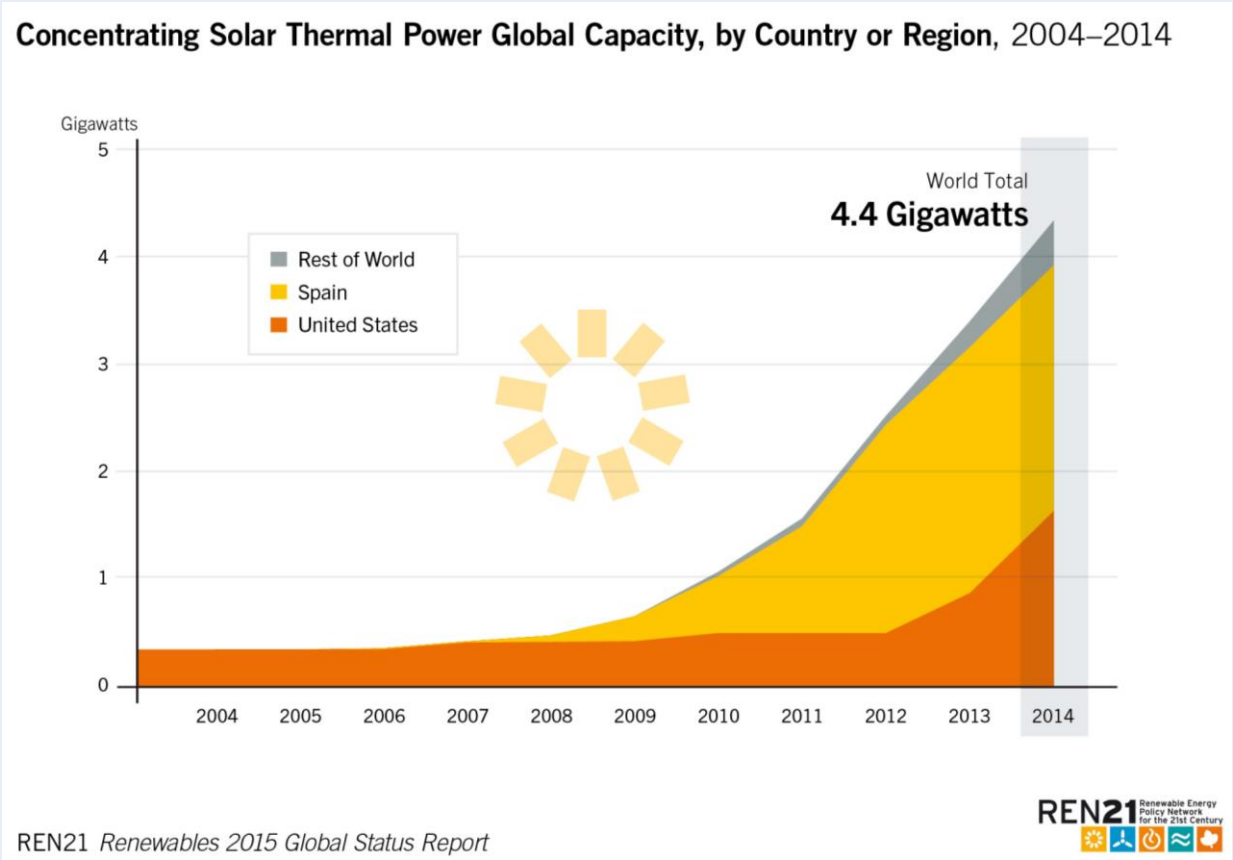
Total CSP capacity: **4.4 GW**

With **+0.9 GW** added, this represents an increase of **27%.**

Trends:

Markets continue to shift to **developing countries**.

Diversification of the CSP technology landscape



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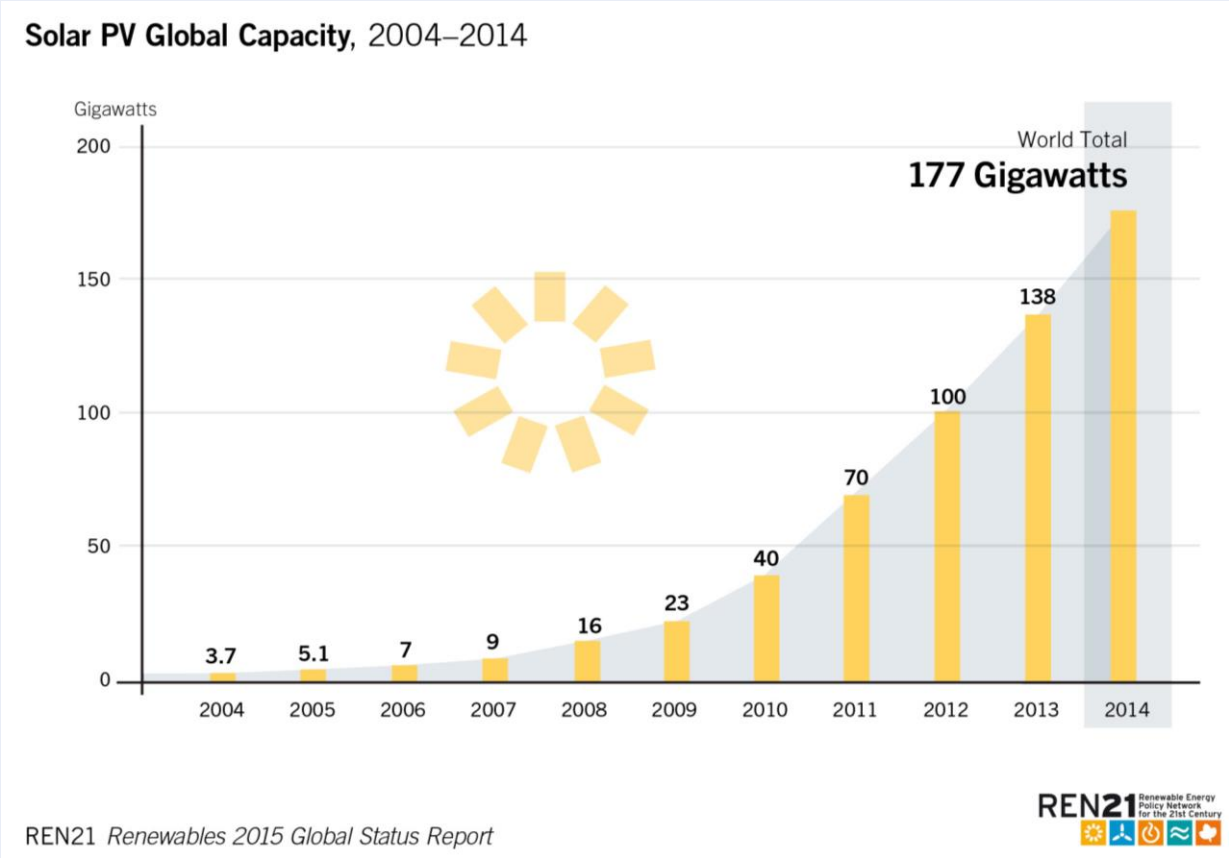
Solar Thermal Heating & Cooling

