



RENEWABLES 2013

GLOBAL STATUS REPORT



KEY FINDINGS
2013

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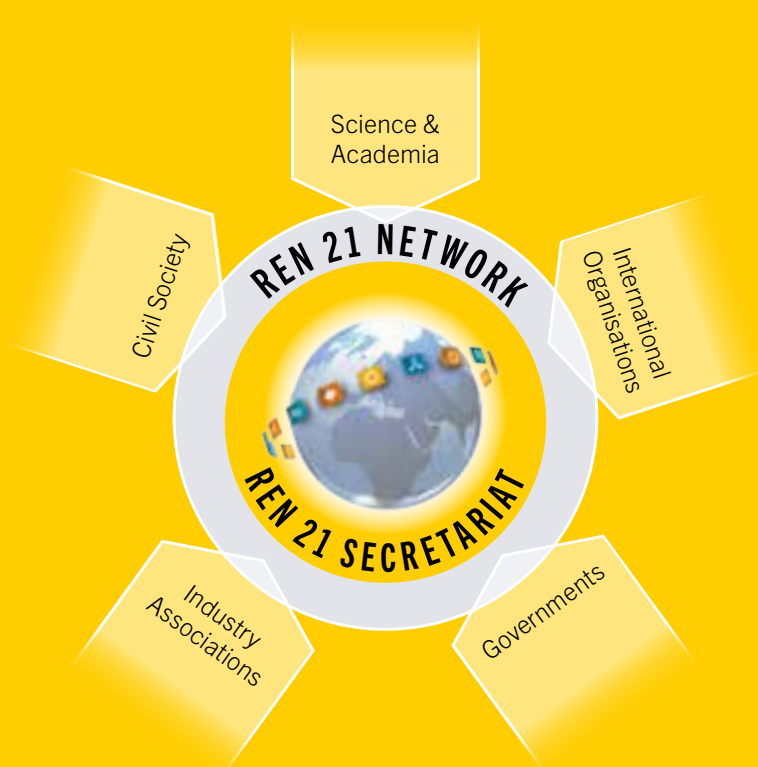
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REN21 releases issue papers and reports to emphasise the importance of renewable energy and to generate discussion of issues central to the promotion of renewable energy. While REN21 papers and reports have benefited from the considerations and input from the REN21 community, they do not necessarily represent a consensus among network participants on any given point. Although the information given in this report is the best available to the authors at the time, REN21 and its participants cannot be held liable for its accuracy and correctness.

RENEWABLE ENERGY POLICY NETWORK FOR THE 21st CENTURY

REN21 is the global renewable energy policy multi-stakeholder network that connects a wide range of key actors including governments, international organisations, industry associations, science and academia, and civil society, with the aim of facilitating knowledge exchange, policy development, and joint action towards a rapid global transition to renewable energy.

REN21 promotes renewable energy in both industrialised and developing countries that are driven by the need to mitigate climate change while advancing energy security, economic and social development, and poverty alleviation.



www.ren21.net

KEY FINDINGS

Renewable energy markets, industries, and policy frameworks have evolved rapidly in recent years. The *Renewables Global Status Report* provides a comprehensive and timely overview of renewable energy market, industry, investment, and policy developments worldwide. It relies on the most recent data available, provided by a network of more than 500 contributors and researchers from around the world, all of which is brought together by a multi-disciplinary authoring team. The report covers recent developments, current status, and key trends; by design, it does not provide analysis or forecasts.¹

■ CONTINUED RENEWABLE ENERGY GROWTH

Global demand for renewable energy continued to rise during 2011 and 2012, supplying an estimated 19% of global final energy consumption in 2011 (the latest year for which data are available), with a little less than half from traditional biomass. Useful heat energy from modern renewable sources accounted for an estimated 4.1% of total final energy use; hydropower made up about 3.7%; and an estimated 1.9% was provided by power from wind, solar, geothermal, and biomass, and by biofuels.

Total renewable power capacity worldwide exceeded 1,470 GW in 2012, up about 8.5% from 2011. Hydropower rose 3% to an estimated 990 GW, while other renewables grew 21.5% to exceed 480 GW. Globally, wind power accounted for about 39% of renewable power capacity added in 2012, followed by hydropower and solar PV, each accounting for approximately 26%.

Renewables made up just over half of total net additions to electric generating capacity from all sources in 2012. By year's end, they comprised more than 26% of global generating capacity and supplied an estimated 21.7% of global electricity, with 16.5% of electricity provided by hydropower. Industrial, commercial, and residential consumers are increasingly becoming producers of renewable power in a growing number of countries.

Demand continued to rise in the heating and cooling sector, which offers an immense, yet mostly untapped, potential for renewable energy deployment. Already, heat from modern biomass, solar, and geothermal sources represents a significant portion of the energy derived from renewables, and the sector is evolving slowly as countries begin to enact support policies. Trends in the sector include the use of larger systems, increasing use of combined heat and power (CHP), the feeding of renewable heat and cooling into district schemes, and the growing use of modern renewable heat for industrial purposes. After years of rapid growth, biodiesel production continued to expand in 2012 but at a much slower rate; fuel ethanol production peaked in 2010 and has since declined. Small but growing quantities of gaseous biofuels are being used to fuel vehicles, and there are limited but increasing initiatives to link electric transport systems with renewable energy.

Most renewable energy technologies continued to see expansion in manufacturing and global demand during 2012. However, 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, but also due to a production surplus of modules and turbines. Combined with the international economic crisis and ongoing tensions in international trade, these developments have created new challenges for some renewable industries, and particularly for equipment manufacturers, leading to industry consolidation. However, they also have opened up new opportunities and pushed companies to explore new markets. Subsequently, renewables are becoming more affordable for a broader range of consumers in developed and developing countries alike.

Renewables are picking up speed across Asia, Latin America, the Middle East, and Africa, with new investment in all technologies. The Middle East and North Africa (MENA) region and South Africa, in particular, witnessed the launch of ambitious new targets in 2012, as well as the emergence of policy frameworks and renewables deployment. Markets, manufacturing, and investment shifted increasingly towards developing countries during 2012.

The top countries for renewable power capacity at year's end were China, the United States, Brazil, Canada, and Germany; the top countries for non-hydro capacity were China, the United States, and Germany, followed by Spain, Italy, and India. By region, the BRICS nations accounted for 36% of total global renewable power capacity and almost 27% of non-hydro renewable capacity. The EU had the most non-hydro capacity at the end of 2012, with approximately 44% of the global total.

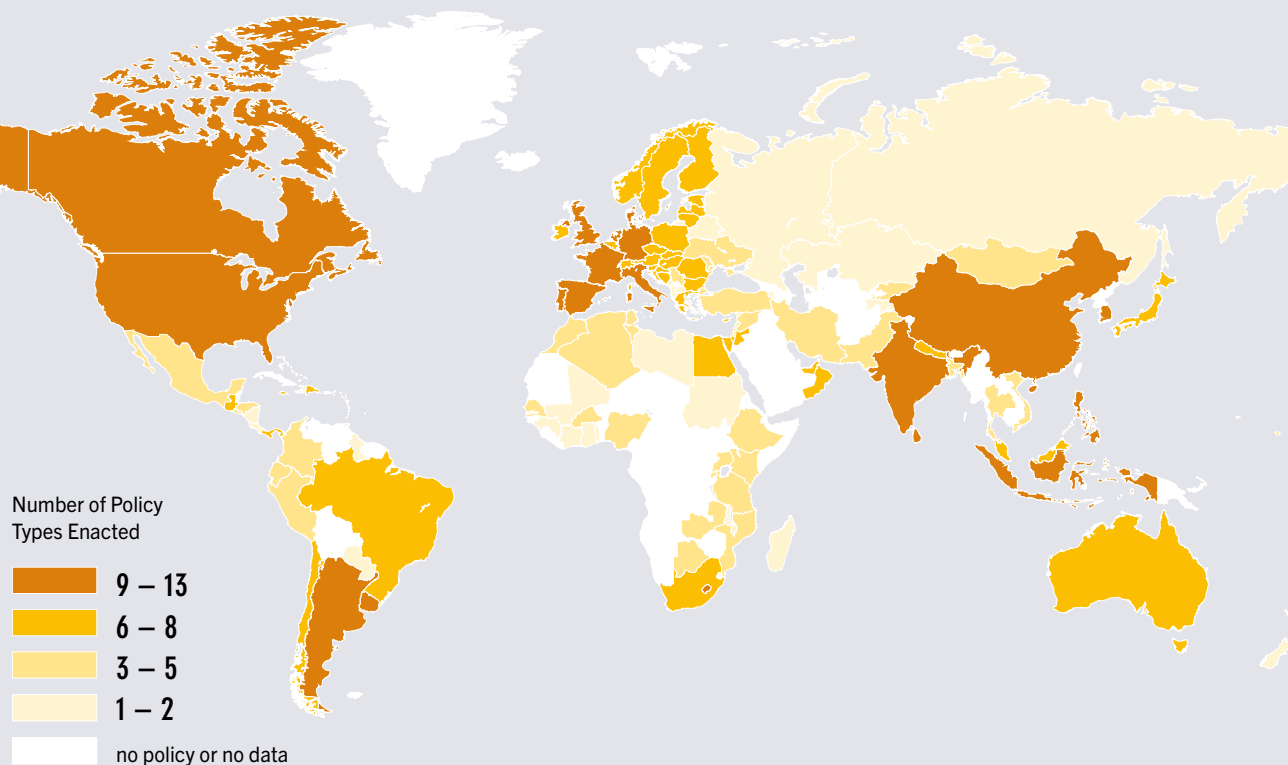
Renewables represent a rapidly rising share of energy supply in a growing number of countries and regions:

- In China, wind power generation increased more than generation from coal and passed nuclear power output for the first time.
- In the European Union, renewables accounted for almost 70% of additions to electric capacity in 2012, mostly from solar PV and wind power. In 2011 (the latest year for which data are available), renewables met 20.6% of the region's electricity consumption and 13.4% of gross final energy consumption.
- In Germany, renewables accounted for 22.9% of electricity consumption (up from 20.5% in 2011), 10.4% of national heat use, and 12.6% of total final energy demand.
- The United States added more capacity from wind power than any other technology, and all renewables made up about half of total electric capacity additions during the year.
- Wind and solar power are achieving high levels of penetration in countries like Denmark and Italy, which in 2012 generated 30% of electricity with wind and 5.6% with solar PV, respectively.

