

RENEWABLES 2013

GLOBAL STATUS REPORT



Renewables 2013

Global Status Report

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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

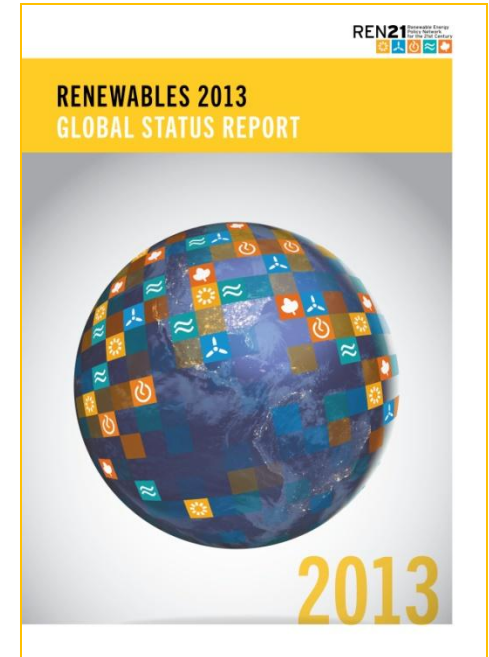
National Governments:

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

REN21 Renewables Global Status Report



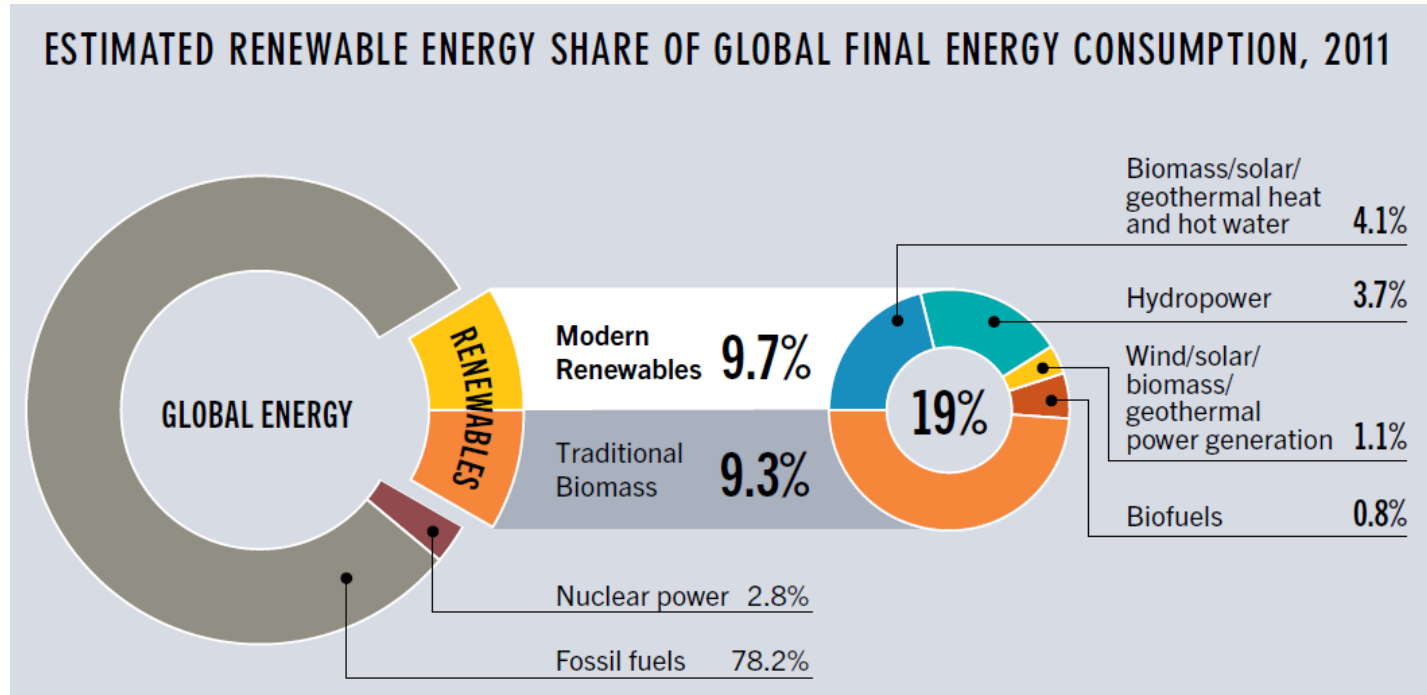
- Launched along with UNEP's Global trends in RE investment
- Team of over 500 contributors, researchers & reviewers worldwide
- The report features:
 - Global Market Overview
 - Industry Trends
 - Policy Landscape
 - Rural Renewable Energy
- All renewable energy technologies
- Sectors: power, heating/cooling, 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.
- **UN Secretary General's goal** : **doubling the share of renewable energy** in the global energy mix by 2030 (base year 2010).