Cumulative capacity of all collector types in operation rose by
a net **44 GWth** for a year-end total of **374.7 GWth**

2013 Trends:

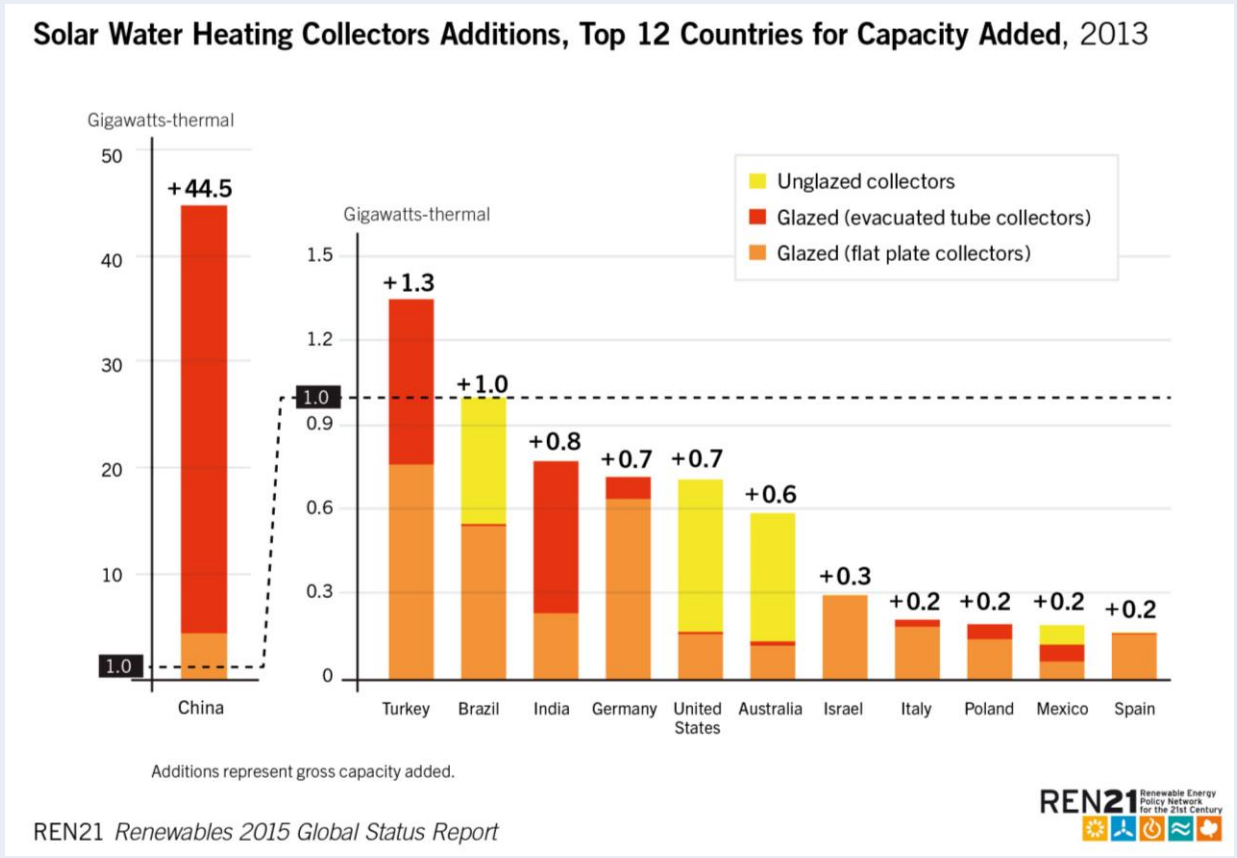
- focus on glazed water collectors
- slowdown in market growth continued in 2014
- China seeing a trend away from market to commercial