¹ REN21's recently published *Global Futures Report* shows the range of credible possibilities for renewable energy futures, based on interviews with over 170 leading experts from around the world and the projections of 50 recently published scenarios. It can be downloaded from www.ren21.net/gfr.

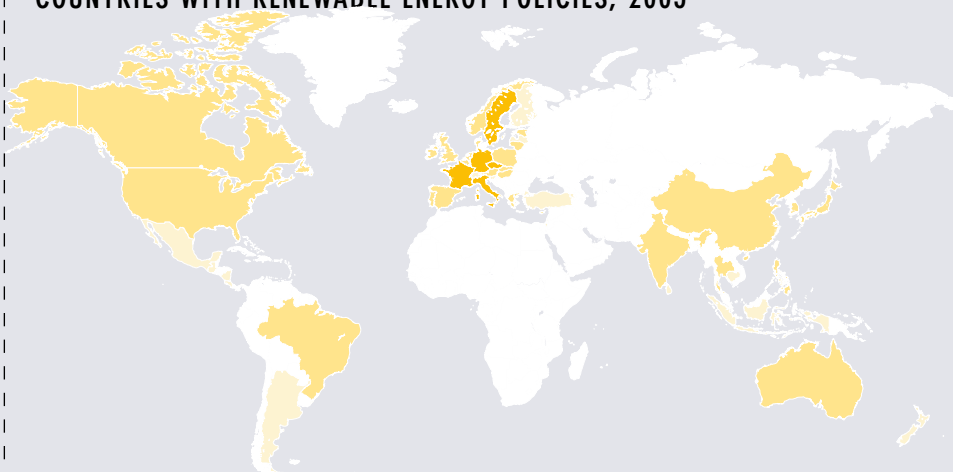
POLICY MAPS

COUNTRIES WITH RENEWABLE ENERGY POLICIES, EARLY 2013



138
COUNTRIES
HAVE DEFINED
RENEWABLE
ENERGY TARGETS

COUNTRIES WITH RENEWABLE ENERGY POLICIES, 2005



SUPPORT POLICIES ARE IN PLACE IN
127 COUNTRIES
TWO-THIRDS OF THESE ARE
DEVELOPING AND EMERGING ECONOMIES



GSR
2013

SELECTED INDICATORS

| | | 2010 | 2011 | 2012 |
|--|------------------|-------|-------|-------|
| Investment in new renewable capacity (annual) ¹ | billion USD | 227 | 279 | 244 |
| Renewable power capacity (total, not including hydro) | GW | 315 | 395 | 480 |
| Renewable power capacity (total, including hydro) | GW | 1,250 | 1,355 | 1,470 |
| Hydropower capacity (total) ² | GW | 935 | 960 | 990 |
| Biopower generation | GWh | 313 | 335 | 350 |
| Solar PV capacity (total) | GW | 40 | 71 | 100 |
| Concentrating solar thermal power (total) | GW | 1.1 | 1.6 | 2.5 |
| Wind power capacity (total) | GW | 198 | 238 | 283 |
| Solar hot water capacity (total) ³ | GW _{th} | 195 | 223 | 255 |
| Ethanol production (annual) | billion litres | 85.0 | 84.2 | 83.1 |
| Biodiesel production (annual) | billion litres | 18.5 | 22.4 | 22.5 |
| Countries identified with policy targets | # | 109 | 118 | 138 |
| States/provinces/countries with feed-in policies | # | 88 | 94 | 99 |
| States/provinces/countries with RPS/quota policies | # | 72 | 74 | 76 |
| States/provinces/countries with biofuels mandates | # | 71 | 72 | 76 |

1 Investment data are from Bloomberg New Energy Finance and include all biomass, geothermal, and wind generation projects of more than 1 MW; all hydro projects of between 1 and 50 MW; all solar power projects, with those less than 1 MW estimated separately and referred to as small-scale projects or small distributed capacity; all ocean energy projects; and all biofuel projects with an annual production capacity of 1 million litres or more.

2 Hydropower data do not include pumped storage capacity. For more information, see Methodological Notes in the full report.

3 Solar hot water capacity data include glazed water collectors only.

Note: Numbers are rounded. Renewable power capacity (including and not including hydropower) and hydropower capacity data are rounded to nearest 5 GW; other statistics are rounded to nearest whole number except for very small numbers and biofuels, which are rounded to one decimal point.

As their shares of variable wind and solar power increase, a number of countries (including Denmark, Germany, and Spain) have begun to enact policies and measures to successfully transform their energy systems to accommodate even larger shares.

Impacts of all of these developments on jobs in the renewable energy sector have varied by country and technology, but, globally, the number of people working in renewable industries has continued to rise. An estimated 5.7 million people worldwide work directly or indirectly in the sector.

AN EVOLVING POLICY LANDSCAPE

At least 138 countries had renewable energy targets by the end of 2012. As of early 2013, renewable energy support policies were identified in 127 countries, more than two-thirds of which are developing countries or emerging economies. The rate of adoption of new policies and targets has remained slow relative to the early to mid 2000s. As the sector has matured, revisions to existing policies have become increasingly common.

In response to rapidly changing market conditions for renewable technologies, tight national budgets, and the broader impacts of the global economic crisis, some countries

undertook extensive revisions to existing laws, some of which were imposed retroactively. Others increased support for renewables, and several countries around the world adopted ambitious new targets.

Most policies to support renewable energy target the power sector, with feed-in tariffs (FITs) and renewable portfolio standards (RPS) used most frequently. During 2012, FIT policies were enacted in five countries, all in Africa and the Middle East; the majority of FIT-related changes involved reduced support. New RPS policies were enacted in two countries. An increasing number of countries turned to public competitive bidding, or tendering, to deploy renewables.

In the heating and cooling sector, promotion policies and targets continued to be enacted at a slower rate than in the power sector, although their adoption is increasing steadily. As of early 2013, 20 countries had specific renewable heating targets in place, while at least 19 countries and states mandated the use of renewable heat technologies. Renewable heating and cooling are also supported through building codes and other measures.

Biofuel blend mandates were identified at the national level in 27 countries and in 27 states/provinces. Despite increasing pressure in major markets such as Europe and the United States, due to growing debate over the overall sustainability of first generation biofuels, regulatory policies promoting the use of biofuels existed in at least 49 countries as of early 2013.

Thousands of cities and towns around the world have developed their own plans and policies to advance renewable energy, and momentum accelerated in 2012. To achieve ambitious targets, local governments adopted a range of measures, including FITs or technology-specific capacity targets; fiscal incentives to support renewable energy deployment; and new building codes and standards, including solar heat mandates. Others developed renewable district heating and cooling systems; promoted the use of renewably powered electric transport; formed consortia to fund projects; or advanced advocacy and information sharing.

Several cities are working with their national governments to promote renewable energy, while others have begun to organise from the bottom up. In Europe, 1,116 new cities and towns joined the Covenant of Mayors in 2012, committing to a 20% CO₂ reduction target and to plans for climate mitigation, energy efficiency, and renewable energy.

■ INVESTMENT TRENDS

Global new investment in renewable power and fuels was USD 244 billion in 2012, down 12% from the previous year's record. The total was still the second highest ever and 8% above the 2010 level. If the unreported investments in hydropower projects larger than 50 MW and in solar hot water collectors are included, total new investment in renewable energy exceeded USD 285 billion.

The decline in investment—after several years of growth—resulted from uncertainty about support policies in major developed economies, especially in Europe (down 36%) and the United States (down 35%). Nonetheless, considering only net additions to electric generating capacity (excluding replacement plants) in 2012, global investment in renewable power was ahead of fossil fuels for the third consecutive year.

The year 2012 saw the most dramatic shift yet in the balance of investment activity between developed and developing economies. Outlays in 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. By contrast, investment in developed economies fell 29% to USD 132 billion, the lowest level since 2009. The shift was driven by reductions in subsidies for solar and wind project development in Europe and the United States; increased investor interest in emerging markets with rising power demand and attractive renewable energy resources; and falling technology costs of wind and solar PV. Europe and China accounted for 60% of global investment in 2012.

Solar power was the leading sector by far in terms of money committed in 2012, receiving 57% of total new investment in renewable energy (96% of which went to solar PV). Even so, the USD 140.4 billion for solar was down 11% from 2011 levels, due to a slump in financing of CSP projects in Spain and the United States, as well as to sharply lower PV system prices. Solar was followed by wind power (USD 80.3 billion) and hydropower projects larger than 50 MW (estimated at USD 33 billion).

■ RURAL RENEWABLE ENERGY

The year 2012 brought improved access to modern energy services through the use of renewables. 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.

