

# RENEWABLES 2013

## GLOBAL STATUS REPORT



# Renewable Energy Status

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CEC Webinar South-East Asia  
22<sup>nd</sup> October 2013



# 2013

[www.ren21.net](http://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:

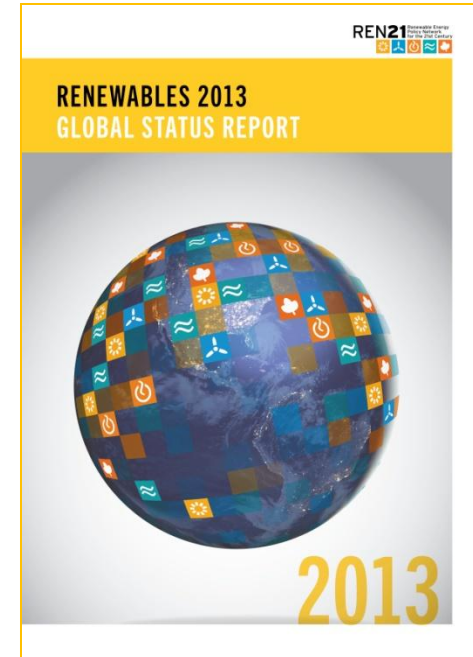
ADB, EC, GEF, IEA, IRENA,  
UNDP, UNEP, UNIDO,  
World Bank

