

RENEWABLES 2013

GLOBAL STATUS REPORT



Global Renewable Energy Status

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CESC Webinar North America
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2013

www.ren21.net

About REN21

A Multi-stakeholder Policy Network grouping

Science & Academia:

IIASA, ISES, SANEDI, TERI

NGOs:

CURES, GFSE,
Greenpeace, ICLEI, ISEP,
JREF, WCRE, WRI, WWF

Industry Associations:

ACORE, ARE, CEC, CREIA,
EREC, GWEC, IGA, IHA,
WBA, WWEA



International Organisations:

ADB, EC, GEF, IEA, IRENA,
UNDP, UNEP, UNIDO,
World Bank

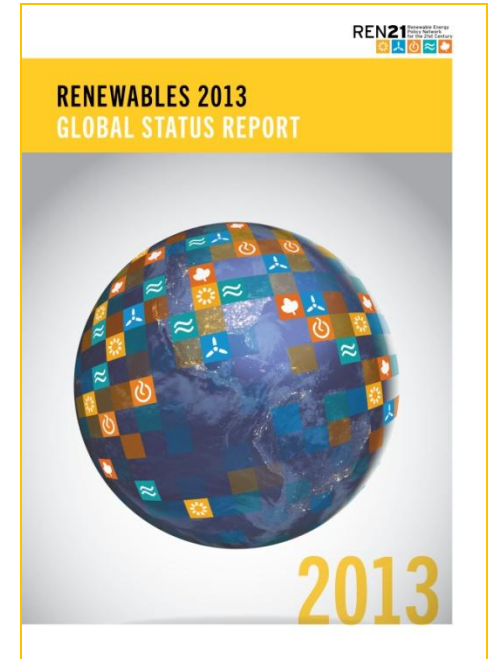
National Governments:

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

REN21 Renewables Global Status Report



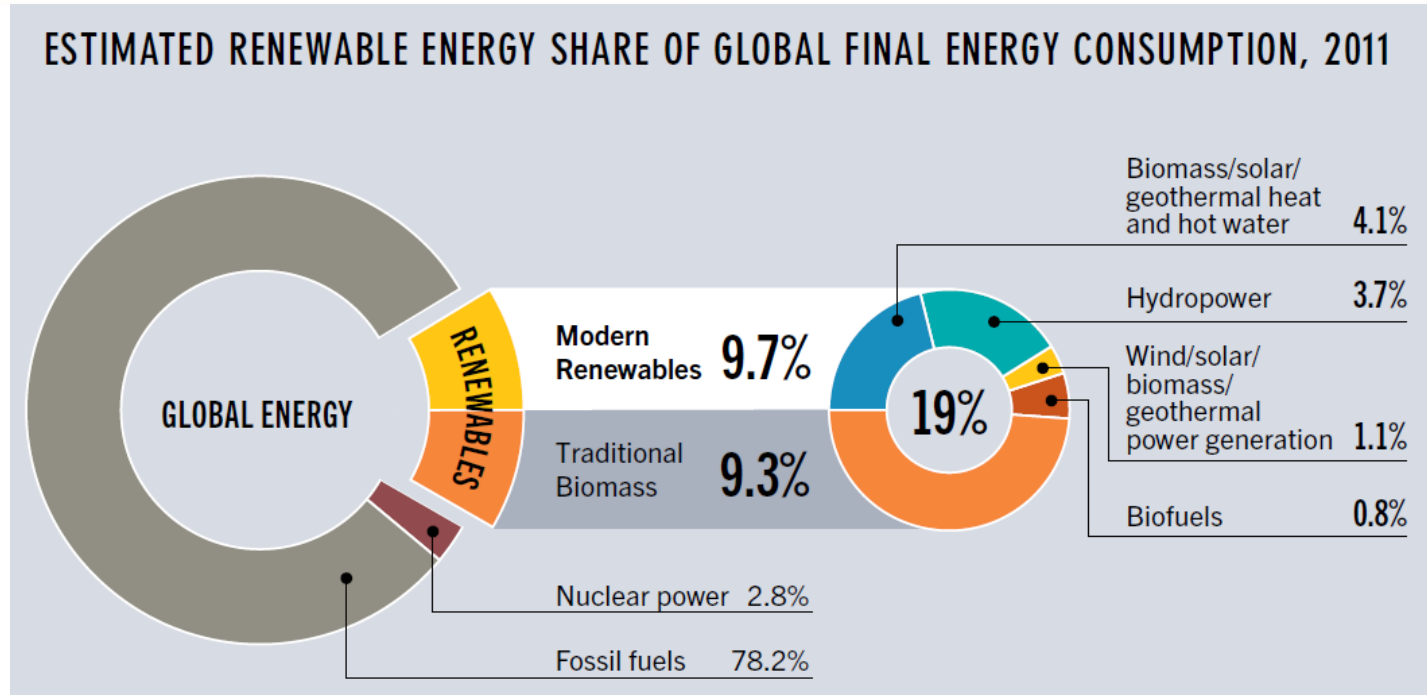
- Launched along with UNEP's Global trends in RE investment
- Team of over 500 contributors, researchers & reviewers worldwide
- Contributor for North America: Worldwatch Institute
- The report features:
 - Global Market Overview
 - Industry Trends
 - Policy Landscape
 - Rural Renewable Energy
- All renewable energy technologies
- Sectors: power, heating/cooling, transport
- New elements in 2013:
 - Feature on system transformation



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Renewable Energy in the World



Source: REN21 Renewables 2013 Global Status Report

- RE supplied an estimated **19%** of **global final energy consumption** in 2011.