Technological progress also advanced the use of renewables in the rural heating and cooking sectors. Rural renewable energy markets show significant diversity, with the levels of electrification, access to clean cookstoves, financing models, actors, and support policies varying greatly among countries and regions.

Government-driven electrification and grid extension programmes are still being adopted across the developing world. However, the last two decades have seen increasing private sector involvement in deployment of renewables in remote and rural areas, spurred by new business models and increasing recognition that low-income customers can offer fast-growing markets.

Policies to provide energy access through renewable energy are being integrated increasingly into broader rural development plans. Brazil, China, India, and South Africa are in the lead in the development of large-scale programmes that address the dual challenges of energy access and sustainability. However, for energy access targets to be met, institutional, financial, and legal mechanisms must be created and strengthened to support large-scale renewable energy deployment. The UN General Assembly's 'Energy Access for All' objective of universal access to modern energy by 2030 will require an annual investment of an estimated USD 36-41 billion.

TOP FIVE COUNTRIES

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 |

| | Solar PV | Solar PV per capita | Wind power | Solar water collector (heating) ¹ | Solar water collector (heating) per capita ¹ | Geothermal heat capacity | Geothermal direct heat use ³ |
|----------|---------------|---------------------|---------------|--|---|--------------------------|---|
| 1 | Germany | Germany | China | China | Cyprus | United States | China |
| 2 | Italy | Italy | United States | Germany | Israel | China | United States |
| 3 | United States | Belgium | Germany | Turkey | Austria | Sweden | Sweden |
| 4 | China | Czech Republic | Spain | Brazil | Barbados | Germany | Turkey |
| 5 | Japan | Greece | India | India | Greece | Japan | Japan/Iceland |

1 Solar water collector (heating) rankings are for 2011, and are based on capacity of glazed water collectors only (excluding unglazed systems for swimming pool heating and air collectors). Including all water and air collectors, the 2011 ranking for total capacity is China, United States, Germany, Turkey, and Brazil.

2 Per capita renewable power capacity ranking considers only those countries that place among the top 12 for total renewable power capacity, not including hydro.

3 In some countries, ground-source heat pumps make up a significant share of geothermal direct-use capacity; the share of heat use is lower than the share of capacity for heat pumps because they have a relatively low capacity factor. Rankings are based on a mix of 2010 data and more recent statistics for some countries.

Note: Most rankings are based on absolute amounts of investment, power generation capacity, or biofuels production; if done on a per capita basis, the rankings would be quite different for many categories (as seen with per capita rankings for renewable power, solar PV, and solar water collector capacity). Country rankings for hydropower would be different if power generation (TWh) were considered rather than power capacity (GW) because some countries rely on hydropower for baseload supply whereas others use it more to follow the electric load and match peaks in demand.

MARKET AND INDUSTRY HIGHLIGHTS AND ONGOING TRENDS

BIOMASS FOR HEAT, POWER, AND TRANSPORT. Use of biomass in the heat, power, and transport sectors increased 2–3% to approximately 55 EJ. Heating accounted for the vast majority of biomass use, including traditional biomass, with modern biomass heat capacity rising about 3 GW_{th} to an estimated 293 GW_{th}. Bio-power capacity was up 12% to nearly 83 GW, with notable increases in some BRICS countries, and about 350 TWh of electricity was generated during the year. Demand for modern biomass is driving increased international trade, particularly for biofuels and wood pellets. Global production and transport of wood pellets exceeded 22 million tonnes, and about 8.2 million tonnes of pellets were traded internationally.

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, to 83.1 billion litres, while biodiesel production increased slightly, reaching 22.5 billion litres. New ethanol and biodiesel production facilities opened, although many ethanol plants operated below capacity.

GEOTHERMAL ENERGY. Geothermal resources provided an estimated 805 PJ (223 TWh) of renewable energy in 2012, delivering two-thirds as direct heat and the remainder as electricity. The use of ground-source heat pumps is growing rapidly and reached an estimated 50 GW_{th} of capacity in 2012. At least 78 countries tap geothermal resources for direct heat, while two-thirds of global capacity is located in the United States, China, Sweden, Germany, and Japan. 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.

HYDROPOWER. An estimated 30 GW of new hydropower capacity came on line in 2012, increasing global installed capacity by 3% to an estimated 990 GW.ⁱ Hydropower generated an estimated 3,700 TWh of electricity during 2012. Once again, China led in terms of capacity additions (15.5 GW), with the bulk of other installations in Turkey, Brazil, Vietnam, and Russia. Joint-venture business models involving local and international partnerships are becoming increasingly prominent as the size of projects and the capacity of hydropower technologies increase.

OCEAN ENERGY. Commercial ocean energy capacity (mostly tidal power facilities) remained at about 527 MW at year's end, with little added in 2012. Small-scale projects were deployed in the United States and Portugal. Governments and regional authorities continued to support ocean energy research and development, while major power corporations increased their presence in the sector, which is seeing measured but steady progress.

SOLAR PV. Total global operating capacity of solar PV reached the 100 GW milestone, led by Europe, with significant additions in Asia late in the year. Driven by falling prices, PV is expanding to new markets, from Africa and the MENA region to Asia to Latin America. Interest in community-owned and

self-generation systems continued to grow in 2012, while the number and scale of large PV projects also increased. Cell and module manufacturers struggled as extreme competition and decreases in prices and margins spurred more industry consolidation, and several Chinese, European, and U.S. manufacturers went out of business. Thin film's share of global PV production declined further, with production down 15% to 4.1 GW.

CONCENTRATING SOLAR THERMAL POWER (CSP). Total global CSP capacity increased more than 60% to about 2,550 MW. Most of this capacity was added in Spain, home to more than three-fourths of the world's CSP capacity. No new capacity came on line in the United States, but about 1,300 MW was under construction by year's end. Elsewhere, more than 100 MW of capacity was operating, mostly in North Africa. The industry is expanding into Australia, Chile, China, India, the MENA region, and South Africa. Falling PV and natural gas prices, the global economic downturn, and policy changes in Spain all created uncertainty for CSP manufacturers and developers.

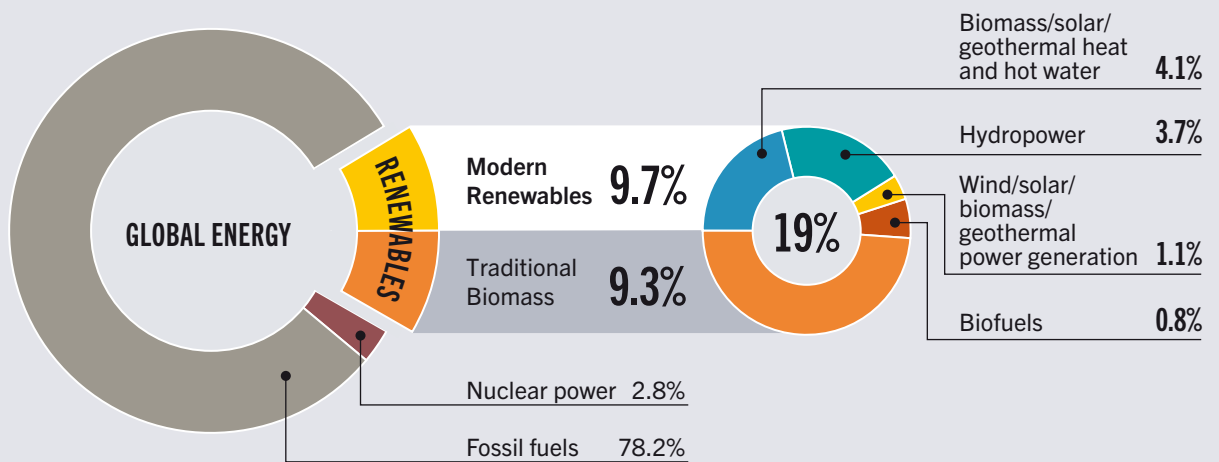
SOLAR THERMAL HEATING AND COOLING. By the end of 2012, global solar thermal capacity reached an estimated 282 GW_{th} for all collector types, with the capacity of glazed water collectors reaching an estimated 255 GW_{th}. China and Europe account for about 90% of the world market (all types) and the vast majority of total capacity. Solar space heating and cooling are gaining ground, as are solar thermal district heating, solar cooling, and process heat systems. The industry continued to face challenges, particularly in Europe, and was marked by acquisitions and mergers among leading players, with rapid consolidation continuing in China. Automation of manufacturing processes increased in 2012, with innovation spanning from adhesives to materials and beyond.

WIND POWER. In another record year for wind power, at least 44 countries added a combined 45 GW of capacity (more than any other renewable technology), increasing the global total by 19% to 283 GW. The United States was the leading market, but China remains the leader for total installed capacity. Wind power is expanding to new markets, aided by falling prices. Almost 1.3 GW of capacity was added offshore (mostly in northern Europe), bringing the total to 5.4 GW in 13 countries. The wind industry has been challenged by downward pressure on prices, combined with increased competition among turbine manufacturers, competition with low-cost gas in some markets, and reductions in policy support driven by economic austerity.