Solar Thermal Heating & Cooling – additions

China maintained multi-year lead in the global solar heating industry

China added a capacity of **36.7 GW_{th}** of collectors



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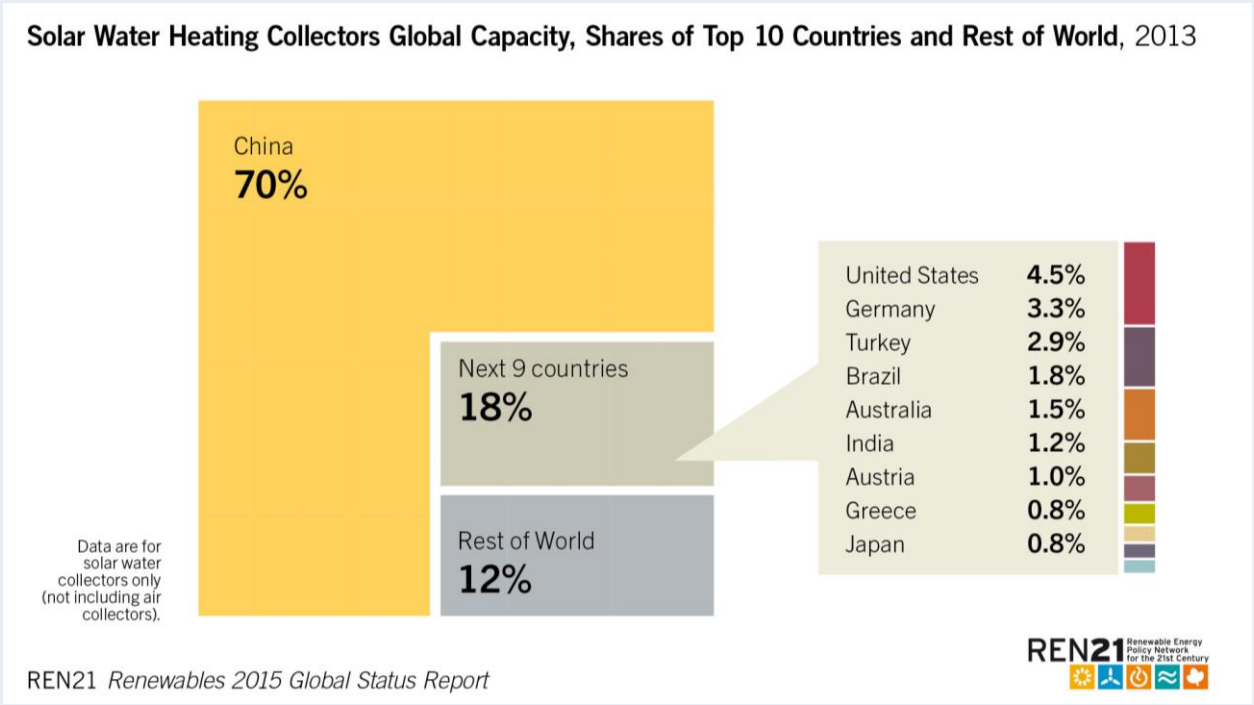
Solar Thermal Heating & Cooling – global capacity

China accounts for nearly **81%** of the global market.

Total solar water heating capacity per capita:

1. Cyprus
2. Austria
3. Israel
4. Barbados
5. Greece



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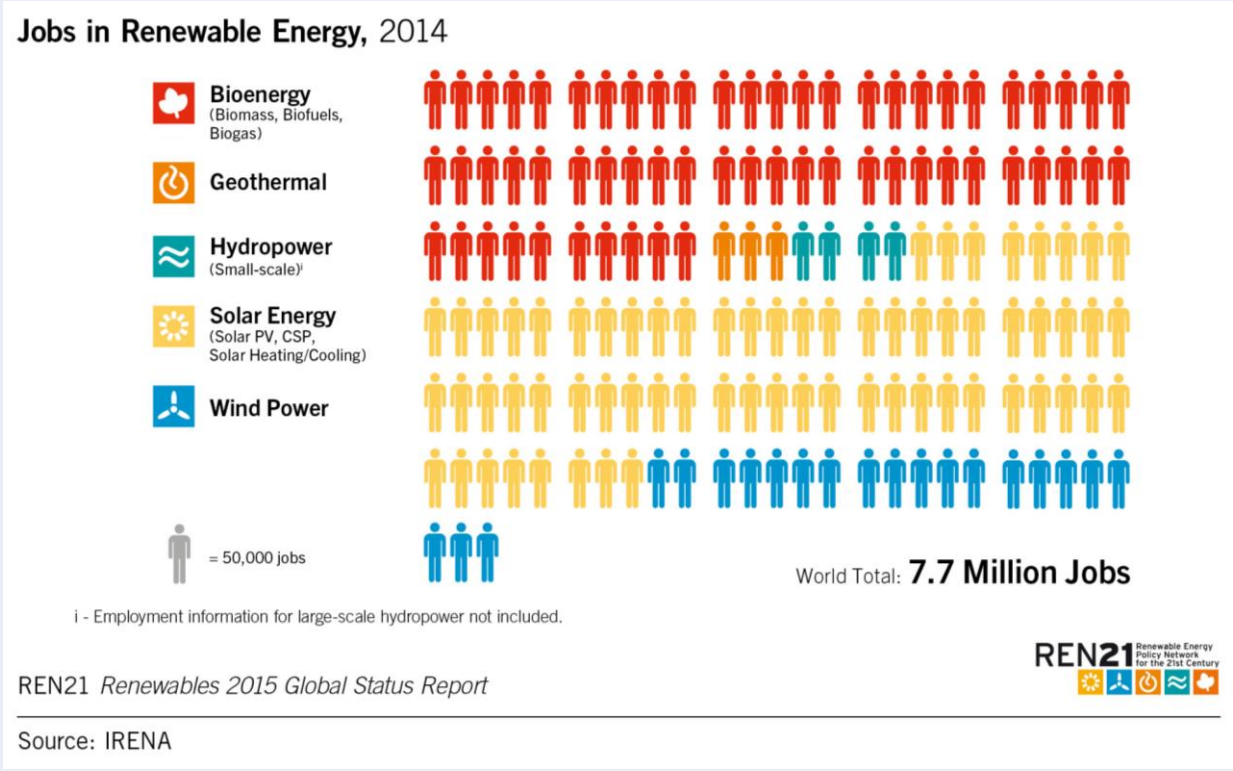
Jobs in Renewable Energy

Global employment continued to increase

An estimated **7.7 million direct or indirect jobs** in the renewable energy industry