Top 5 RE champions

ANNUAL INVESTMENT/ADDITIONS/PRODUCTION IN 2012

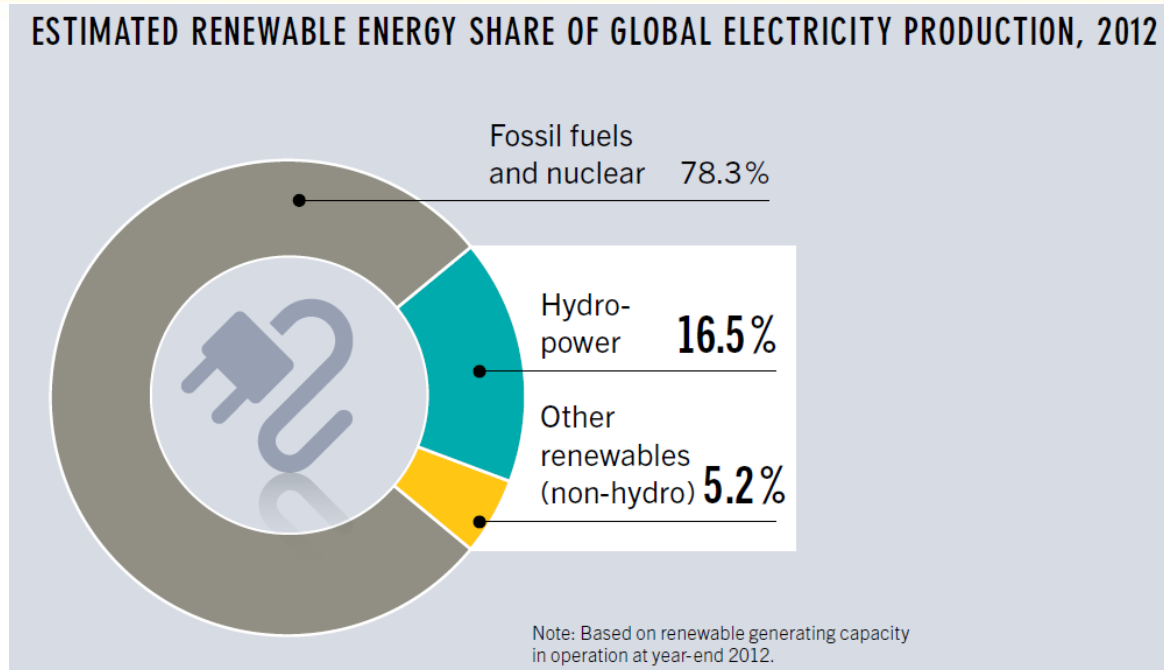
	New capacity investment	Hydropower capacity	Solar PV capacity	Wind power capacity	Solar water collector (heating) capacity ¹	Biodiesel production	Ethanol production
1	China	China	Germany	United States	China	United States	United States
2	United States	Turkey	Italy	China	Turkey	Germany	Brazil
3	Germany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

TOTAL CAPACITY AS OF END-2012

	Renewable power capacity (incl. hydro)	Renewable power capacity (not incl. hydro)	Renewable power capacity per capita (not incl. hydro) ²	Biopower capacity	Geothermal power capacity	Hydropower capacity	Concentrating solar thermal power (CSP) capacity
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**.
- **21.7%** of **global electricity** is produced from renewable energy.
- **Renewables** accounted for **just over half** of the estimated 280GW of new installed electric capacity in 2012.

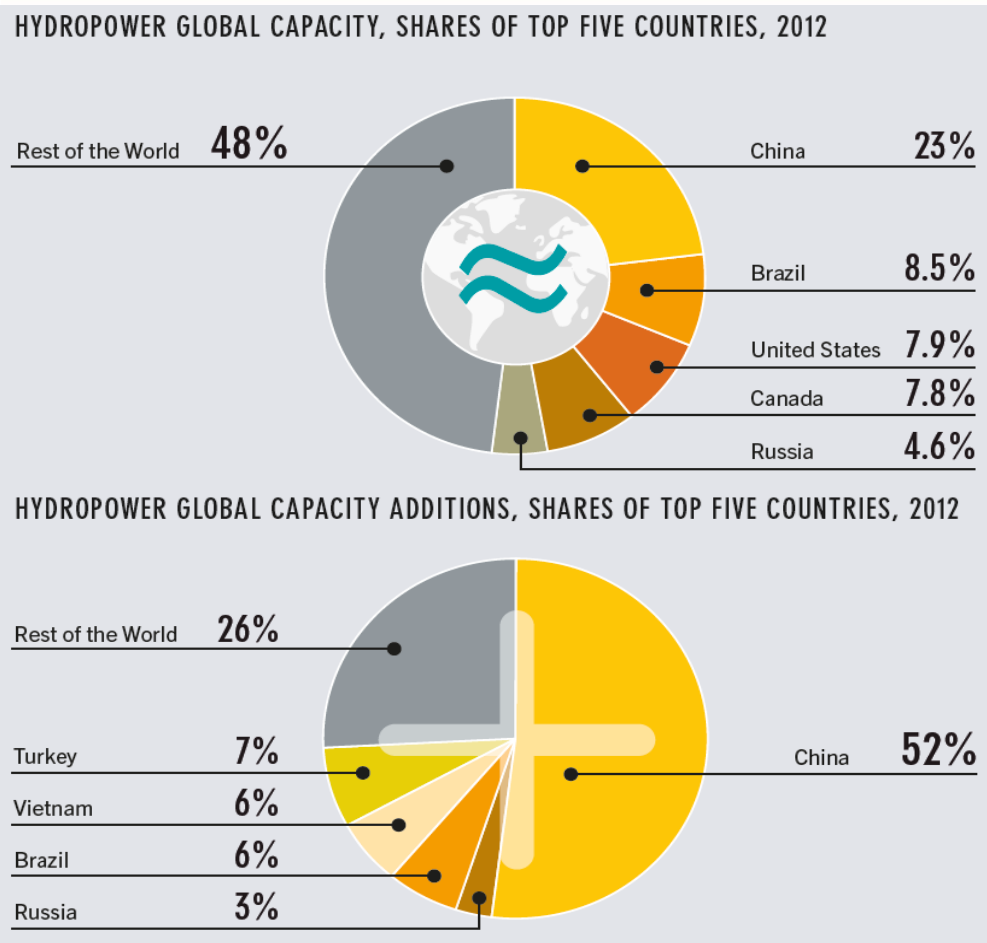
■ Heating and Cooling

- 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.