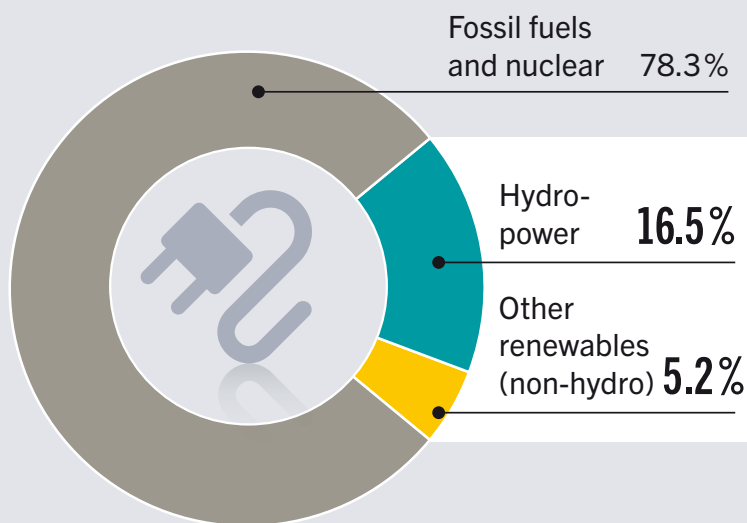
ⁱ Hydropower data do not include pure pumped storage capacity except where specifically noted. For more information on data impacts, see Methodological Notes in the full report.

SELECTED FIGURES AND TABLES **GSR 2013**

ESTIMATED RENEWABLE ENERGY SHARE OF GLOBAL FINAL ENERGY CONSUMPTION, 2011

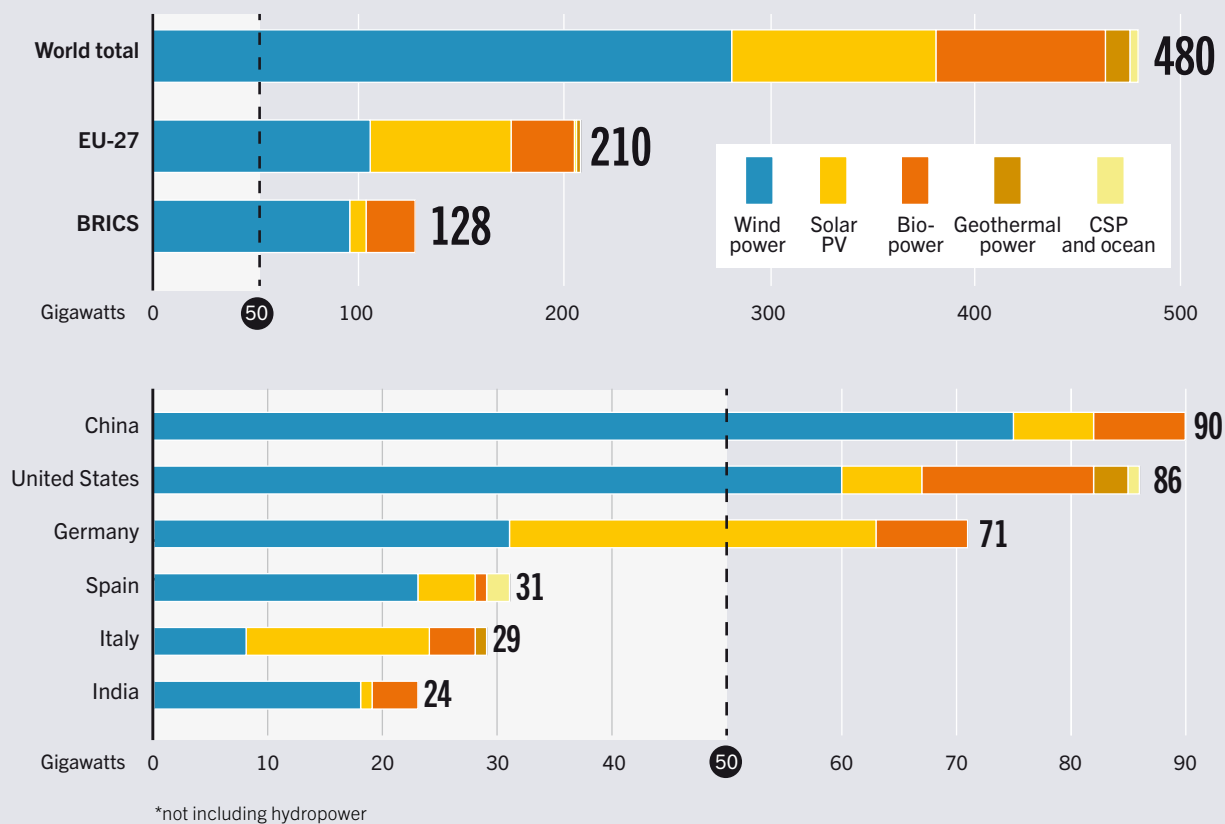


ESTIMATED RENEWABLE ENERGY SHARE OF GLOBAL ELECTRICITY PRODUCTION, END-2012

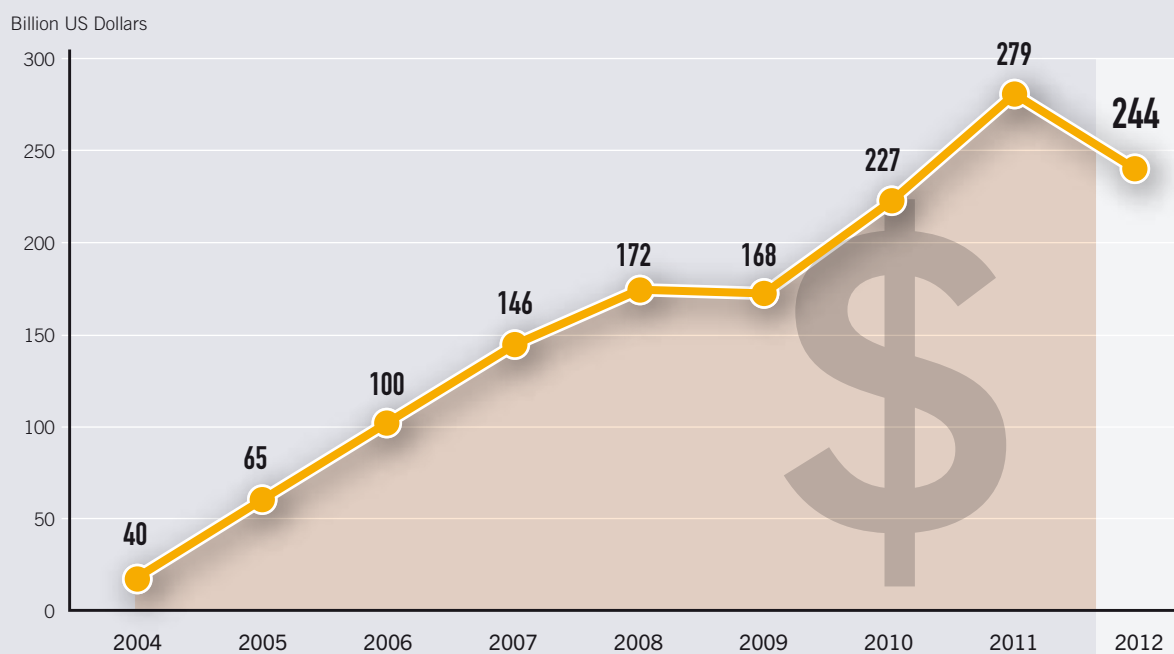


ating capacity

RENEWABLE POWER CAPACITIES* IN WORLD, EU-27, BRICS, AND TOP SIX COUNTRIES, 2012



GLOBAL NEW INVESTMENT IN RENEWABLE ENERGY, 2004–2012





JOBS WORLDWIDE GSR 2013

ESTIMATED DIRECT AND INDIRECT JOBS IN RENEWABLE ENERGY WORLDWIDE, BY INDUSTRY

| Technologies | Global | China | EU-27 | Brazil | United States | India | Germany | Spain |
|---------------------------------|---------------|------------------|--------------|------------------|------------------|------------|------------------------|-----------------|
| | Thousand Jobs | | | | | | | |
| Biomass ^a | 753 | 266 | 274 | | 152 ^f | 58 | 57 | 39 |
| Biofuels | 1,379 | 24 | 109 | 804 ^e | 217 ^g | 35 | 23 | 4 |
| Biogas | 266 | 90 | 71 | | | 85 | 50 | 1 |
| Geothermal ^a | 180 | | 51 | | 35 | | 14 | 0.3 |
| Hydropower (Small) ^b | 109 | | 24 | | 8 | 12 | 7 | 2 |
| Solar PV | 1,360 | 300 ^d | 312 | | 90 | 112 | 88 | 12 |
| CSP | 53 | | 36 | | 17 | | 2 | 34 ⁱ |
| Solar Heating/ Cooling | 892 | 800 | 32 | | 12 | 41 | 11 | 1 |
| Wind Power | 753 | 267 | 270 | 29 | 81 | 48 | 118 | 28 |
| Total^c | 5,745 | 1,747 | 1,179 | 833 | 611 | 391 | 378^h | 120 |

a Power and heat applications. b Employment information for large-scale hydropower is incomplete, and therefore focuses on small hydro. Although 10 MW is often used as a threshold, definitions are inconsistent across countries. c Derived from the totals of each renewable energy technology. d Estimates run as high as 500,000. e About 365,000 jobs in sugarcane and 213,400 in ethanol processing in 2011; also includes 200,000 indirect jobs in manufacturing the equipment needed to harvest and refine sugar cane into biofuels, and 26,000 jobs in biodiesel. f Biomass power direct jobs run only to 15,500. g Includes 173,600 jobs for ethanol and 42,930 for biodiesel in 2012. h Includes 9,400 jobs in publicly funded R&D and administration; not broken down by technology. i 2011 estimate by the Spanish Renewable Energy Association (APPA); Protermosolar offers a somewhat lower figure for the same year (28,850 jobs) and finds that the number fell to 17,816 in 2012.