### National Governments:

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

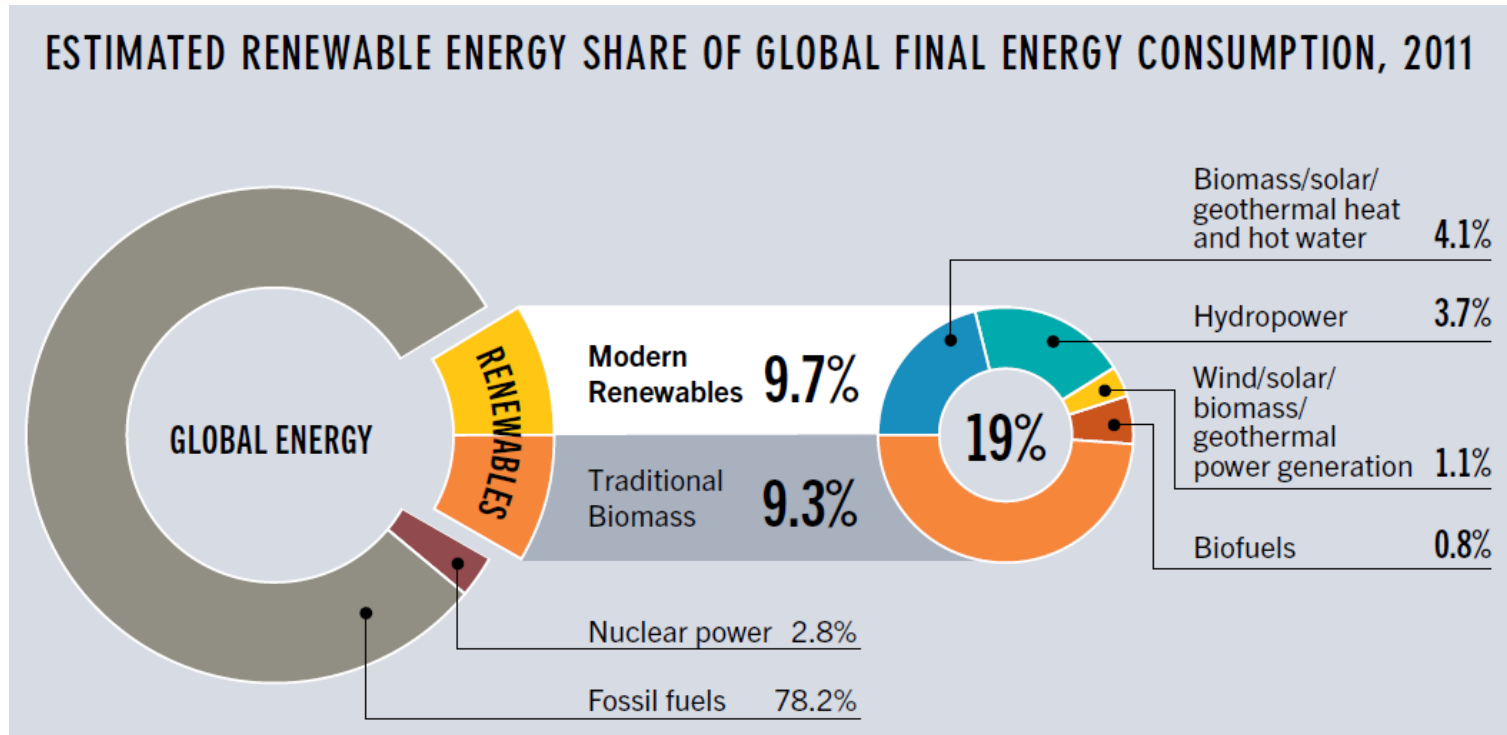
# REN21 Renewables Global Status Report

- Launched along with UNEP's Global trends in RE investment.
- Team of over 500 Contributors, researchers & reviewers worldwide.
- 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.



[www.ren21.net/gsr](http://www.ren21.net/gsr)

# 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 <sup>1</sup>	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

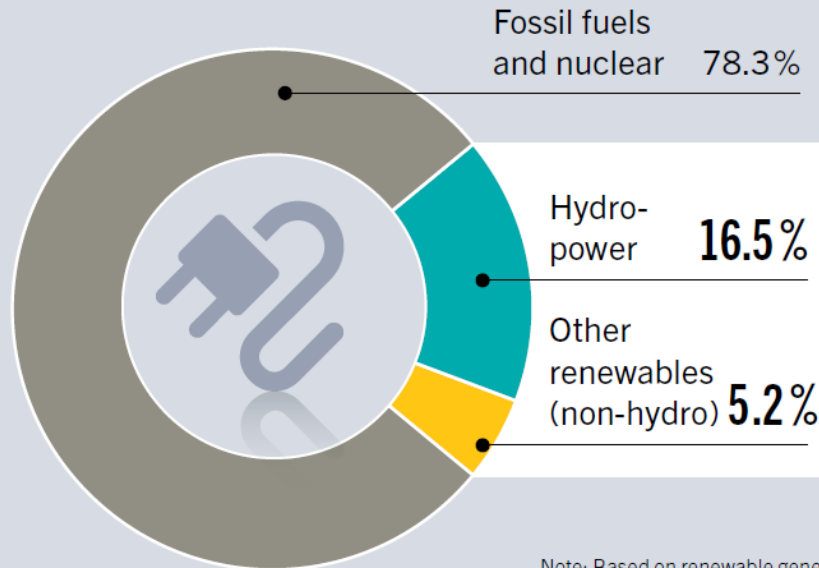
## TOTAL CAPACITY AS OF END-2012

	Renewable power capacity (incl. hydro)	Renewable power capacity (not incl. hydro)	Renewable power capacity per capita (not incl. hydro) <sup>2</sup>	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

## ESTIMATED RENEWABLE ENERGY SHARE OF GLOBAL ELECTRICITY PRODUCTION, 2012



Note: Based on renewable generating capacity in operation at year-end 2012.

Source: REN21 Renewables 2013 Global Status Report

- Renewable energy comprise 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 electric capacity installed in 2012.