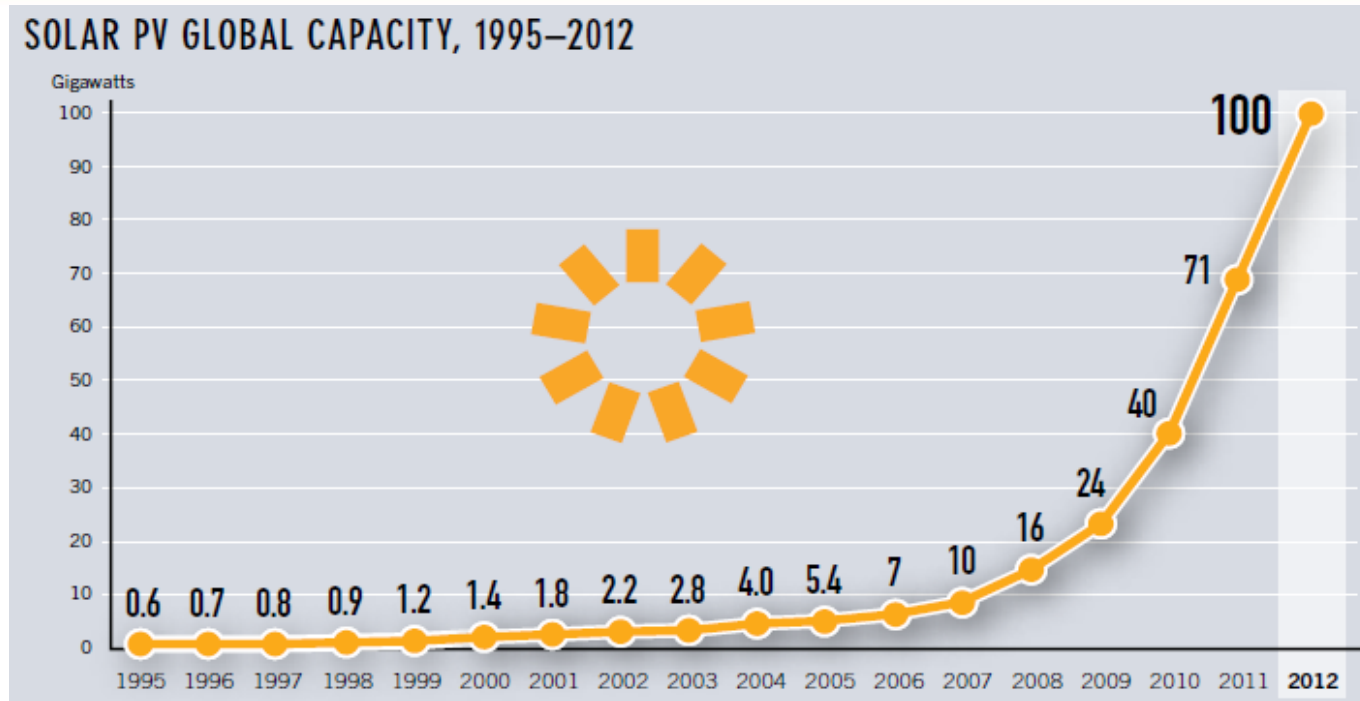
Hydropower



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. China alone produced 864 TWh followed by Brazil (441TWh).
- Growing prominence of joint-venture business models involving local and international partnerships as the size of the projects increase.