Note: Data are principally for 2009–2012, with dates varying by country and technology. Totals may not add up due to rounding.
Source: IRENA, *Renewable Energy and Jobs* (Abu Dhabi: 2013).

JOBS IN 2012



= fifty-thousand



BIOENERGY
(Biomass, Biofuels, Biogas)



HYDROPOWER
(Small-scale)ⁱ



GEOTHERMAL



SOLAR ENERGY
(Solar PV, CSP, Solar Heating/Cooling)

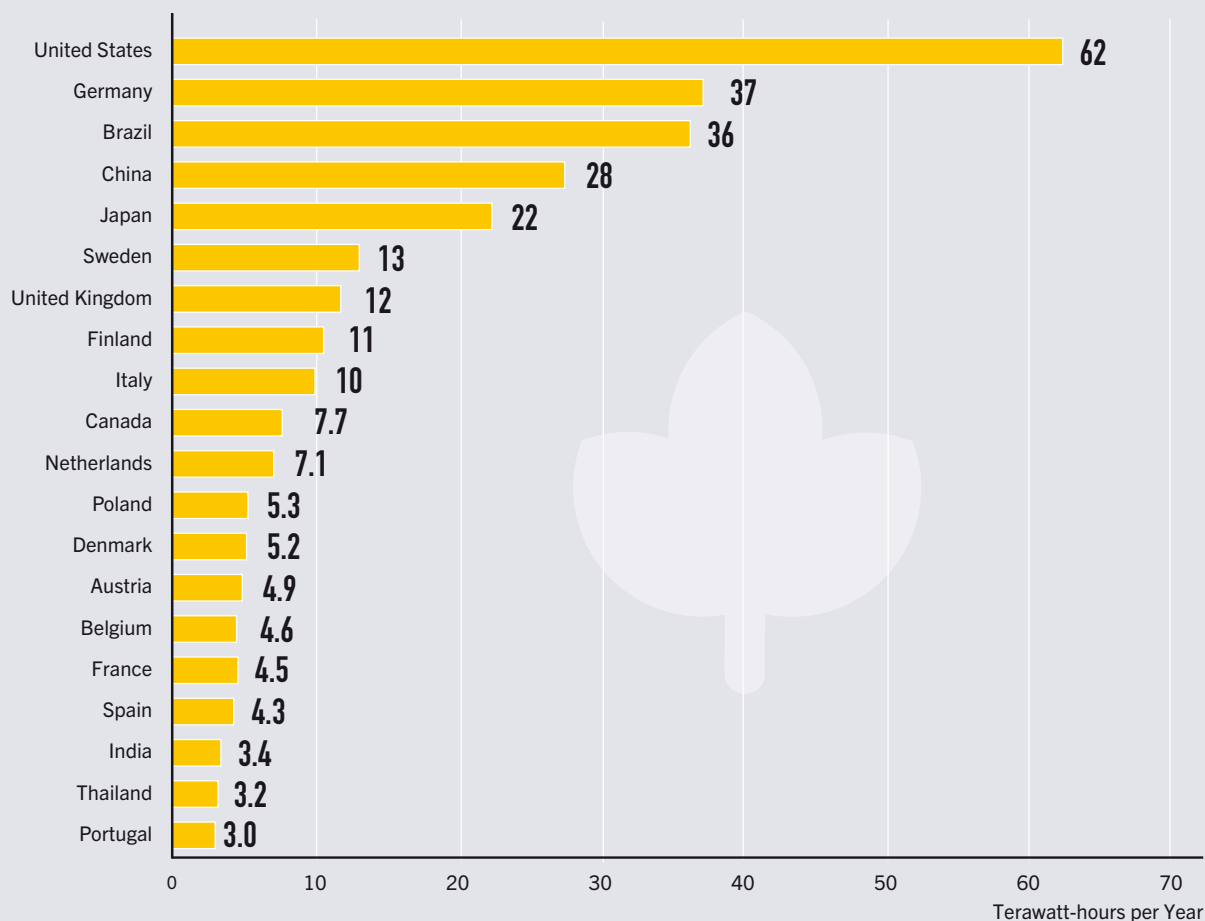


WIND POWER

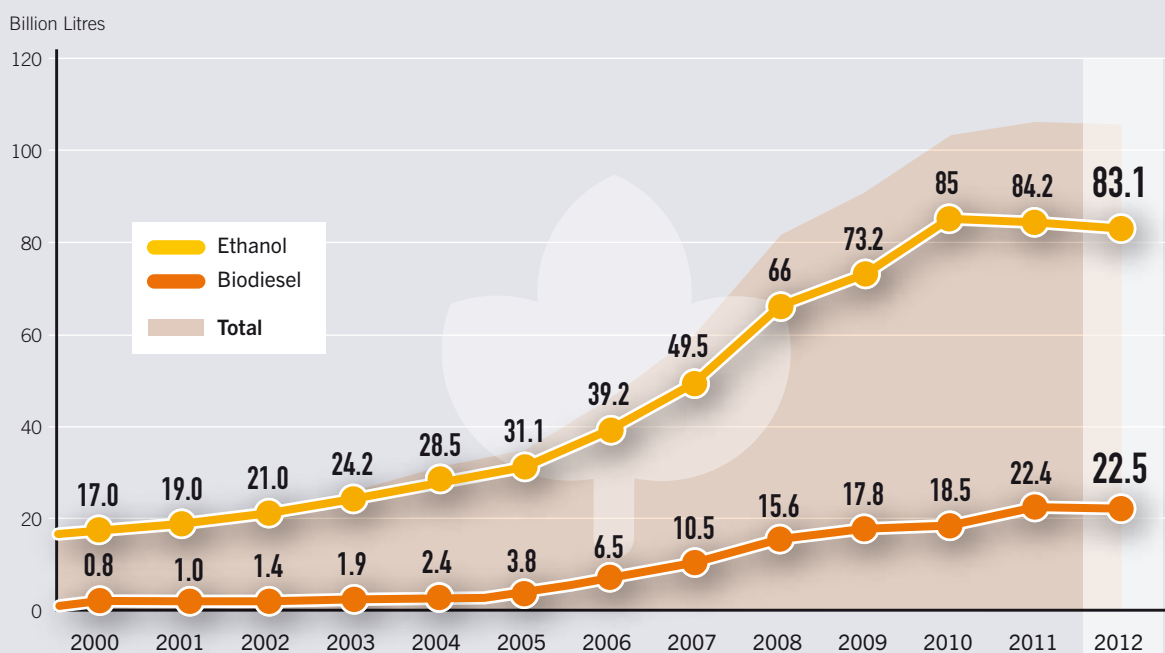
i Employment information for large-scale hydropower is incomplete and not included.