Global wind power employment crossed the 1 million jobs threshold in 2014



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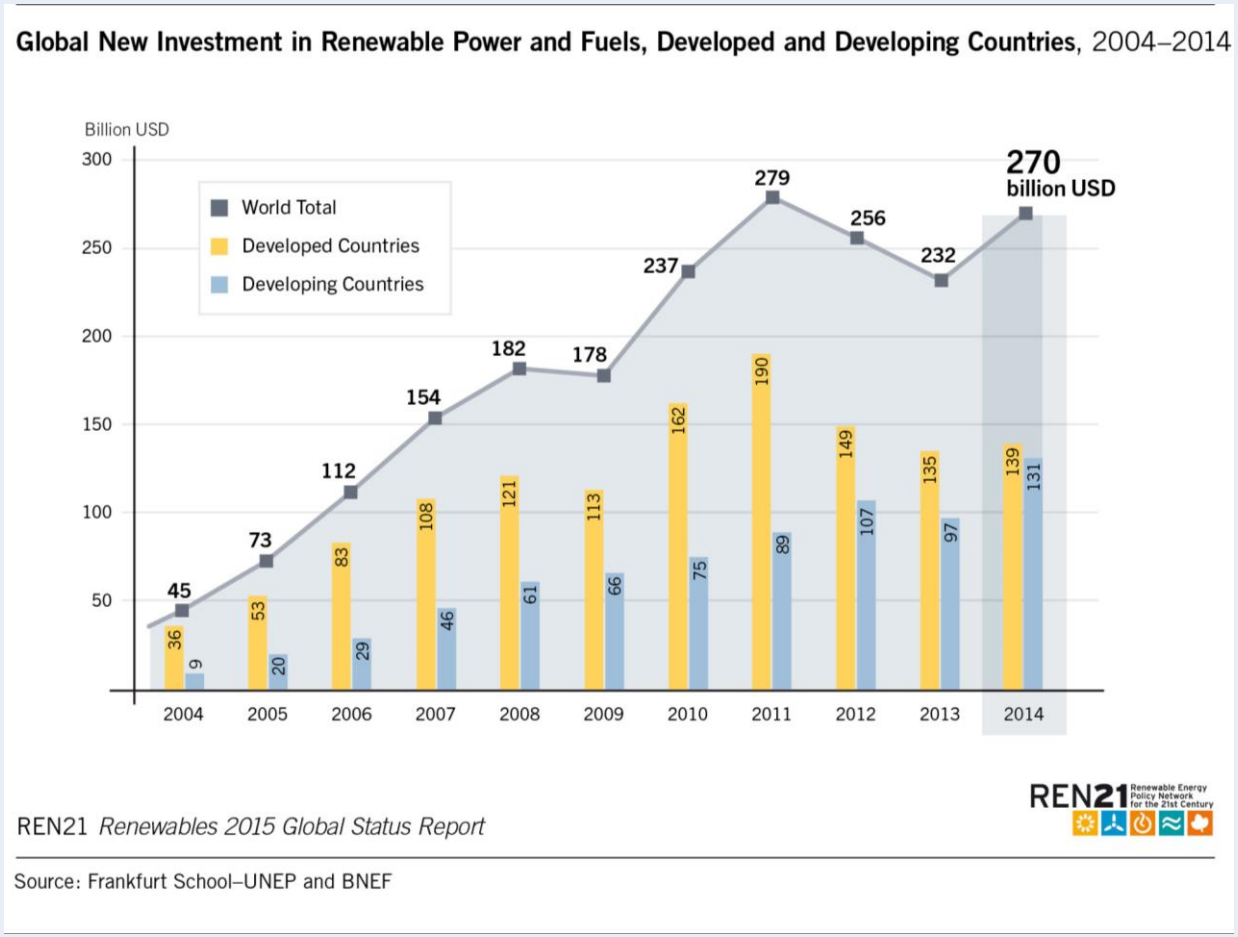
Global Investment in Renewable Energy

Global new investment estimated USD **USD 270.2 billion in 2014**

(including hydropower 301 billion**)**

Reasons for the increase:

- Increase in solar power installations in China and Japan
- Investment in solar power up **25%**
- Record investment in offshore wind projects in Europe



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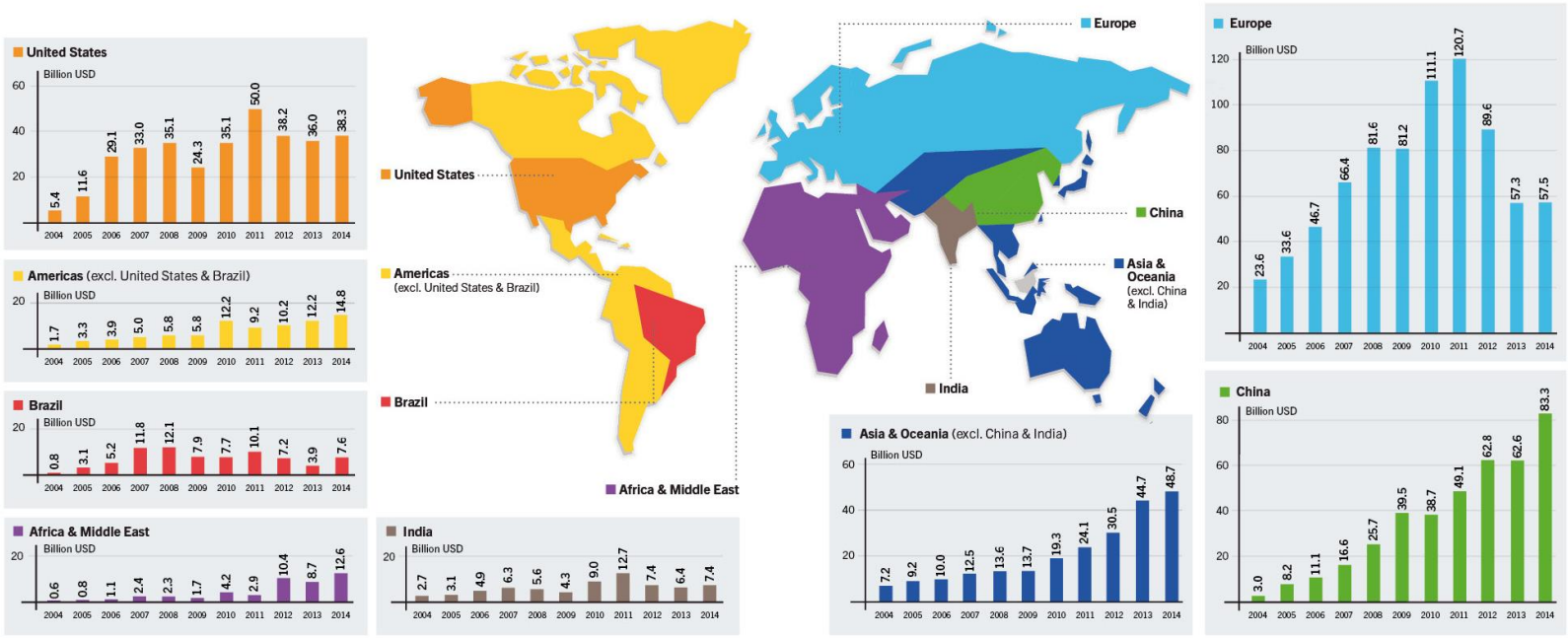
Global New Investment in Renewable Power and Fuels, by Region, 2004–2013



Data include government and corporate R&D.