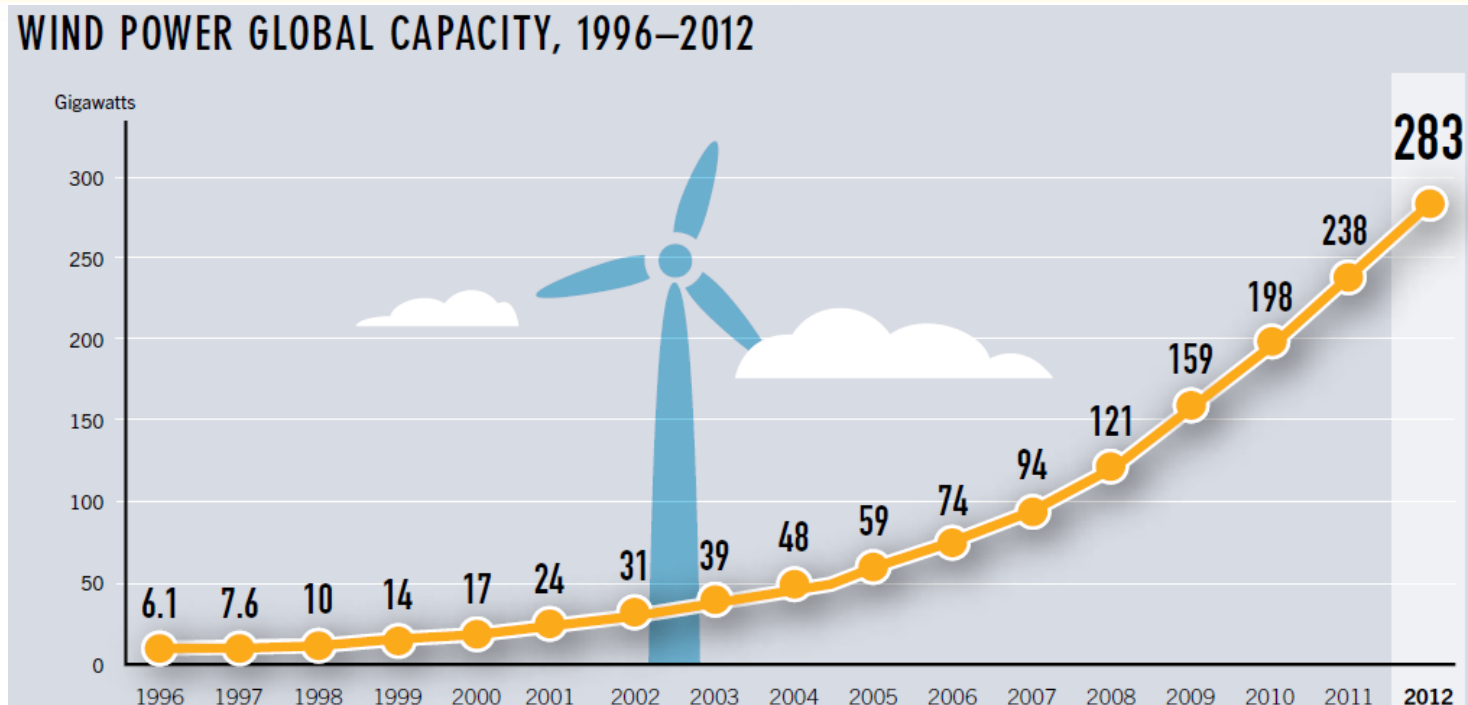
Solar Photovoltaics (PV)



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.

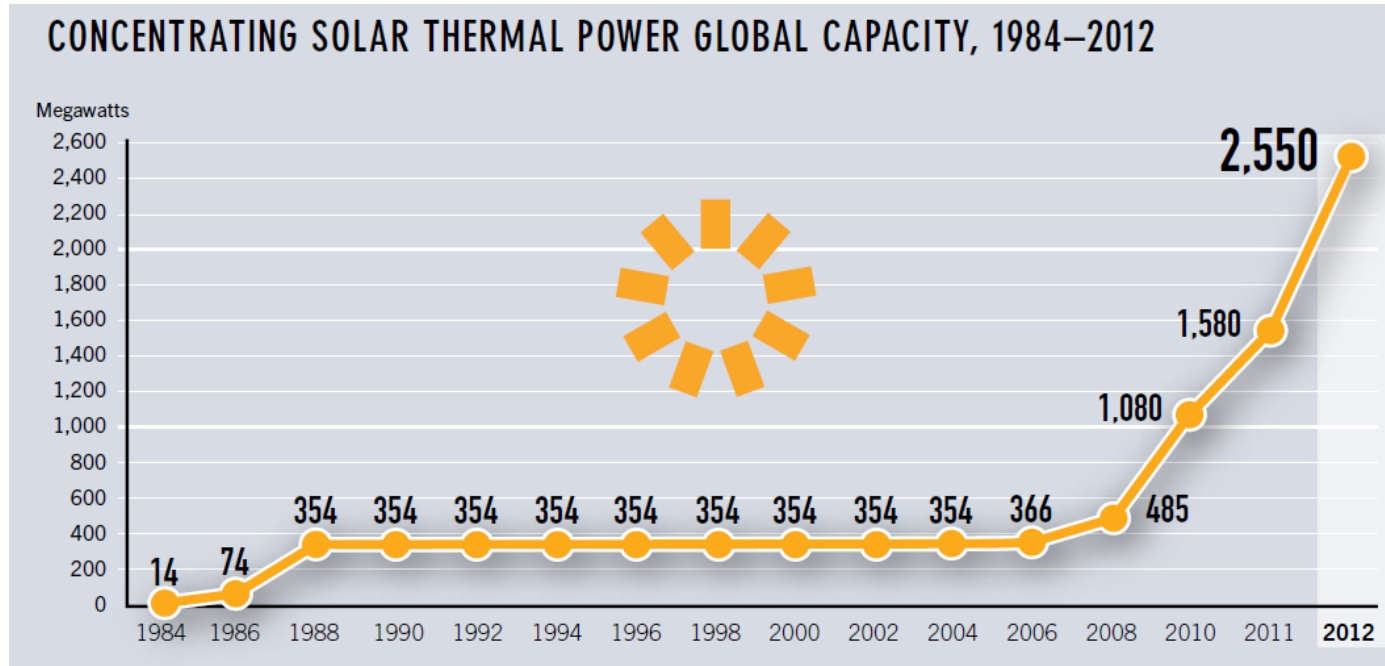
Wind Power



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.
- Annual growth rate of cumulative wind power capacity between 2007-2012 averaged 25%.