# 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.

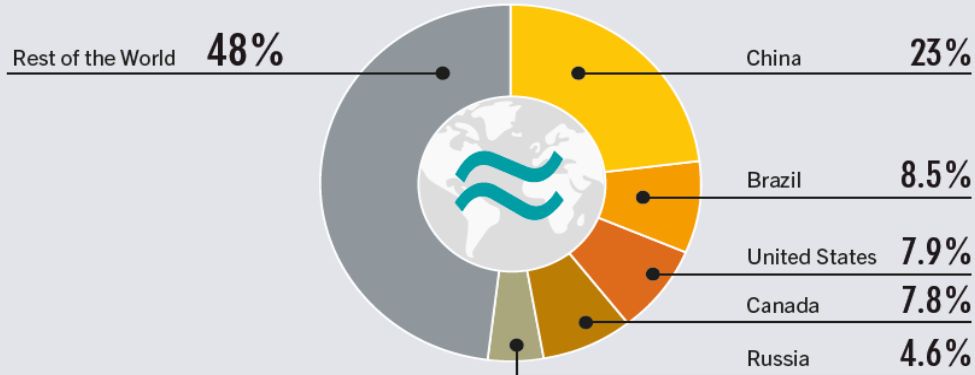
## ■ Transport

- 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.

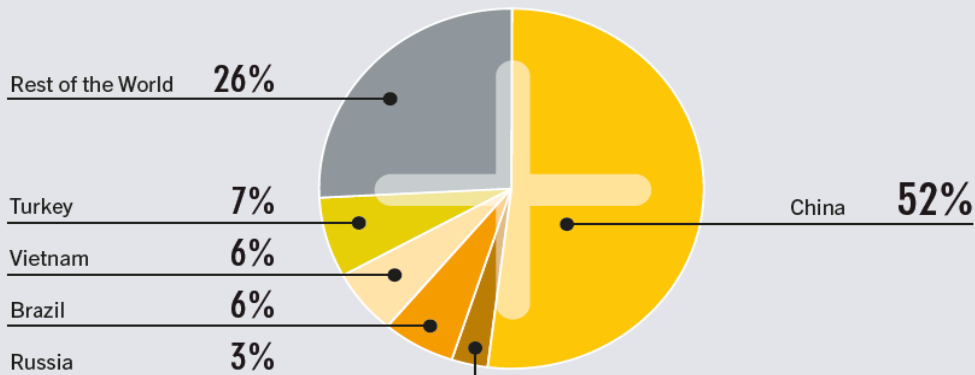


# Hydropower

HYDROPOWER GLOBAL CAPACITY, SHARES OF TOP FIVE COUNTRIES, 2012



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

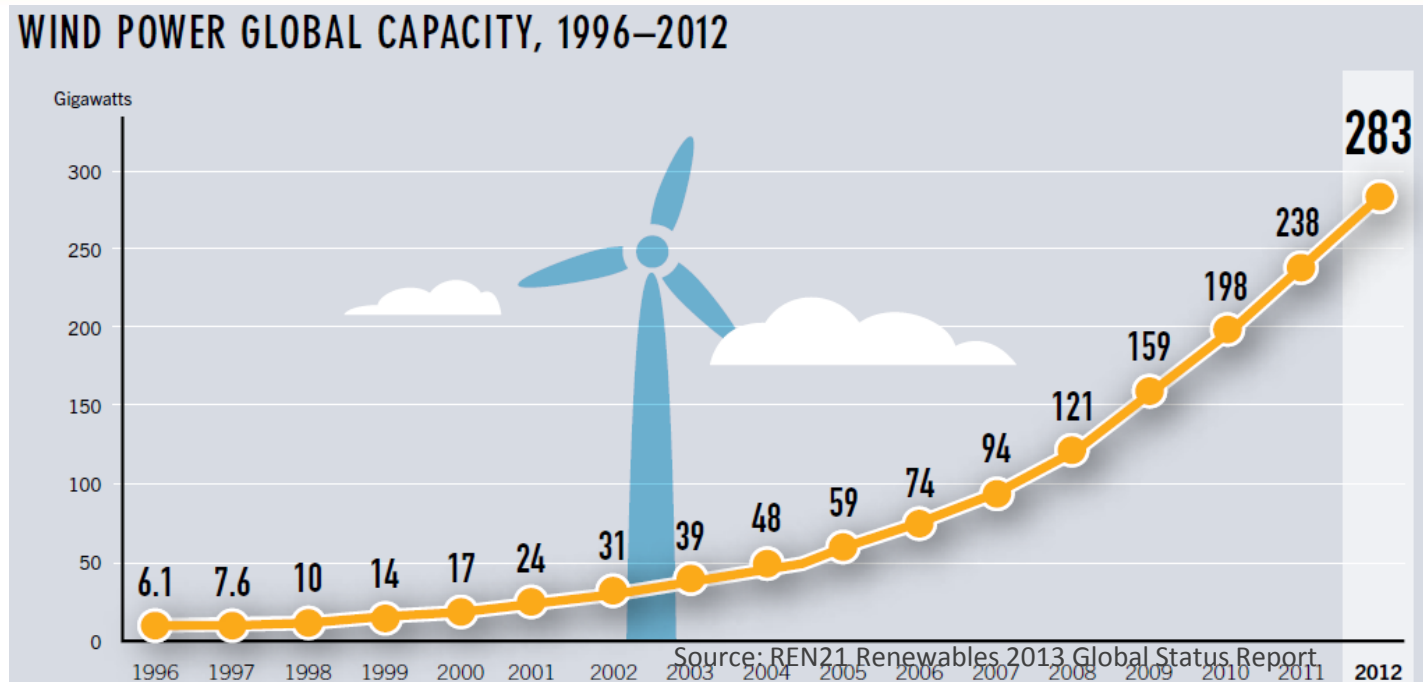


Source: REN21 Renewables 2013 Global Status Report

- 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. 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.