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Developed Countries: Annual investment in 2014: **USD 138.9 billion** (increase of 3 % compared to 2013)

Developing Countries: annual investment in 2014: **USD 131.3 billion** (increase of 36% compared to 2013)

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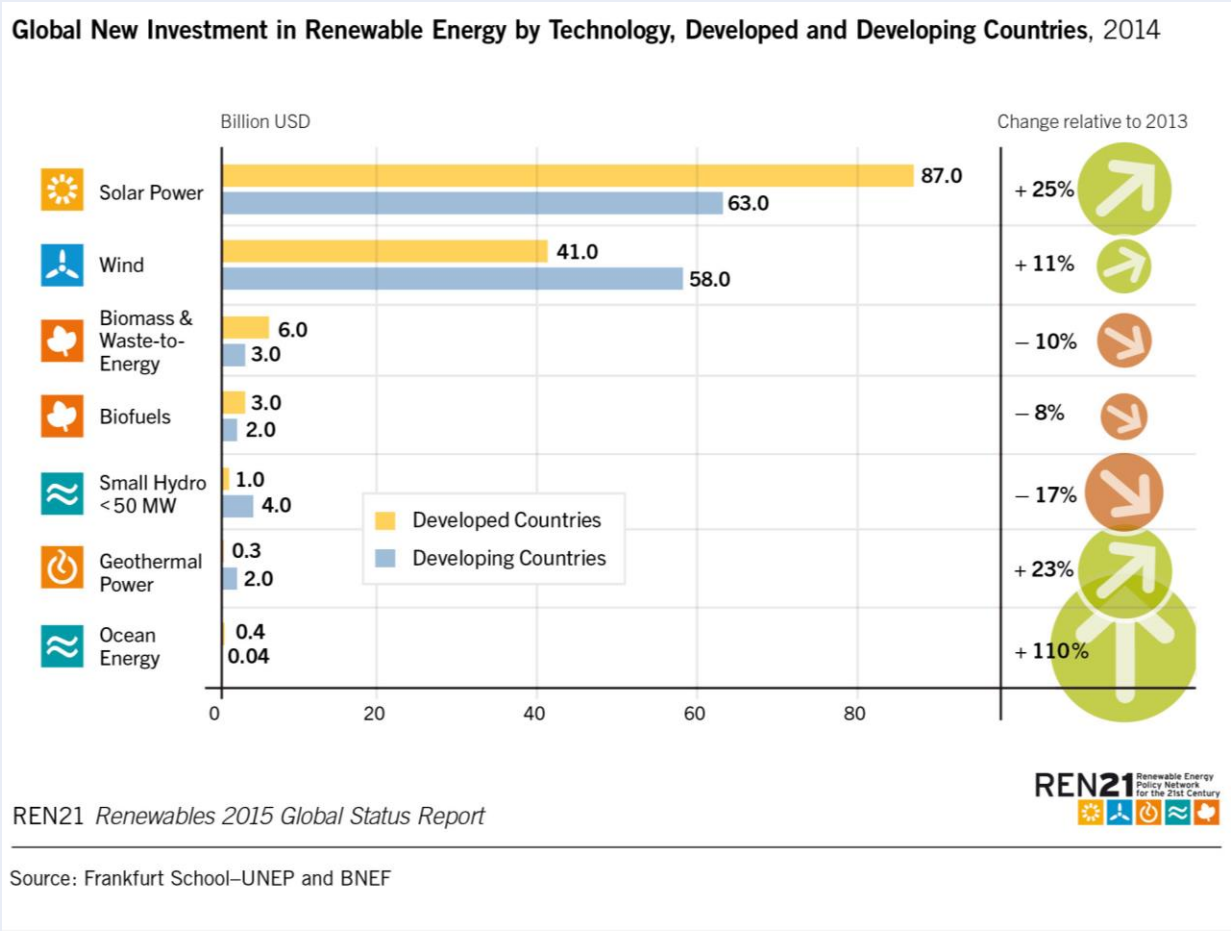
Global Investment in Renewable Energy by Technology

Solar power - leading sector for money committed during 2014, receiving more than **55% (USD 149.6 billion)** of total new investment in renewable power and fuels

Wind power followed with **USD 99.5 billion**



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Renewable Energy Policy Landscape

		START 2004[1]	2013	2014
POLICIES				
Countries with policy targets	#	48	144	**164**
States/provinces/countries with feed-in policies	#	34	106	**108**
States/provinces/countries with RPS/quota policies	#	11	99	**99**
Countries with tendering/ public competitive bidding[5]	#	n/a	55	**60**
Countries with heat obligation/mandate	#	n/a	19	**21**
States/provinces/countries with biofuels mandates[6]	#	10	63	**64**

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At least **164 countries** had **renewable energy targets**.

At least **145 countries** had **renewable energy policies** in place.

Most policies focus on power: mainly feed-in-tariffs and renewable portfolio standards.

Recent trends: Merging of components from different policy mechanisms.