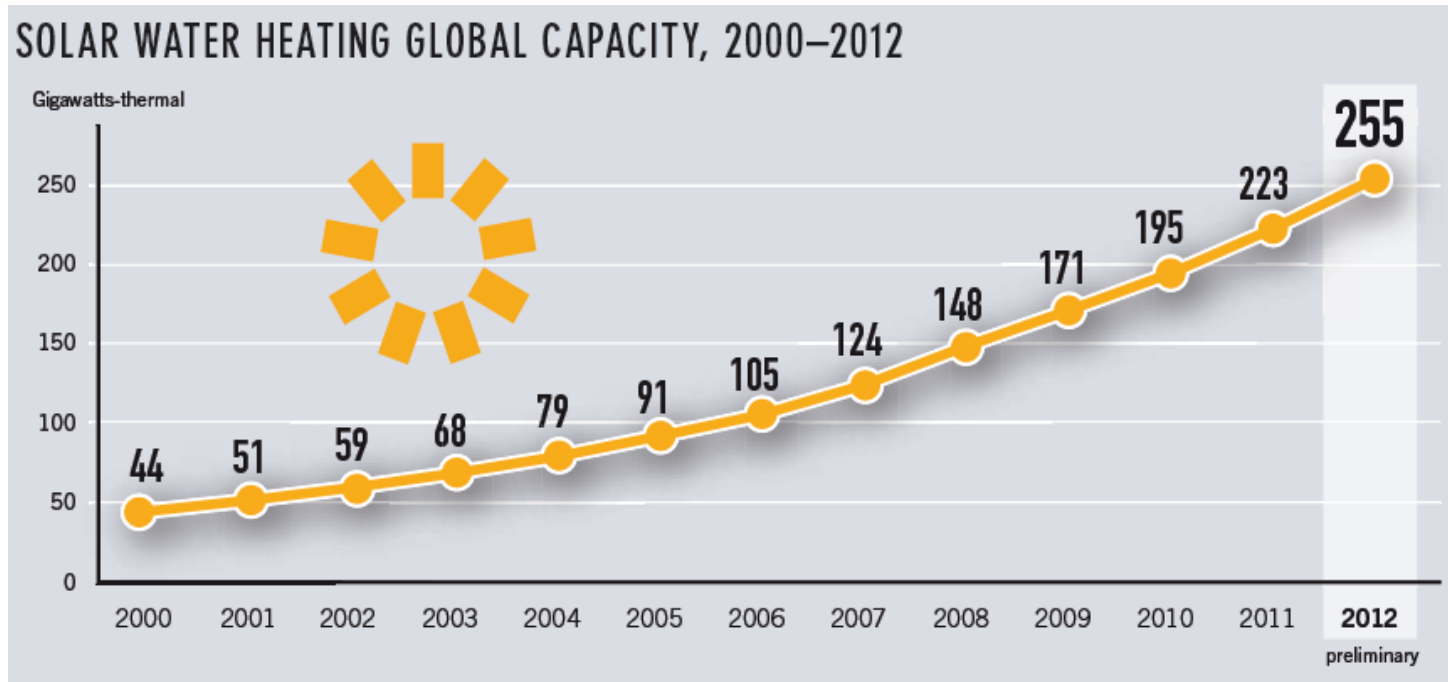
Concentrating Solar Thermal Power (CSP)



Source: REN21 Renewables 2013 Global Status Report

- Total global CSP capacity increased more than 60% to about 2,550 MW.
- Interest in CSP is on the rise, particularly in developing countries, with investment spreading across Africa, the Middle East, Asia, and Latin America.