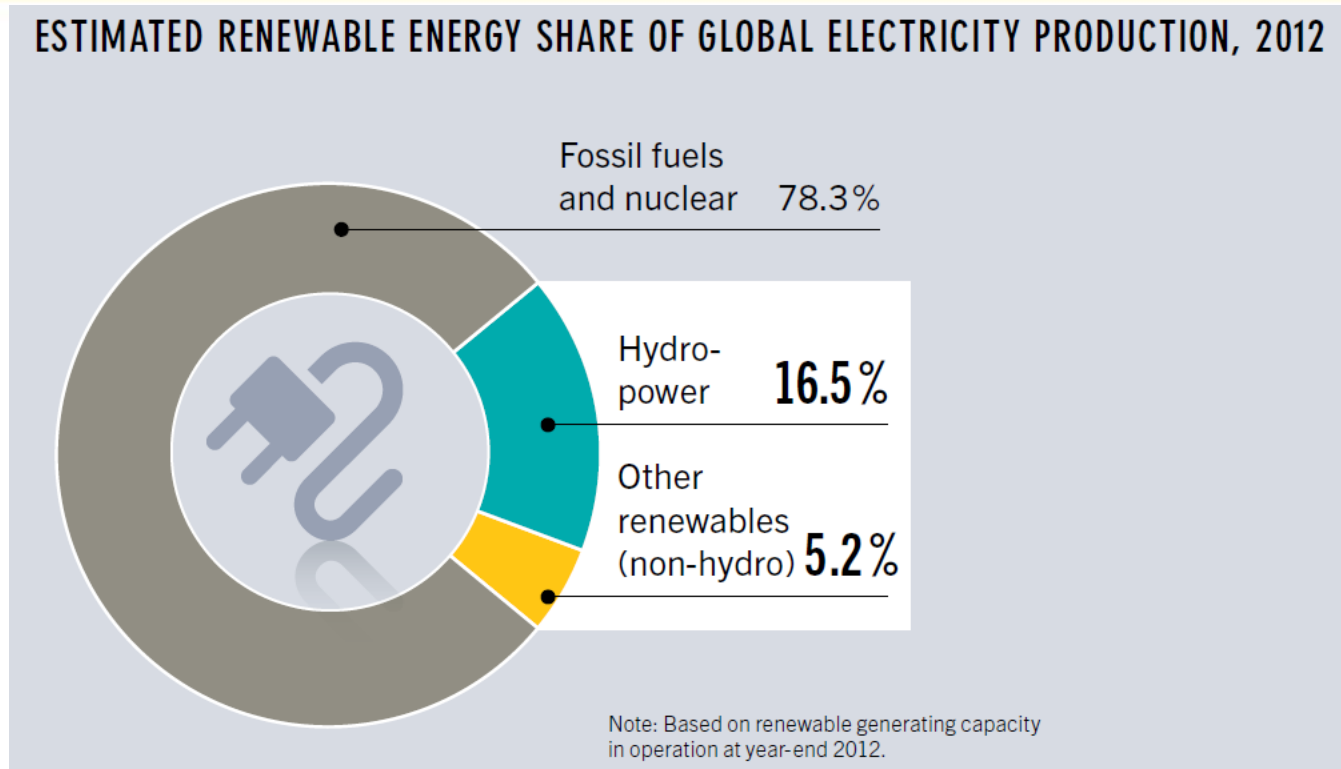
Top 5 RE champions

ANNUAL INVESTMENT/ADDITIONS/PRODUCTION IN 2012							
	New capacity investment	Hydropower capacity	Solar PV capacity	Wind power capacity	Solar water collector (heating) capacity ¹	Biodiesel production	Ethanol production
1	China	China	Germany	United States	China	United States	United States
2	United States	Turkey	Italy	China	Turkey	Argentina	Brazil
3	Germany	Brazil/Vietnam	China	Germany	Germany	Germany/Brazil	China
4	Japan	Russia	United States	India	India	France	Canada
5	Italy	Canada	Japan	United Kingdom	Brazil	Indonesia	France

TOTAL CAPACITY AS OF END-2012							
	Renewable power (incl. hydro)	Renewable power (not incl. hydro)	Renewable power per capita (not incl. hydro) ²	Bio-power	Geothermal power	Hydropower	Concentrating solar thermal power (CSP)
1	China	China	Germany	United States	United States	China	Spain
2	United States	United States	Sweden	Brazil	Philippines	Brazil	United States
3	Brazil	Germany	Spain	China	Indonesia	United States	Algeria
4	Canada	Spain	Italy	Germany	Mexico	Canada	Egypt/Morocco
5	Germany	Italy	Canada	Sweden	Italy	Russia	Australia

Source: REN21 Renewables 2013 Global Status Report

Global Market Overview – Power Markets



Source: REN21 Renewables 2013 Global Status Report

- Renewable energy comprises more than **26%** of **global power generation capacity**.
- United States, renewables accounted for **12.2%** of **net electricity generation**.

Global Market Overview

■ Heating and Cooling

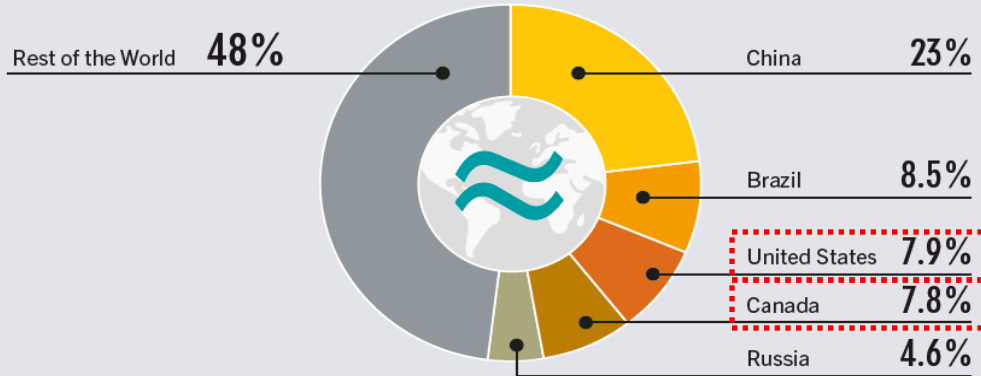
- Transition towards the use of larger systems, increasing use of CHP for district schemes and industrial purposes.
- Solar collectors are used in more than 56 countries for water (and increasingly for space) heating.