BIOENERGY GSR 2013

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

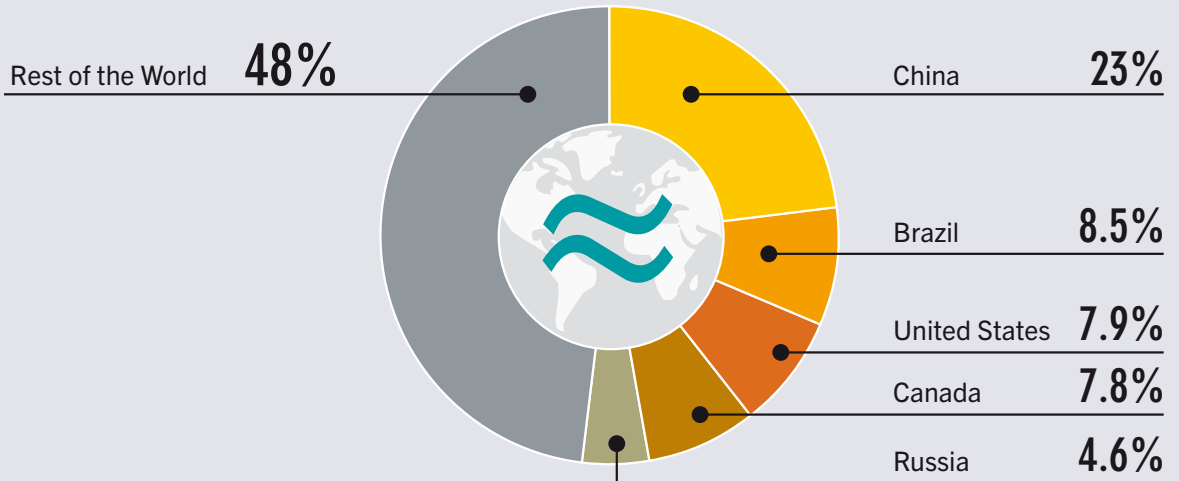


ETHANOL AND BIODIESEL GLOBAL PRODUCTION, 2000–2012



HYDROPOWER GSR 2013

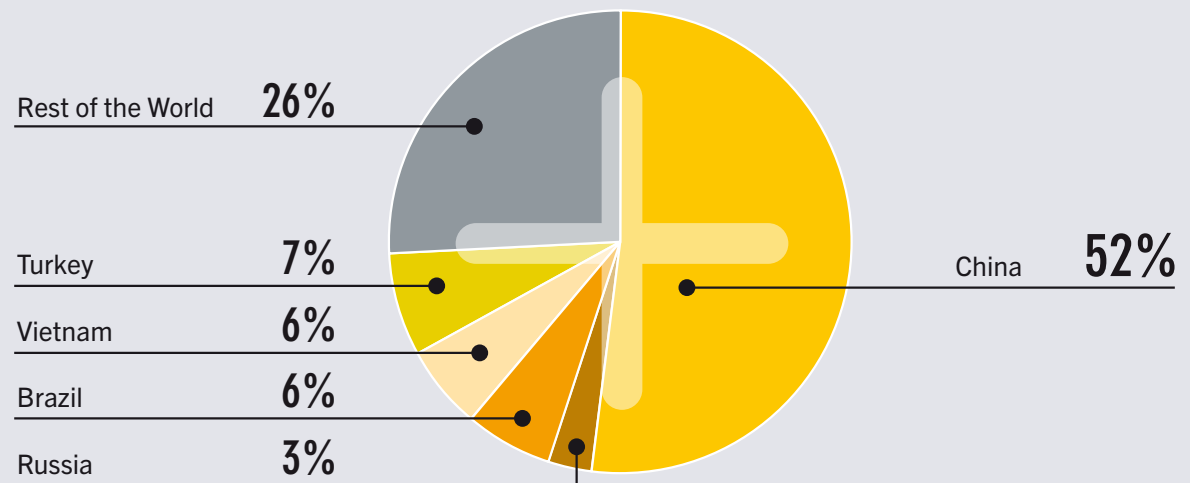
HYDROPOWER GLOBAL CAPACITY, SHARES OF TOP FIVE COUNTRIES, 2012



HYDROPOWER
GENERATED AN ESTIMATED
3,700 TWh
OF ELECTRICITY DURING 2012

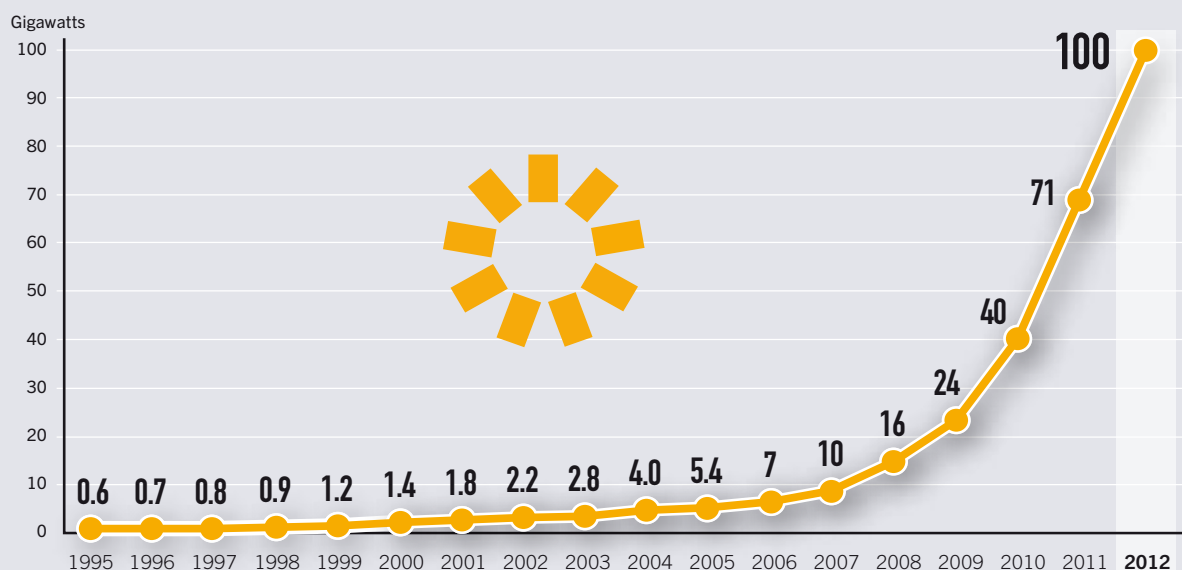


HYDROPOWER GLOBAL NET CAPACITY ADDITIONS, SHARES OF TOP FIVE COUNTRIES, 2012

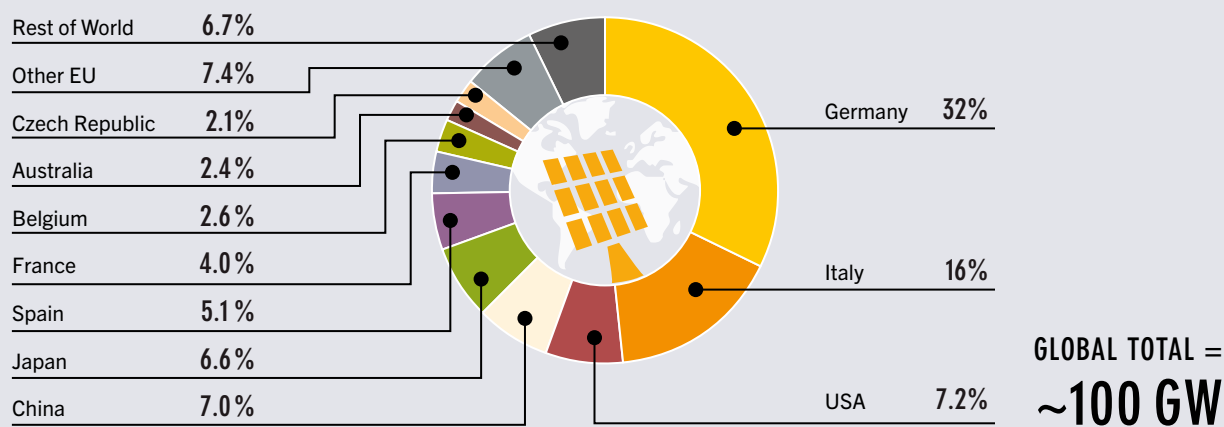


SOLAR PHOTOVOLTAICS (PV) GSR 2013

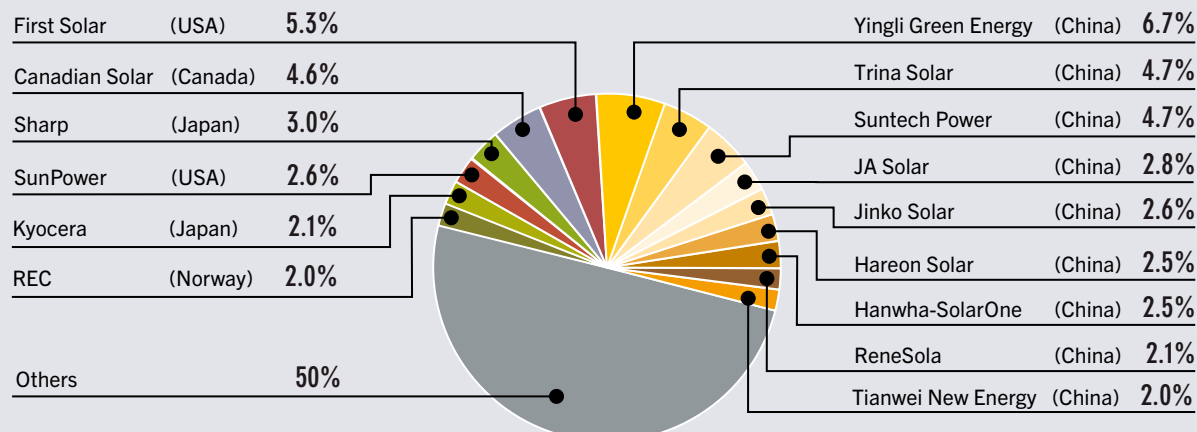
SOLAR PV GLOBAL CAPACITY, 1995–2012



SOLAR PV GLOBAL CAPACITY, SHARES OF TOP 10 COUNTRIES, 2012

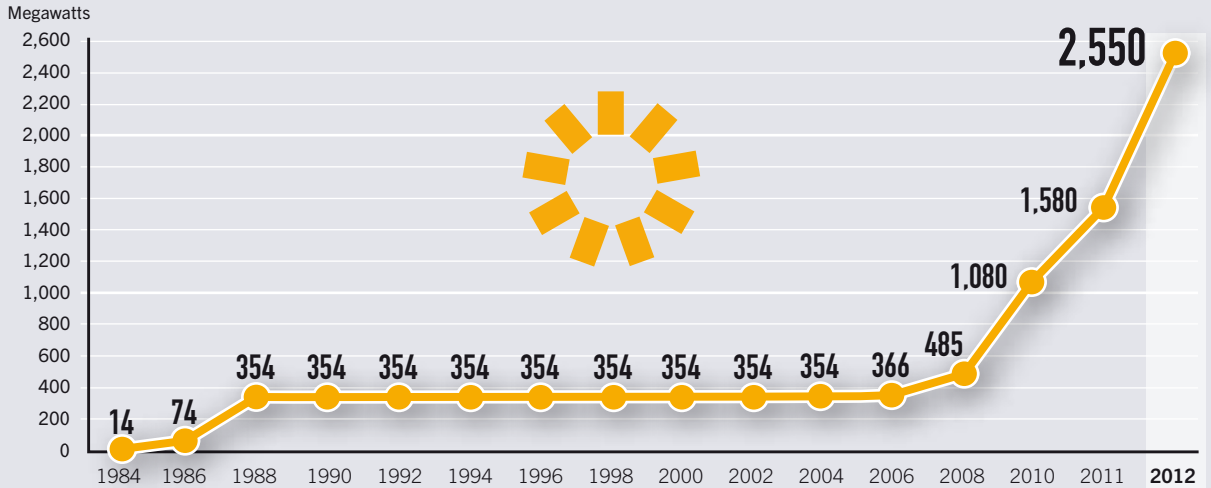


MARKET SHARES OF TOP 15 SOLAR PV MODULE MANUFACTURERS, 2012

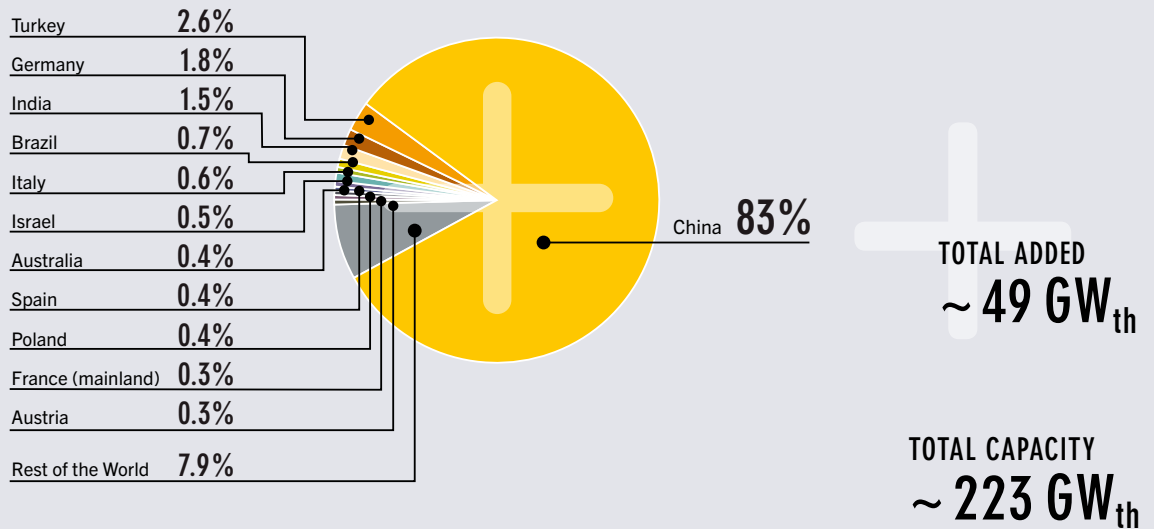


SOLAR THERMAL GSR 2013

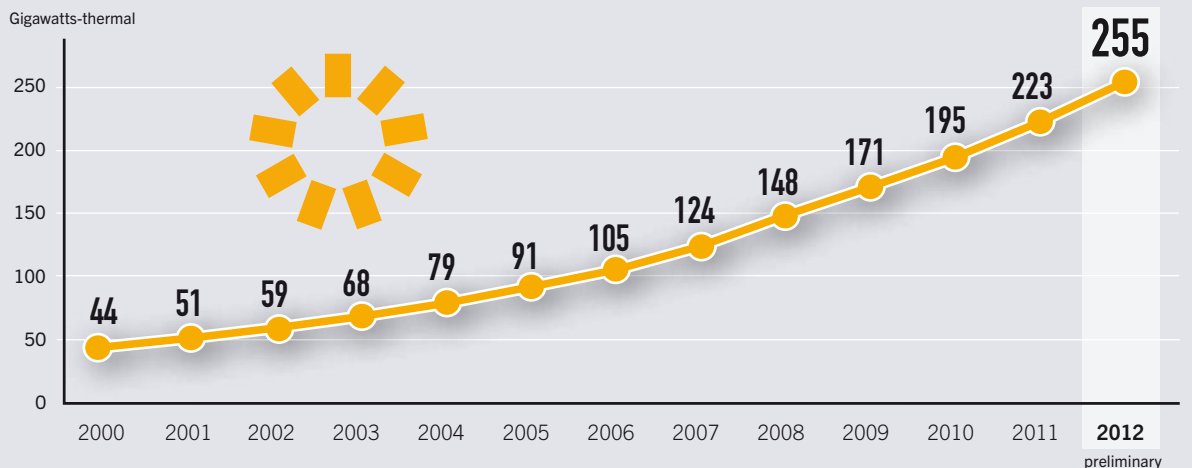
CONCENTRATING SOLAR THERMAL POWER GLOBAL CAPACITY, 1984–2012



SOLAR WATER HEATING GLOBAL CAPACITY ADDITIONS, SHARES OF TOP 12 COUNTRIES, 2011

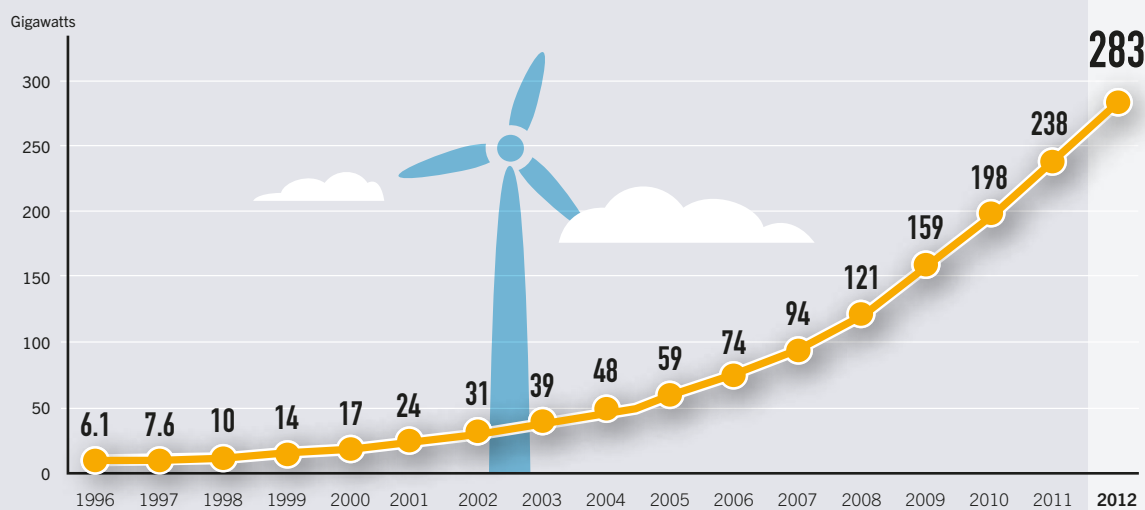


SOLAR WATER HEATING GLOBAL CAPACITY, 2000–2012