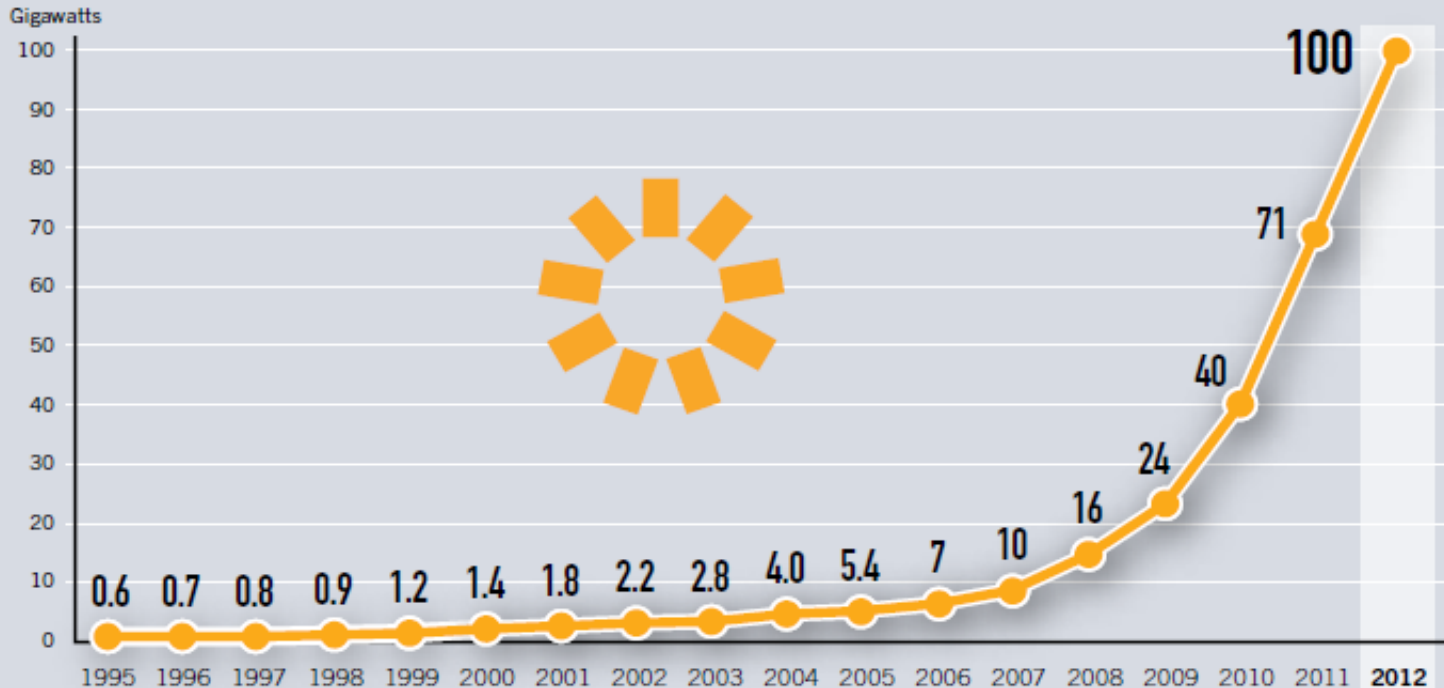
# Wind Power



- Almost 45GW of wind power capacity began operation, increasing global wind capacity 19% to 283 GW.
- In **China**, wind power generation increased by **13 GW surpassing** generation