■ Transport

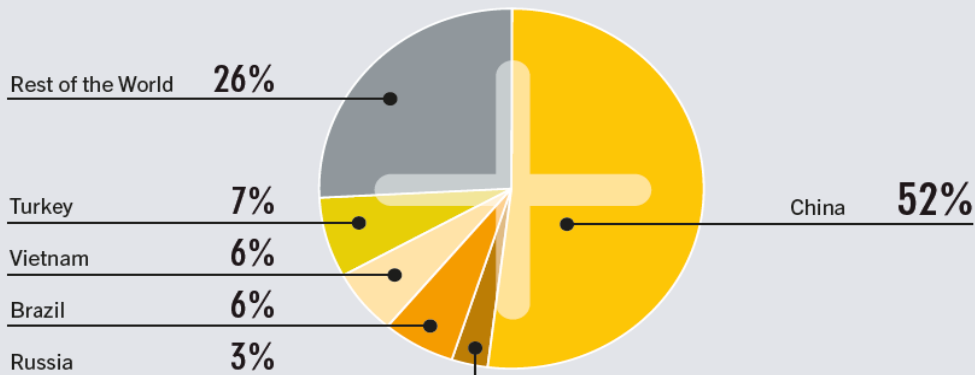
- RE used in the form of liquid and gaseous biofuels, electricity and renewably produced hydrogen for fuel cell vehicles.
- Liquid biofuels provided about 3.4% of global road transport fuels in 2012.
- Electric transport is being tied directly with renewable energy through policy directives particularly at local level.

Hydropower

HYDROPOWER GLOBAL CAPACITY, SHARES OF TOP FIVE COUNTRIES, 2012



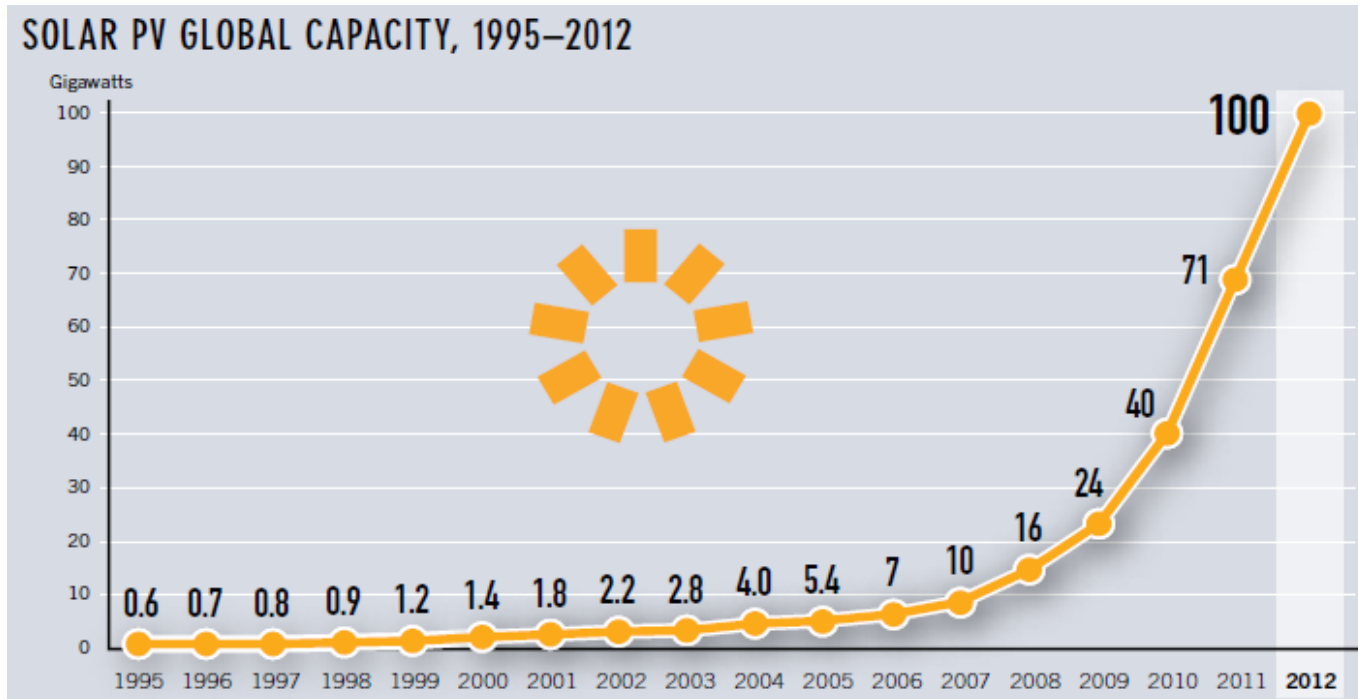
HYDROPOWER GLOBAL CAPACITY ADDITIONS, SHARES OF TOP FIVE COUNTRIES, 2012



Source: REN21 Renewables 2013 Global Status Report

- **30GW of new hydropower** was added in 2012, increasing capacity by nearly 3%, bringing installed capacity to 990GW.
- Globally hydropower generated 3,700TWh of electricity in 2012. Canada alone produced 376 TWh followed by United States (277 TWh).
- Growing prominence of joint-venture business models involving local and international partnerships as the size of the projects increase.

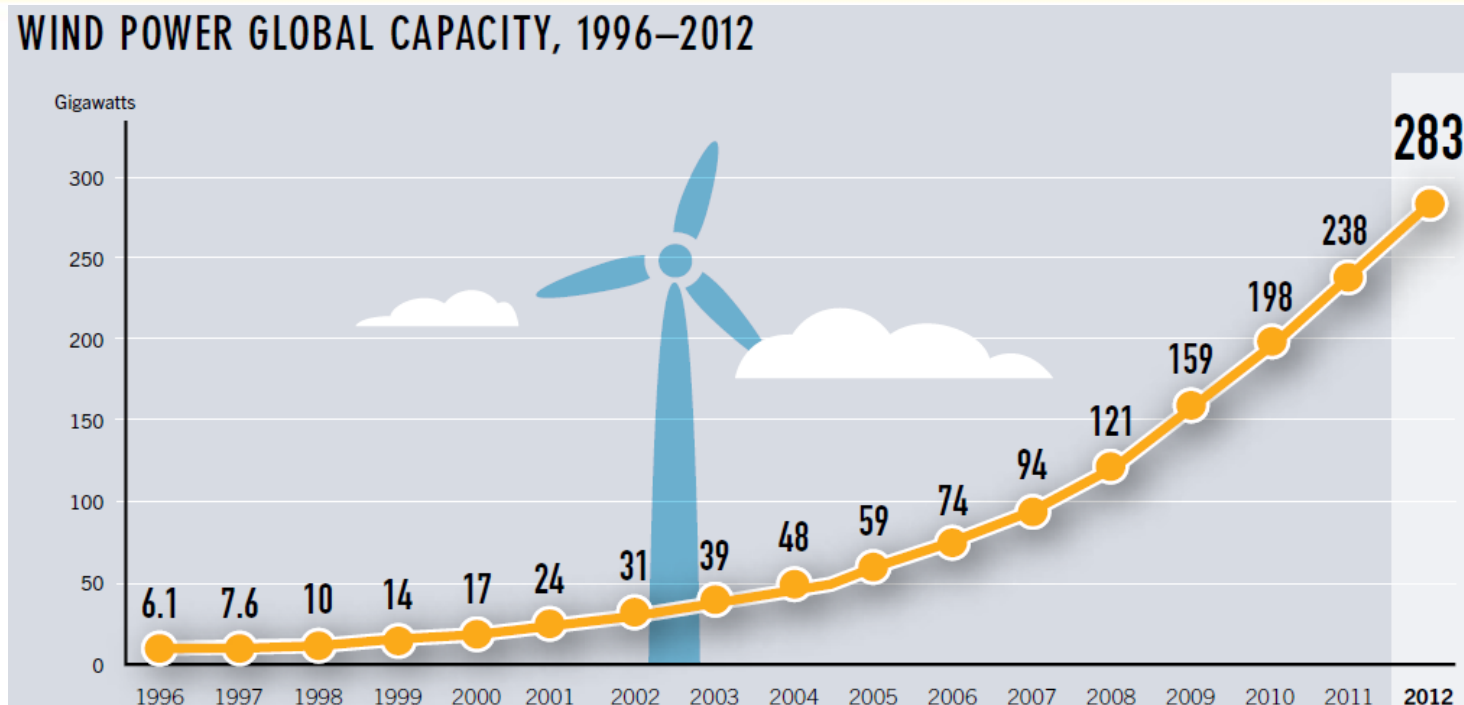
Solar Photovoltaics (PV)