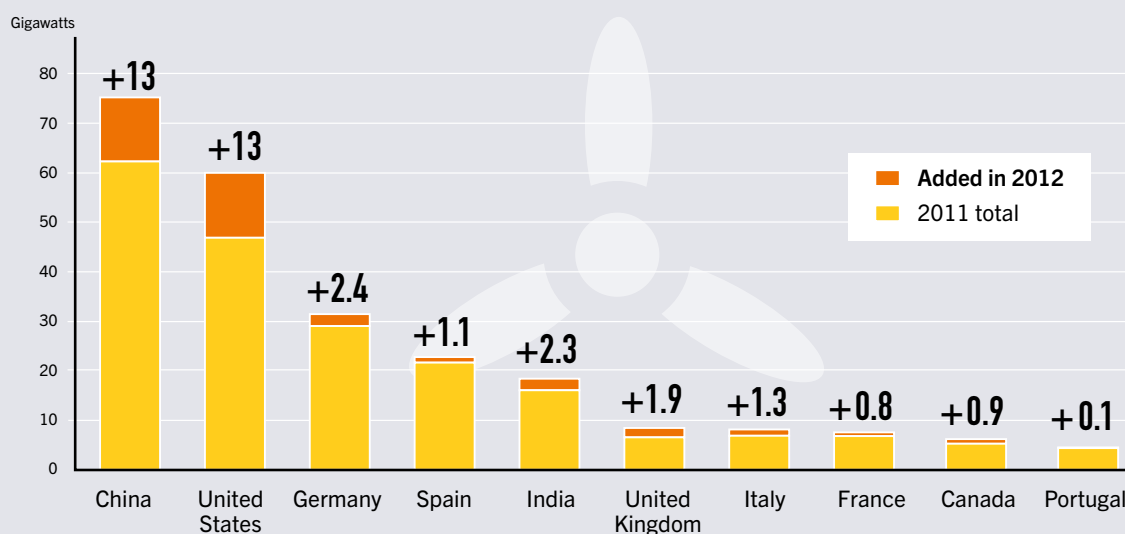


WIND POWER GSR 2013

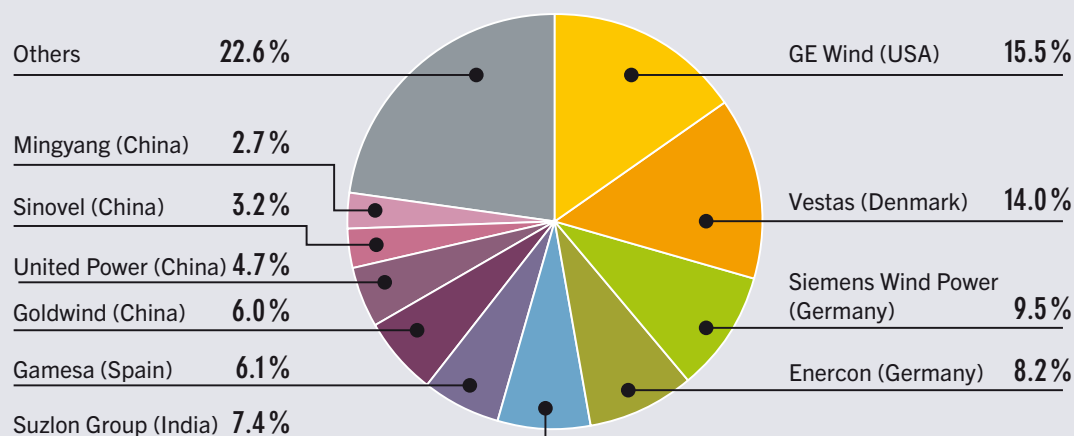
WIND POWER GLOBAL CAPACITY, 1996–2012



WIND POWER CAPACITY AND ADDITIONS, TOP 10 COUNTRIES, 2012



MARKET SHARES OF TOP 10 WIND TURBINE MANUFACTURERS, 2012



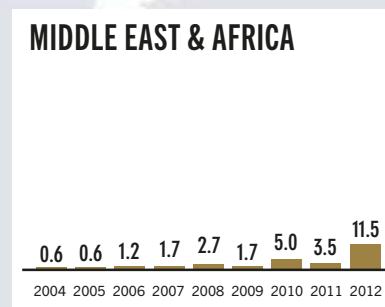
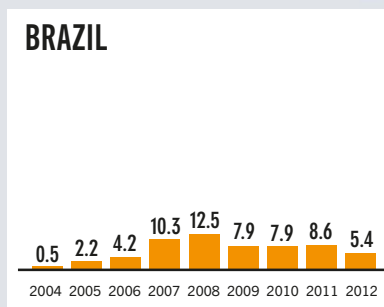
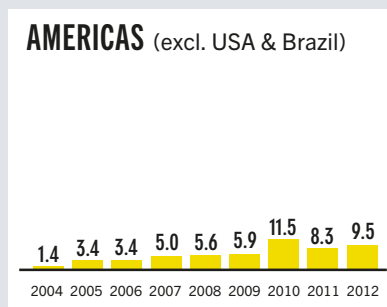
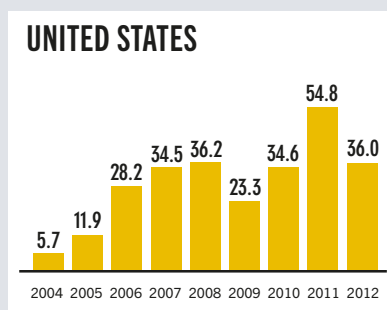
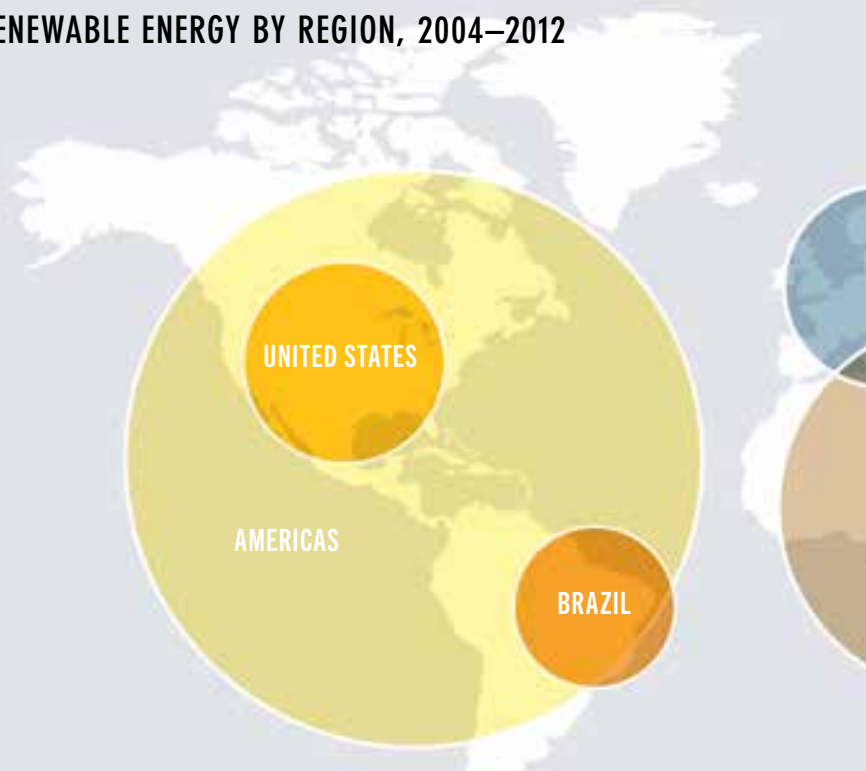
\$ INVESTMENT GSR 2013

GLOBAL NEW INVESTMENT IN RENEWABLE ENERGY BY REGION, 2004–2012

Investment in Billion USD.

Data include government and corporate R&D.

Coloured circles on the map are not to scale.



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The REN21 *Renewables 2013 Global Status Report* is produced by the REN21 Secretariat, Paris, France. In addition to the authoring team, numerous regional, topical, rural energy, and other experts contributed information and valuable time to this collaborative project.

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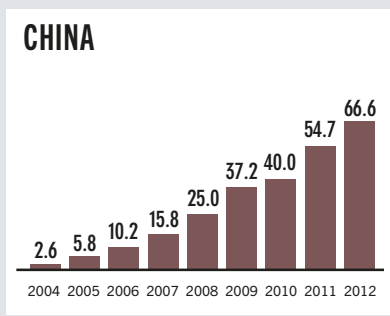
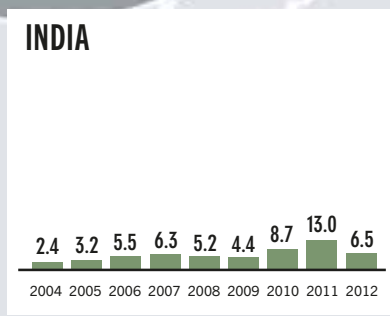
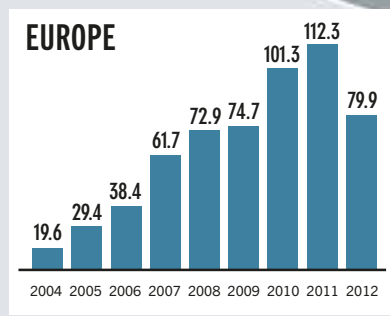