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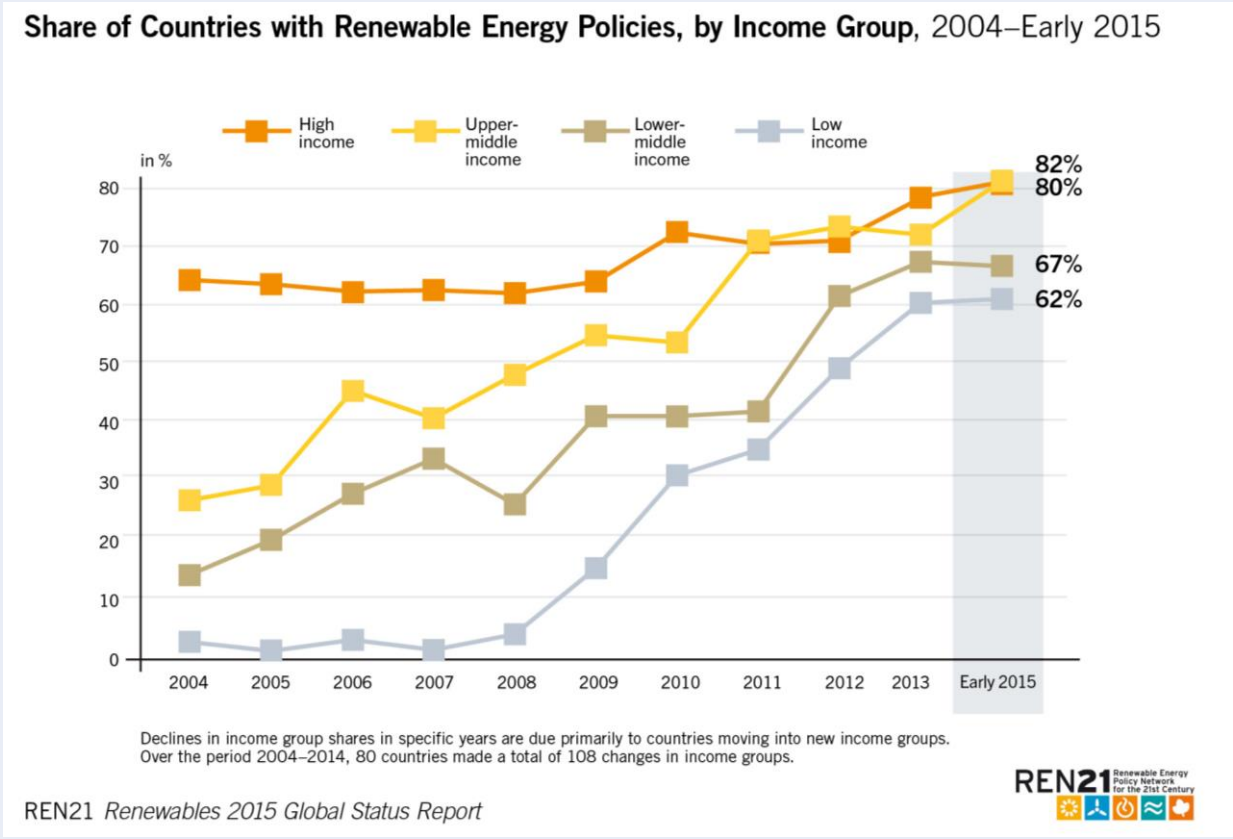
Evolution of Renewable Energy Policy Over Time (2004 – 2014)

At least **164** countries had **renewable energy targets.**

At least **145** countries had **renewable energy support policies** in place.

Low-income, lower-middle income as well as upper-middle income countries feature fastest policy uptake during the last decade.



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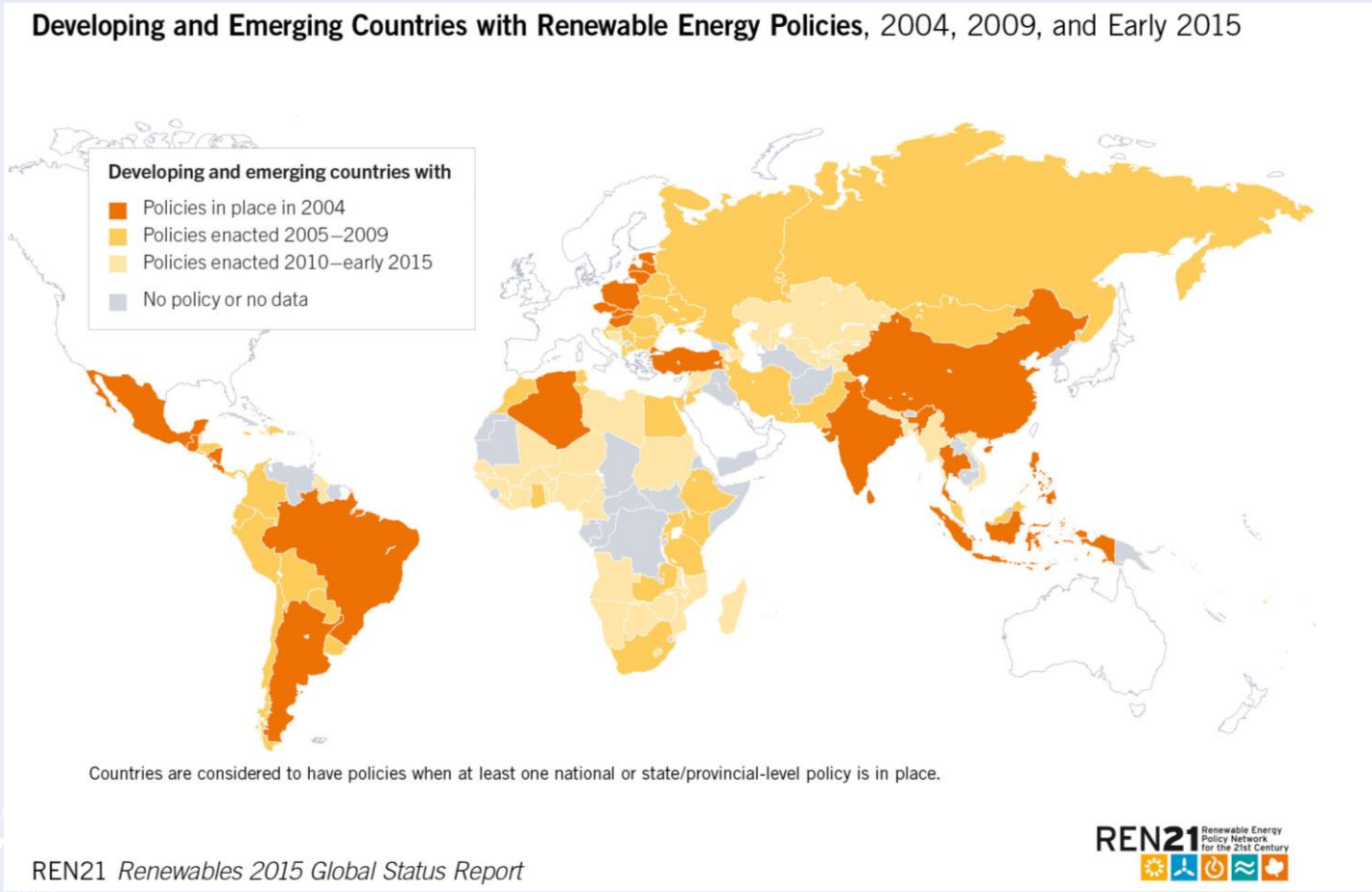
Renewable Energy Policy Landscape