Source: REN21 Renewables 2013 Global Status Report

- Total global operating capacity of **solar PV reached the 100 GW milestone.**
- Prices of solar PV modules fell by more than 30 % in 2012.
- **United States has the world largest PV facility, 250 MW thin-film plant in Arizona.**

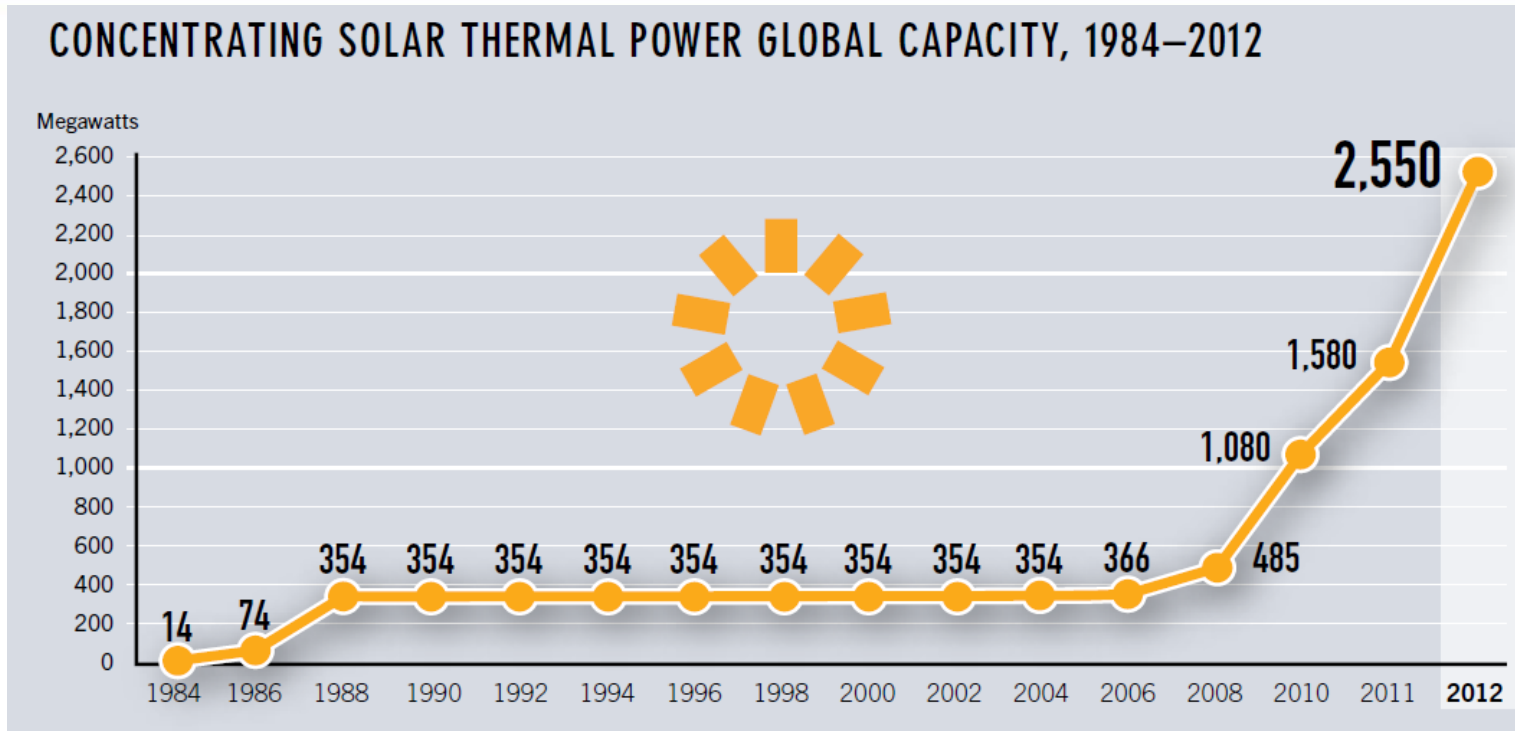
Wind Power



Source: REN21 Renewables 2013 Global Status Report

- Almost 45GW of wind power capacity came in operation in 2012, increasing global wind capacity 19% to 283GW. **North America added 14.1 GW.**
- Annual growth rate of cumulative wind power capacity between 2007-2012 averaged 25%.