Solar Thermal Heating and Cooling

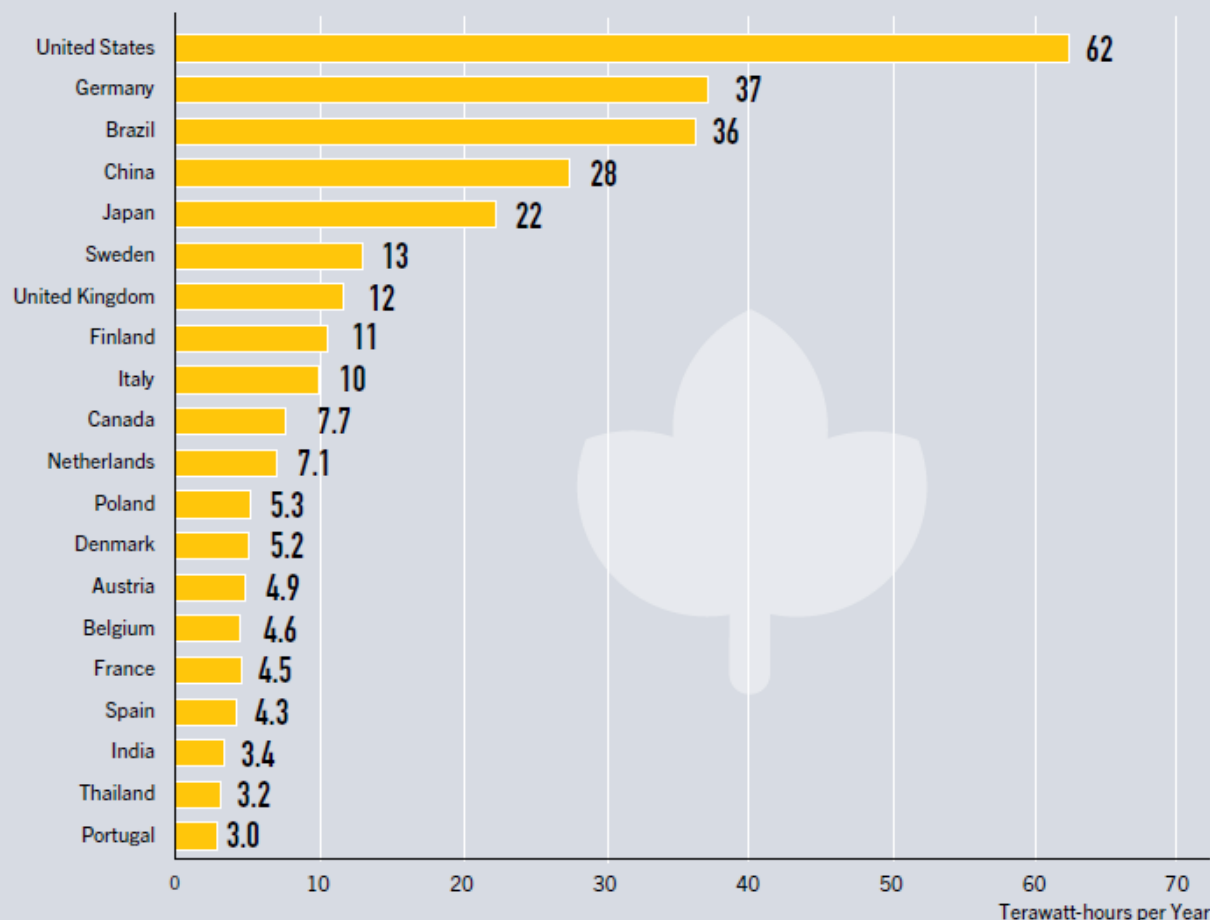


Source: REN21 Renewables 2013 Global Status Report

- By the end of 2012, global solar thermal capacity reached an estimated of 255 GW_{th} for glazed water collectors.
- China and Europe account for about 90% of world market.
- Growing trend to use solar resources to generate process heat for industry.

Bioenergy

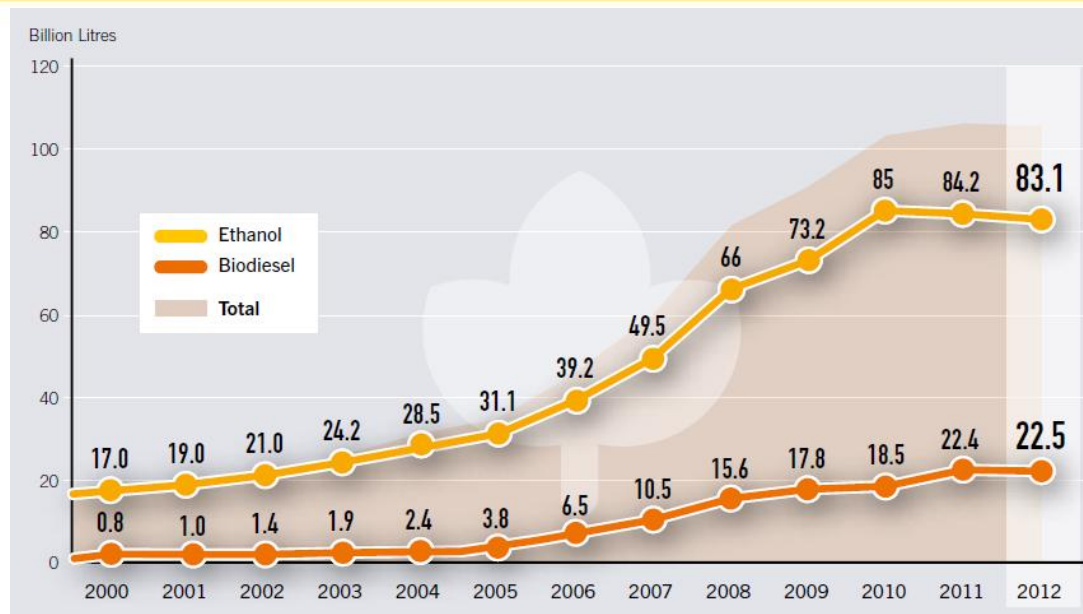
BIOPOWER GENERATION OF TOP 20 COUNTRIES, ANNUAL AVERAGE 2010–2012



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, with notable **increases in some BRICS countries.**
- In 2012, 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.
- New ethanol and biodiesel production facilities opened, although many ethanol plants operated below capacity.

Geothermal Energy



Palinpinon Geothermal Production Field. Copyright, Energy Development Corporation.

- 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 GW_{th} of capacity in 2012.
- Geothermal electric generating capacity grew by an estimated 300 MW during 2012, bringing the global total to 11.7 GW and generating at least 72 TWh.

- 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.