With prices of renewable energy technologies coming down, there is a **steep policy uptake** in developing countries.

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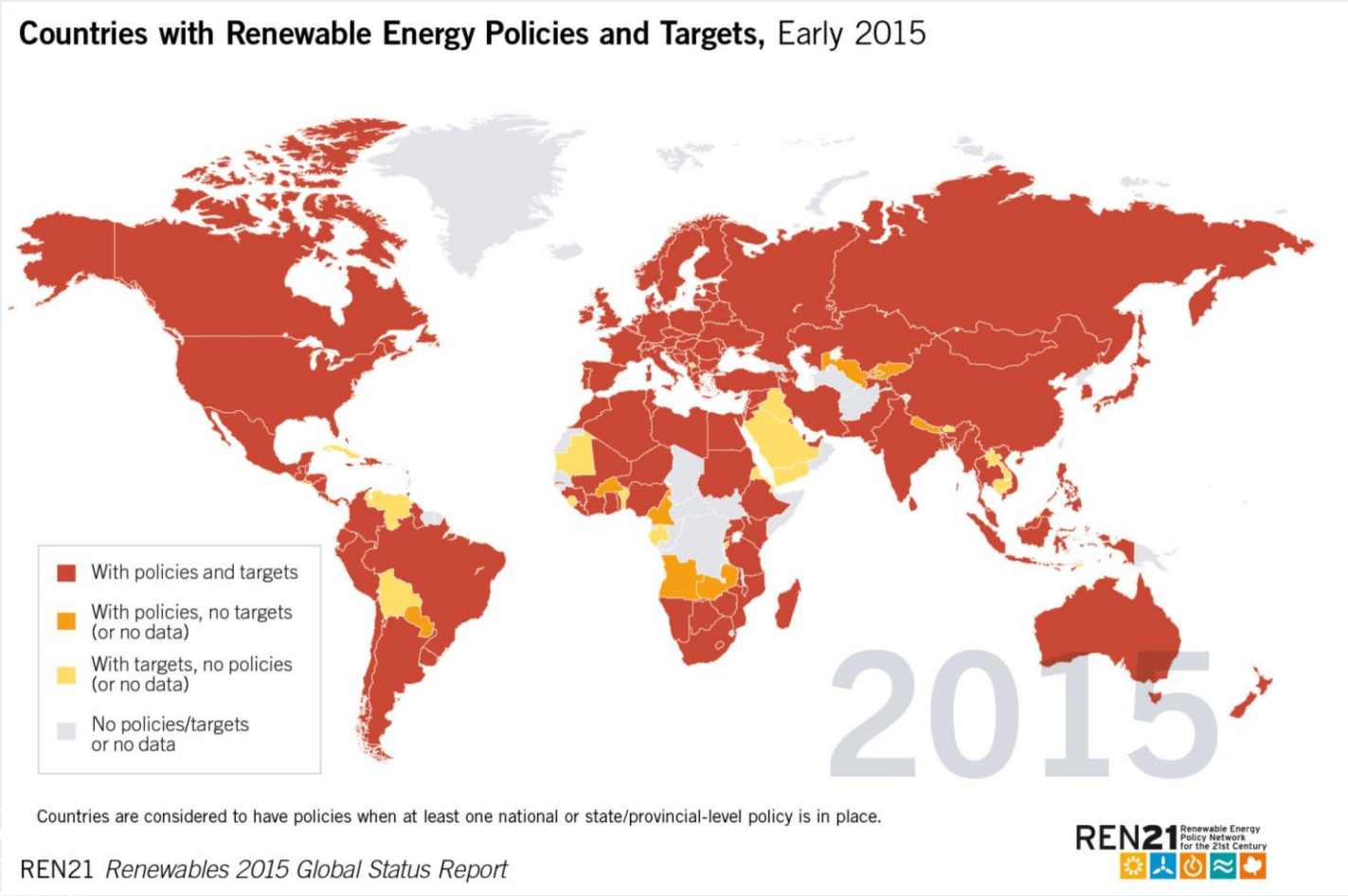
Renewable Energy Policy Landscape