Concentrating Solar Thermal Power (CSP)

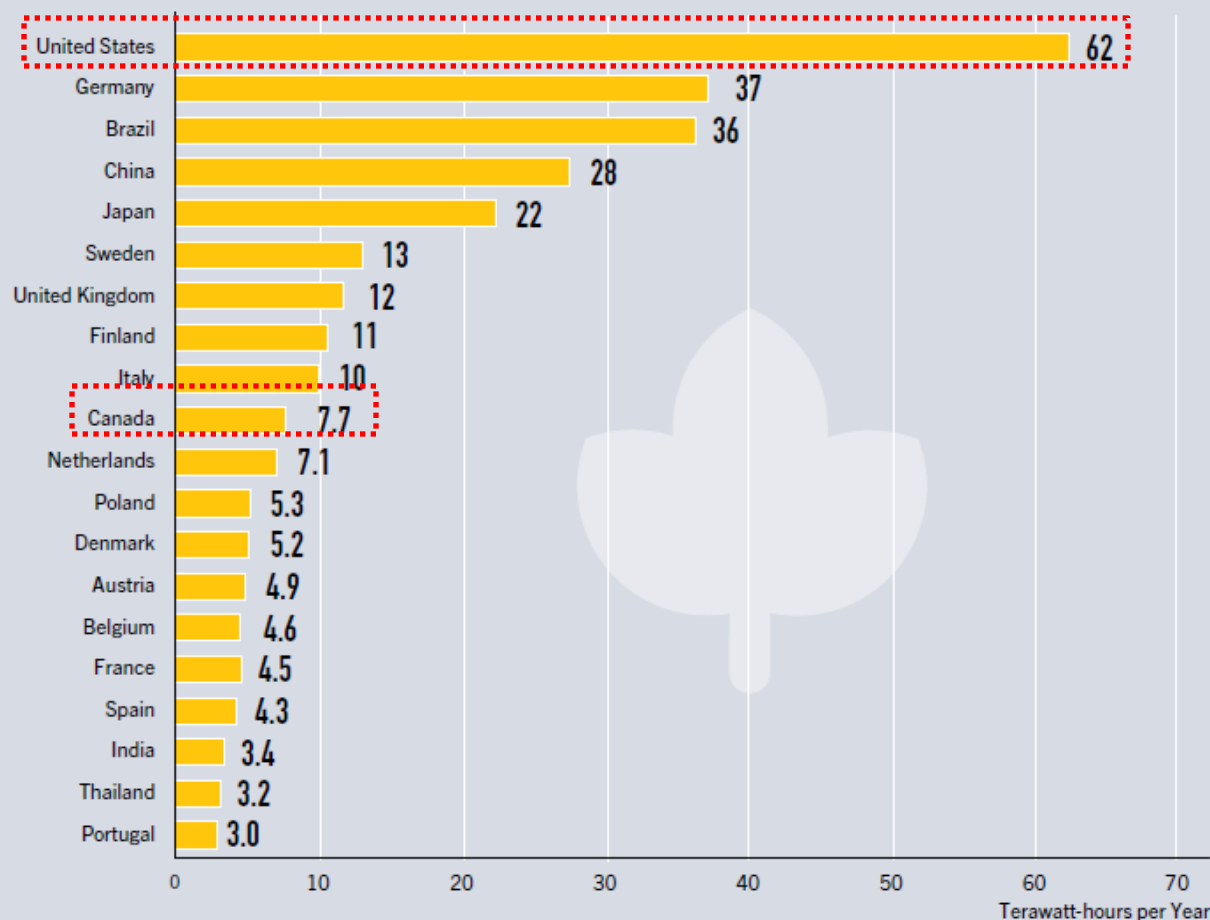


Source: REN21 Renewables 2013 Global Status Report

- Total global **CSP capacity** increased more than **60%** to about **2,550 MW**.
- The United States remained the second largest market, ending the year with 507 MW in operation.