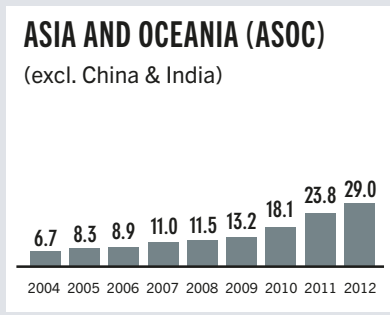
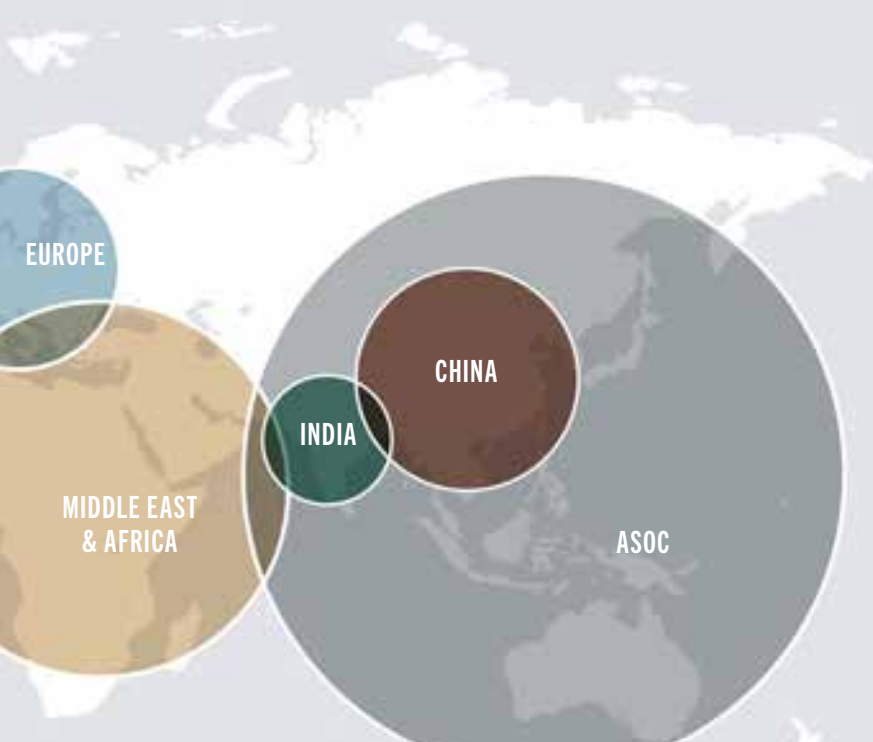
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The UN Secretary-General's initiative Sustainable Energy for All aims at mobilising global action to achieve universal access to modern energy services, improved rates of energy efficiency, and expanded use of renewable energy sources by 2030. REN21's *Renewables 2013 Global Status Report* includes a section on rural renewable energy, based on input from local experts working around the world. The report highlights how renewables are providing access to energy for millions of people and contributing to a better quality of life through the use of modern cooking, heating/cooling, and electricity technologies.

KEY FINDINGS 2013

RENEWABLES 2013 GLOBAL STATUS REPORT

For further details and access to the full report,
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REN21 Renewable Energy
Policy Network
for the 21st Century

A row of five small, colorful icons representing different renewable energy sources: a sun (yellow), a wind turbine (blue), a water drop (orange), a leaf (green), and a flame (red).