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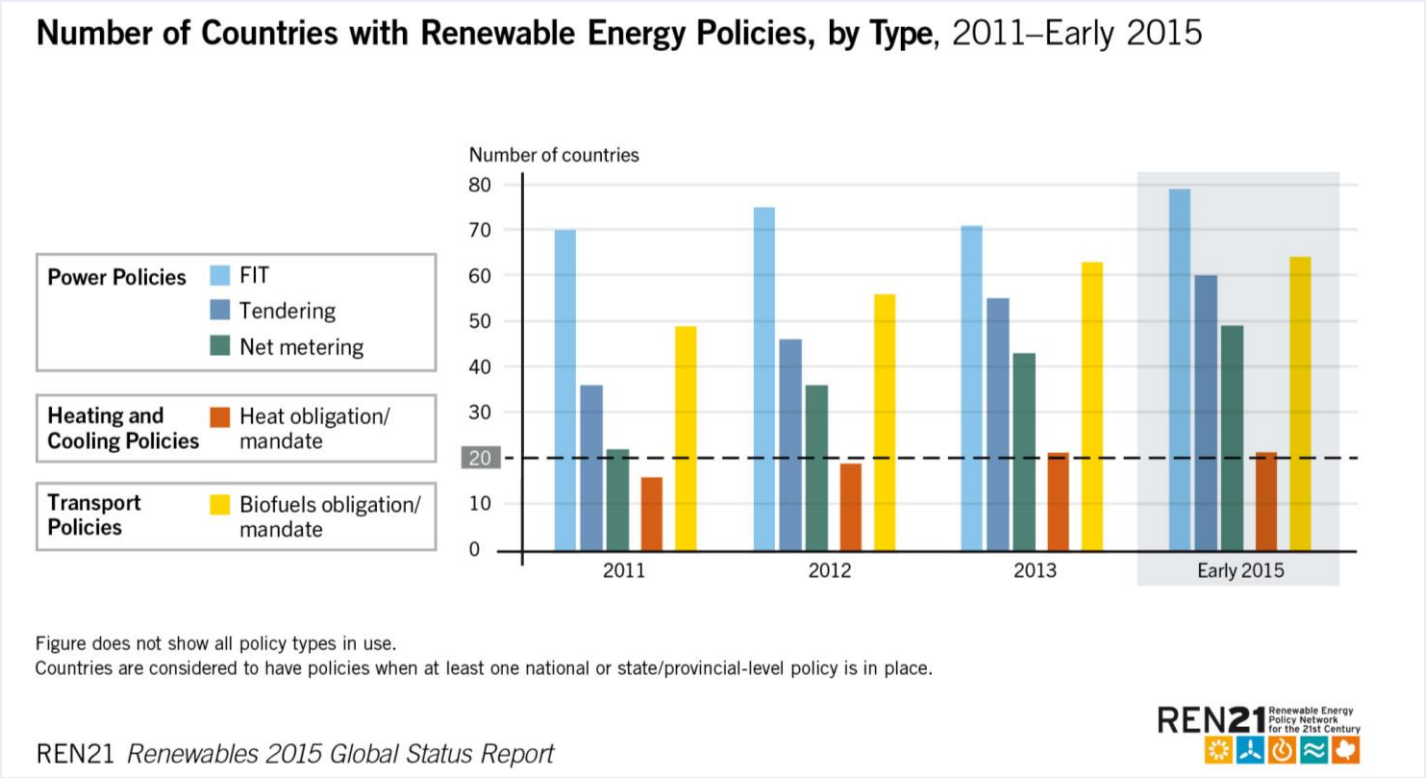
Renewable Energy Policy Landscape



Power sector: the main focus of policies over the last years

FITs were the most popular type of policy

Net metering or net billing policies were in force in 48 countries as of early 2015, increase of approx. 220% . *(2010: 15 countries, 2015: 48 countries)*

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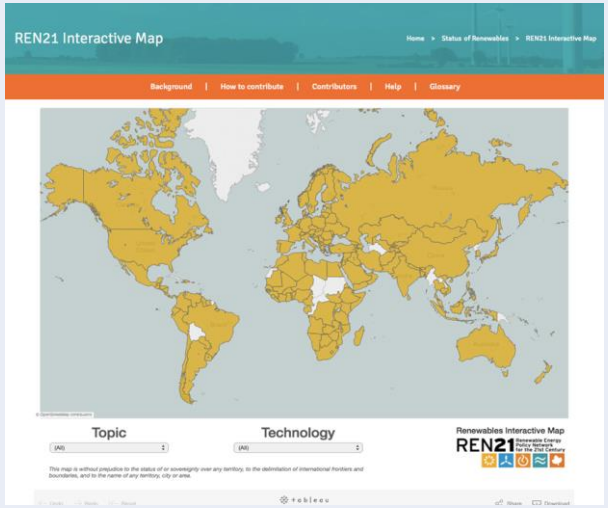
New REN21

Renewables Interactive Map



Featuring information from REN21's latest reports, including **GSR2015.**

Data on the Map is **constantly being updated**, and represents the most up-to-date information on renewable energy.

www.ren21.net/map

UNECE Renewable Energy Status Report

UNECE

Regional status report focusing on **Central Asia**, Caucasus, Eastern Europe.

Data collection ongoing

Share the status of your region with the world

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Conclusions

Economic and CO2 growth has " decoupled" – marking a record year for renewables.

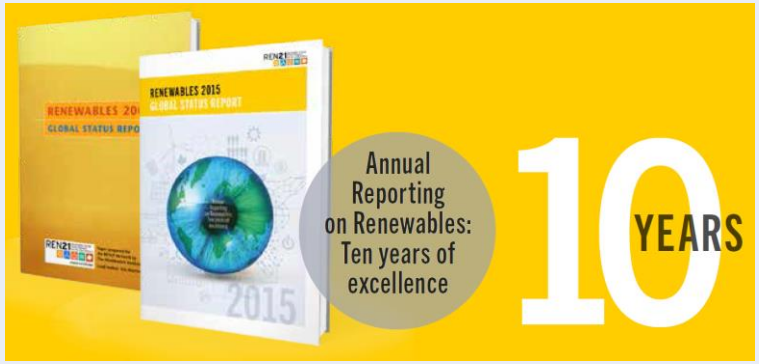
The past decade has set the wheels in motion for a global transition to renewables, but a concerted and sustained effort is needed to achieve it:

- Establish and strengthen institutional, financial, legal, and regulatory support mechanisms
- Long-term and stable policy frameworks, which can adapt to changing environment, to sustain and increase investment levels
- Greater attention to the heating and cooling and the transport sector and "energy system thinking"
- Improve information on distributed renewable energy markets in developing countries and improve access to up-front finance

See you at SAIREC 2015

Capetown, 4-7 october 2015

SAIREC 2015
South African International Renewable Energy Conference



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Thank You!

Martin Hullin
Project Manager
REN21

martin.hullin@ren21.net

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