Bioenergy

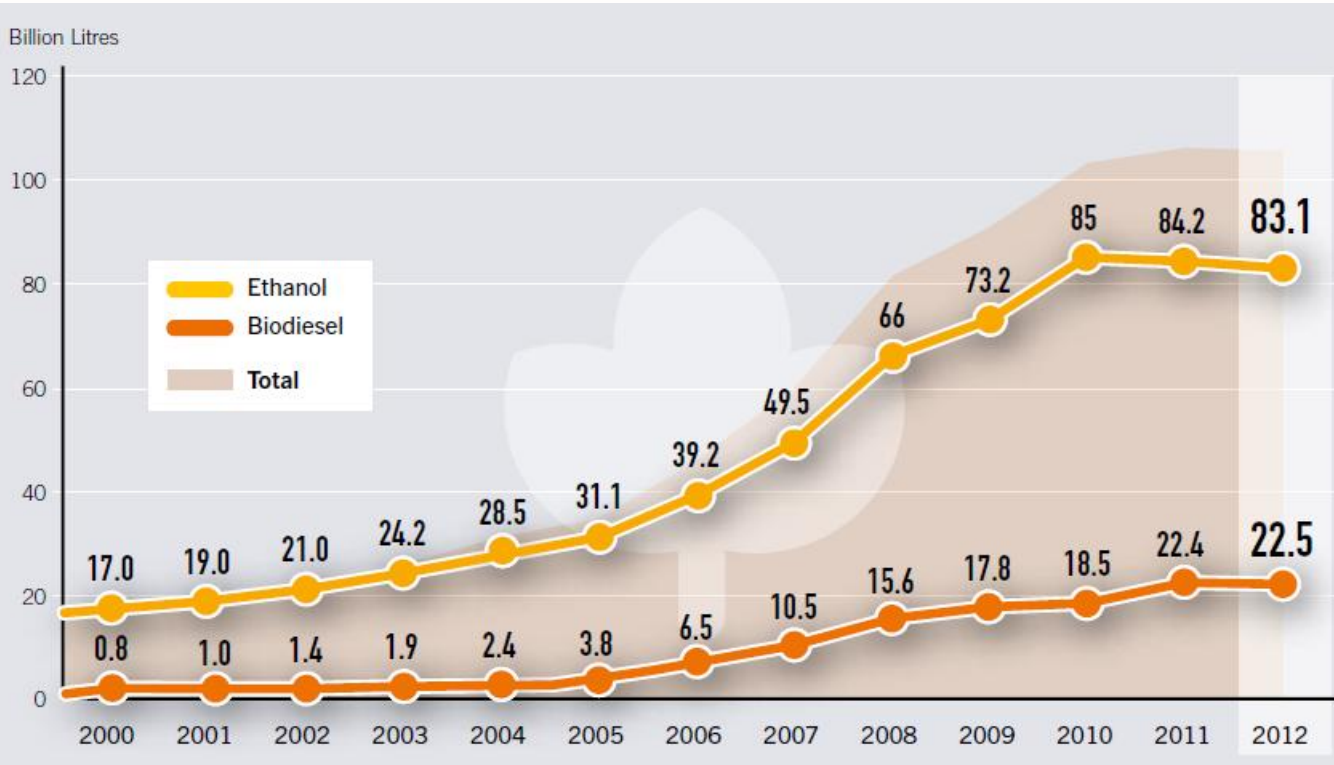
BIOPOWER GENERATION OF TOP 20 COUNTRIES, ANNUAL AVERAGE 2010–2012



Source: REN21 Renewables 2013 Global Status Report

- **Use of biomass** in the heat, power and transport sectors **increased 2–3% to approximately 55 EJ.**
- **Bio-power capacity** was up 12% to nearly 83 GW. In the United States, 543 MW came on line in 2012, bringing total capacity to 15 GW.
- Around 350 TWh of electricity was generated world wide (bio-power).

Ethanol and Biodiesel



Source: REN21 Renewables 2013 Global Status Report

- **Liquid biofuels** provided about **3.4% of global road transport fuels**, with small but increasing use by the aviation and marine sectors.
- **Global production of fuel ethanol was down about 1.3% by volume from 2011**, while **biodiesel production increased slightly**.

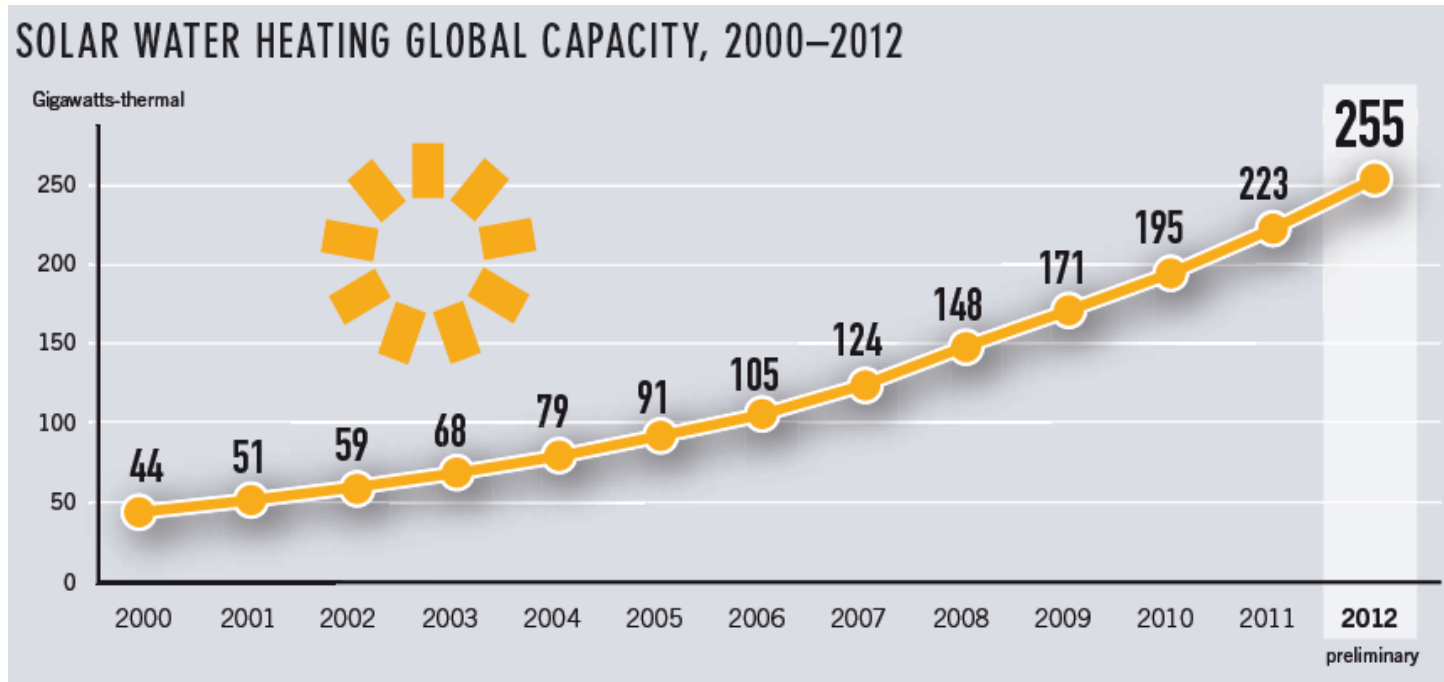
- **United States** accounted for 61% (63% in 2011) of **global ethanol production** and is the **world's leading biodiesel producer**.

Geothermal Energy



- 233 TWh (805PJ) of district heat and electricity was provided by geothermal resources in 2012.
- The use of ground-source heat pumps is growing fast and reached an estimated 50 GWth of capacity in 2012.
- Geothermal electric generating capacity grew by an estimated 300 MW during 2012, bringing the global total to 11.7 GW.
- The United States added 147 MW of geothermal generating capacity in 2012, increasing total capacity by 5% to 3.4 GW.

Solar Thermal Heating and Cooling



Source: REN21 Renewables 2013 Global Status Report

- Global solar thermal capacity reached an estimated of 255 GW_{th} for glazed water collectors.
- Growing trend to use solar resources to generate process heat for industry.

- RE industry saw **continued growth** in manufacturing, sales and installation.
- **Uncertain policy environments** and declining policy support affected investment climates in a number of established markets, slowing momentum in Europe, China, and India.
- Solar PV and onshore wind power experienced **continued price reductions** due to economies of scale and technology advances, and a production surplus of modules and turbines.
- Trends:
 - Industry consolidation.
 - Renewable energy is now more affordable in both developed and developing countries.
 - Markets, manufacturing, and investment shifted increasingly towards developing countries.