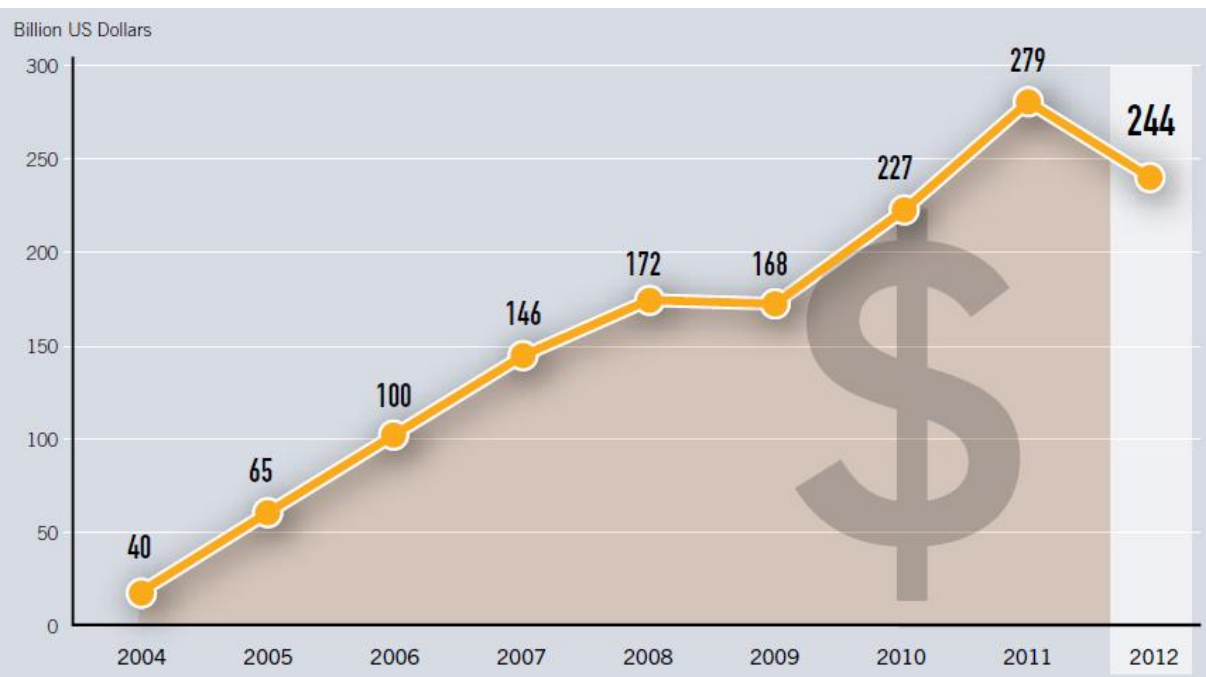
Renewable Energy and Jobs



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.

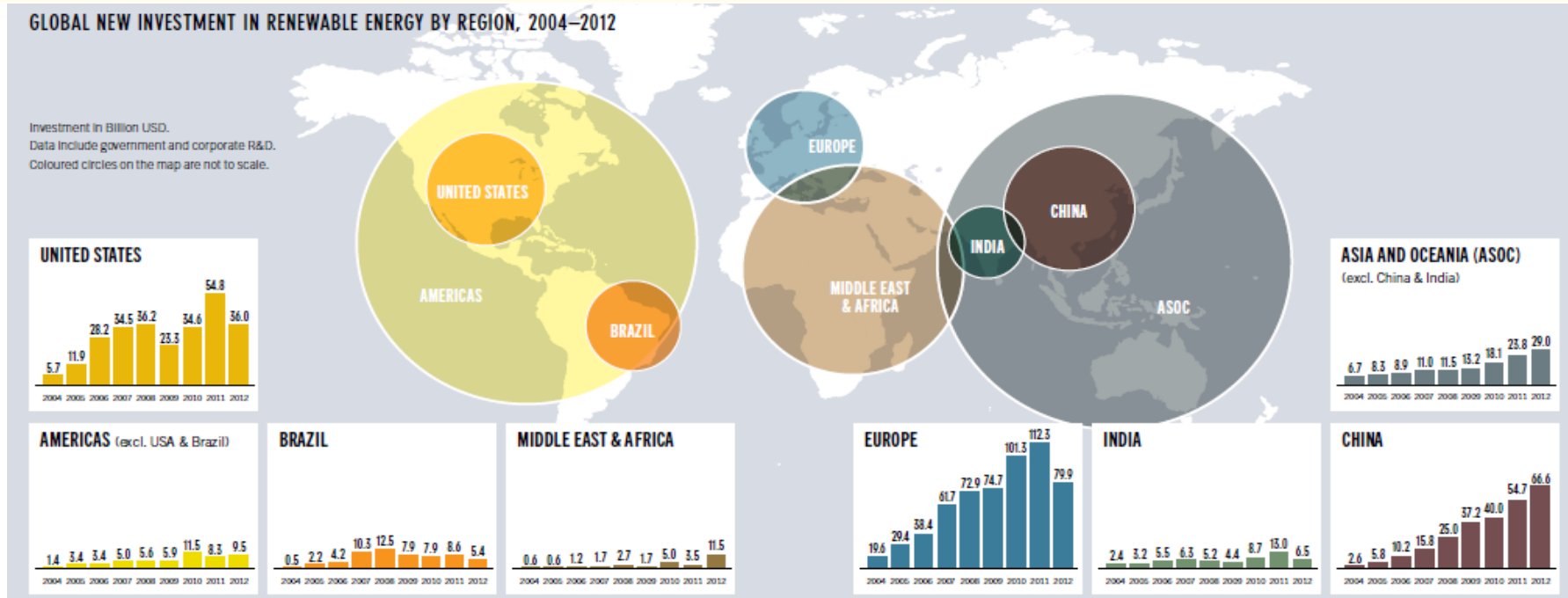
Global New Investment in Renewable Energy



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

- Global new investment in renewable power decreased 12% from the previous year's record (still the second highest ever).
- **Installed capacity continued to grow due to falling technology costs.**
- 2012 showed a continued shift in the balance of investment activity between developed and developing economies.