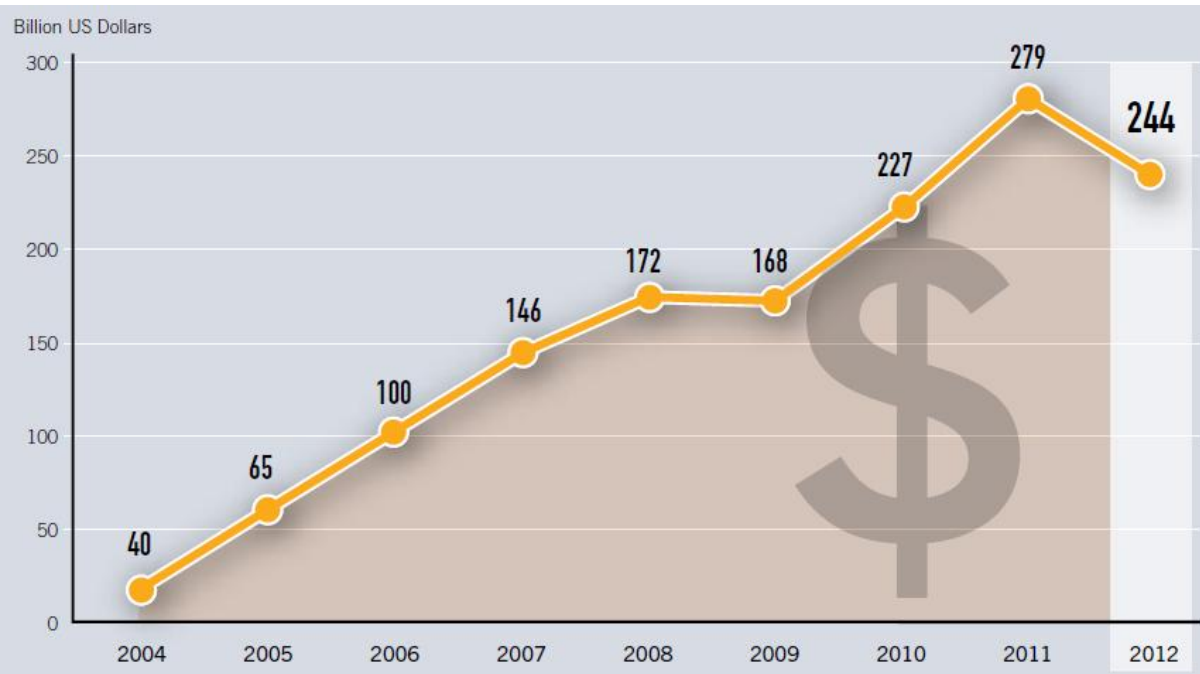
Renewable Energy and Jobs



Data Source: IRENA , Renewable Energy and Jobs (2013)

- Worldwide renewable energy **employment continues to increase**.
- An estimated **5.7 million people** work in the renewable energy sector.
- The bulk of employment remains concentrated in Brazil, China, India, the EU, and the **United States**.

Global New Investment in Renewable Energy



Data source: UNEP FS/ BNEF Global Trends in Renewable Energy Investment 2013

- Global new investment in renewable power went down 12% from the previous year's record (still the second highest ever). Investment in United States went down 35% .
- **Installed capacity, which continued to grow due to falling technology costs.**
- The most dramatic shift yet in the balance of investment activity between developed and developing economies.

Policy Landscape



THE NUMBER OF COUNTRIES WITH RENEWABLE TARGETS MORE THAN DOUBLED BETWEEN 2005 AND 2012. A LARGE NUMBER OF CITY AND LOCAL GOVERNMENTS ARE ALSO PROMOTING RENEWABLE ENERGY.

- At least **138 countries** had renewable energy targets by the end of 2012.
- Most policies to support renewable energy target the power sector, with feed-in tariffs (FITs) and renewable portfolio standards (RPS) used most frequently.
- Policymakers are increasingly aware of the potential national development impacts of renewable energy.
- GSR provides a comprehensive policy table giving an overview of applied instruments worldwide on a country-by-country basis.

Three complementary goals by 2030:

- 
1 ENSURE
universal access
TO MODERN ENERGY SERVICES.
- 
2 DOUBLE THE GLOBAL RATE OF
IMPROVEMENT IN
energy efficiency
- 
3 DOUBLE THE SHARE OF
renewable energy
IN THE GLOBAL ENERGY MIX.



SUSTAINABLE
ENERGY FOR ALL

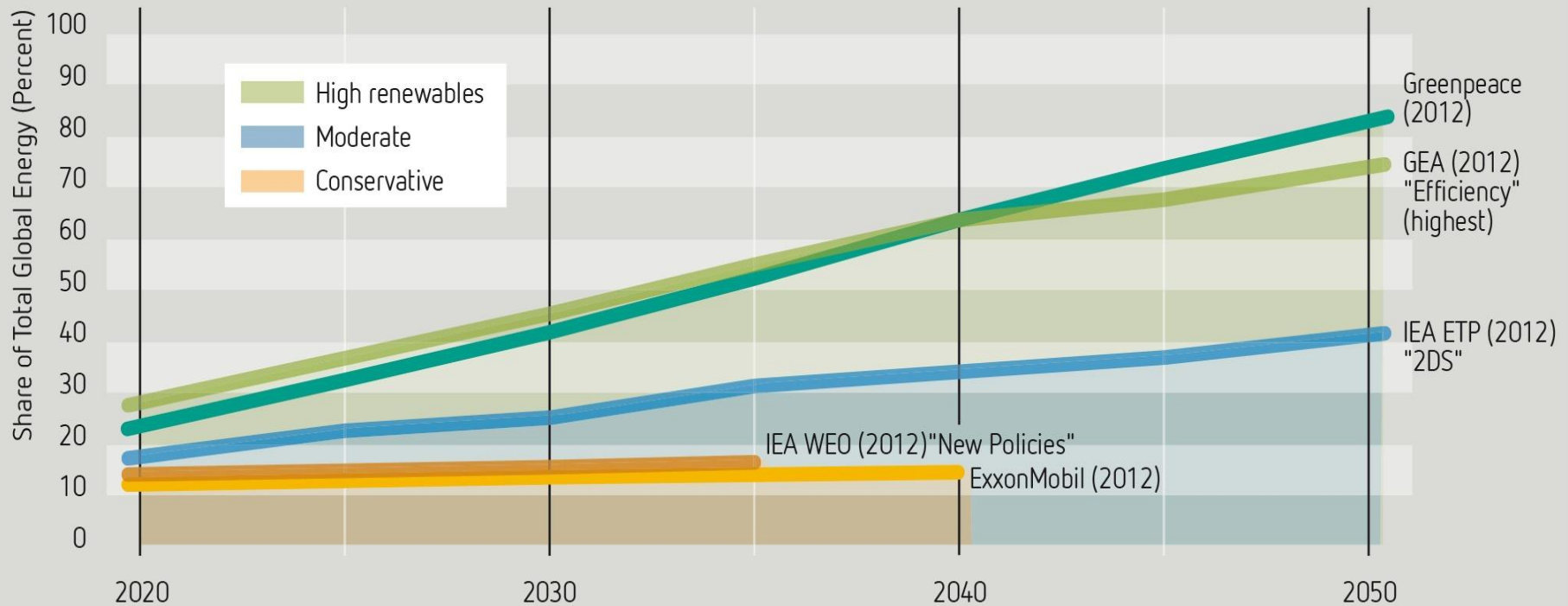
Starting point for SE4ALL goals can be established on this basis