Investment Flows



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

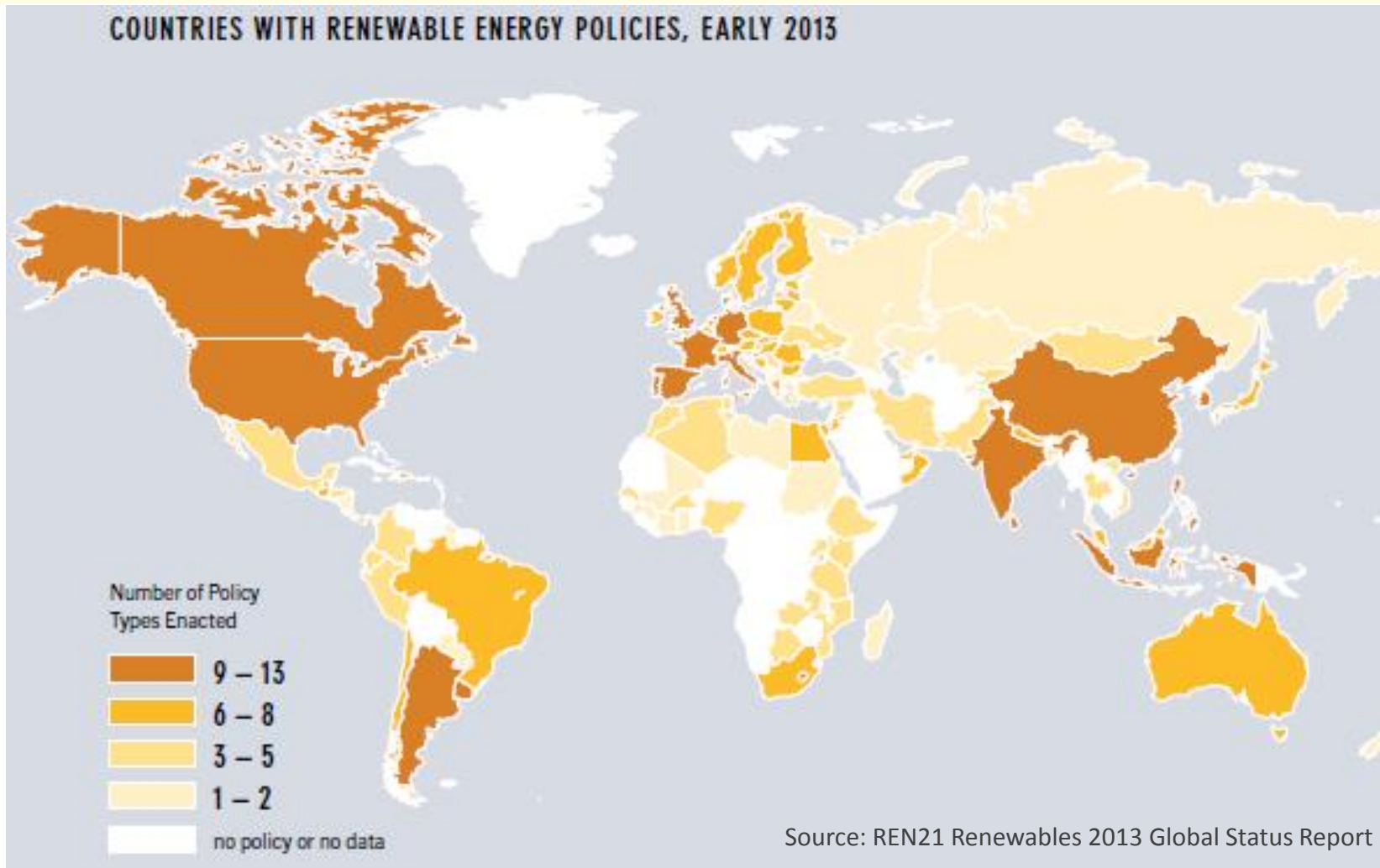
- Dramatic shift in the balance of new investment activity between developed and developing economies.
- **Developing countries** reached USD 112 billion, representing 46% of the world total; this was up from 34% in 2011, and continued an unbroken eight-year growth trend.
- **Developed economies** fell 29% to USD 132 billion, the lowest level since 2009.

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.

Policy Map



- Rural use of renewable electricity has increased with greater affordability, improved knowledge about local renewable resources, and more sophisticated technology applications.
- Attention to mini-grids has risen in parallel with price reductions in solar, wind, inverter, gasification, and metering technologies.
- Trends:
 - Increasing private sector involvement.
 - Increasing technology innovation and reduce prices.
 - Rise of social entrepreneurship.
- Business models in rural energy:
 - Dealers and fee-per-service.
 - Public-Private partnerships.
 - Leasing arrangements.

REN21 Flagship Products & Activities



Renewables Global Status Report

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Renewables Interactive Map

www.map.ren21.net



Renewables Global Futures Report

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Regional Status Reports

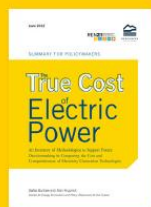


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The True Cost of Electric Power



Facilitation of IRECs



Global Status Report on Local Renewable Energy Policies



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