Percent	Universal access to modern energy services		Doubling global rate of improvement of energy efficiency	Doubling share of renewable energy in global energy mix
	Proxy indicator	Percentage of population with electricity access	Percentage of population with primary reliance on non-solid fuels	Rate of improvement in energy intensity
1990	76	47	-1.3	16.6
2010	83	59		18.0
2030	100	100	-2.6	36.0

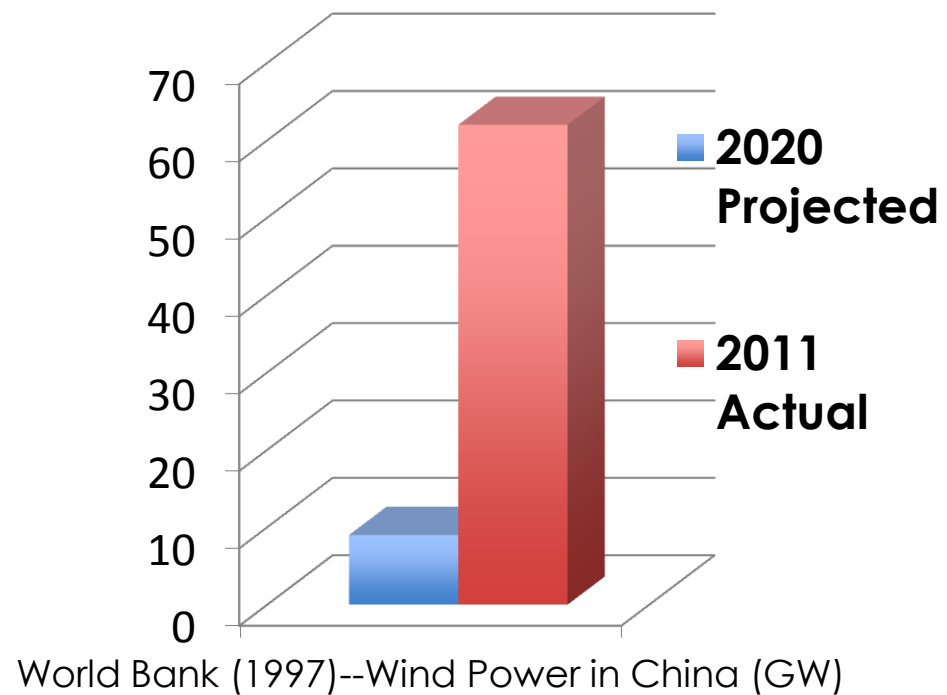
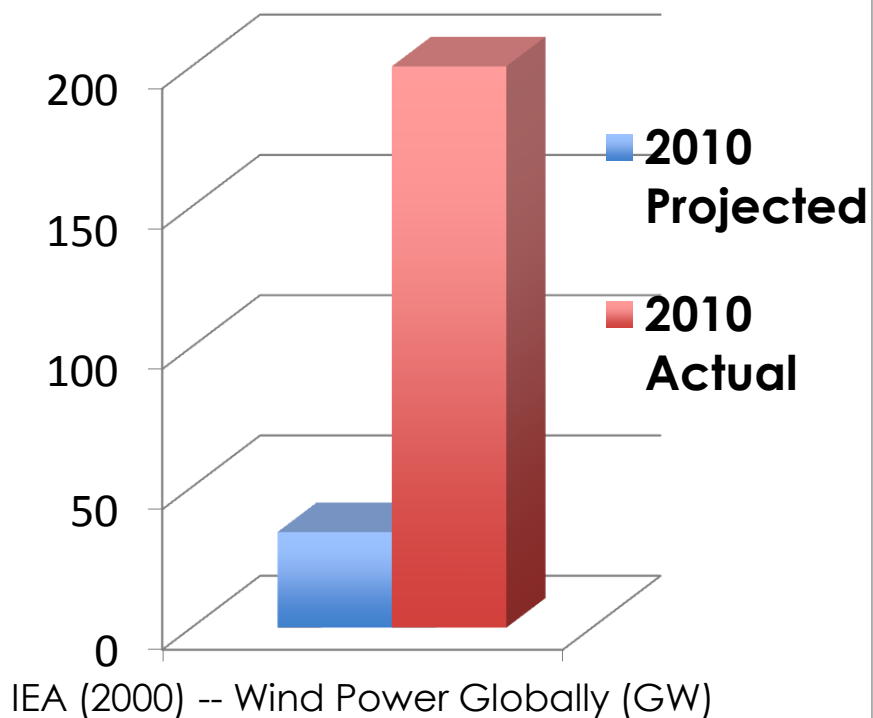
Source: Global Tracking Framework @ International Energy Agency and World Bank, 2013

Future outlook – the best is yet to come

Figure 1: Conservative, Moderate, and High-Renewables Scenarios to 2050



Historic Projections Fall Short...



In conclusion

- Recently the world has passed 400 ppm of atmospheric CO₂ - potentially enough to trigger a warming of 2 degrees Celsius compared with pre-industrial levels. This underlines the need to further accelerate the deployment of renewable energy as well as energy efficiency measures.
- Sustainable Energy4All: Doubling the share of renewables by 2030 will need to result in at least a tripling of the share of modern renewables incl. sustainable hydropower
- Big and small, we need them all!
- Renewable energy needs a level playing field (RE support is still 6 times less than fossil fuel subsidies).
- Integration of renewable energy will be key in the future.

REN21 Flagship Products & Activities



Renewables Global Status Report

www.ren21.net/gsr



Renewables Interactive Map

www.map.ren21.net



Renewables Global Futures Report

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