from coal and passed nuclear power output for the first time, **India** added 2.3 GW.

# Solar Photovoltaics (PV)

SOLAR PV GLOBAL CAPACITY, 1995–2012

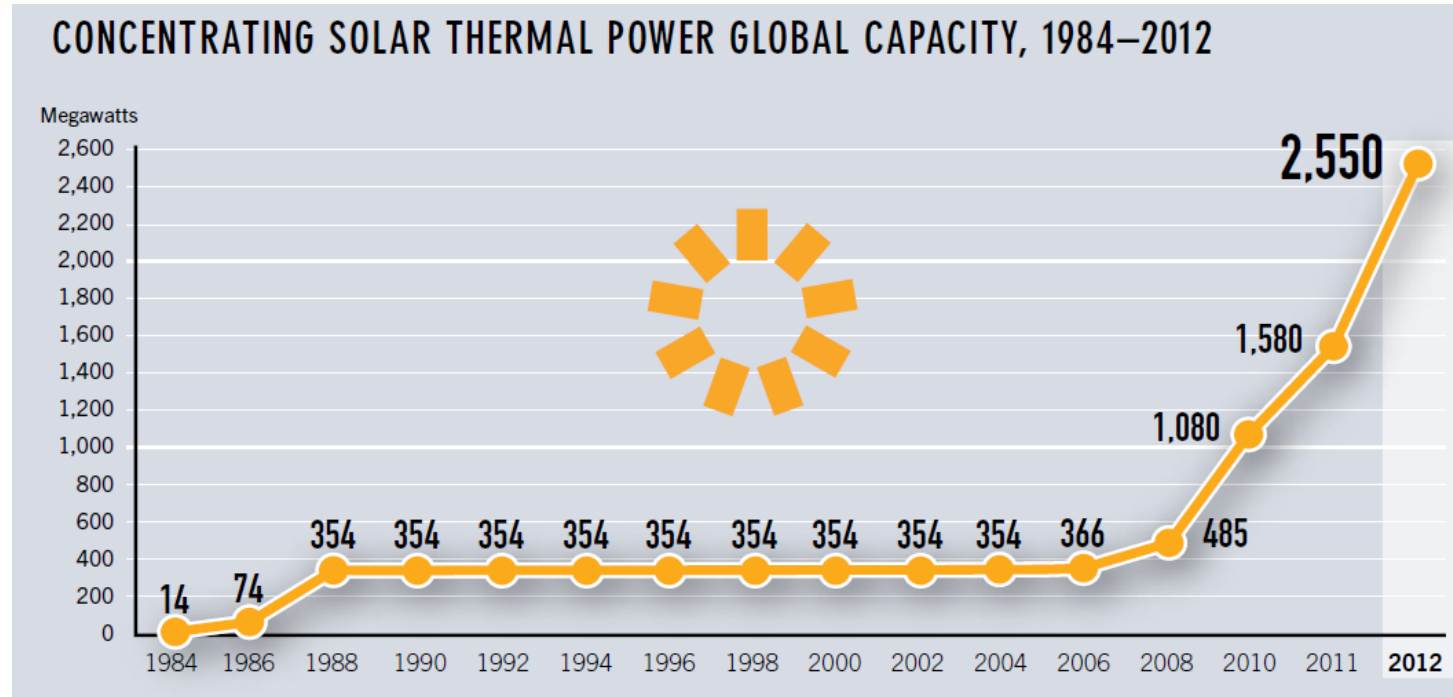


Source: REN21 Renewables 2013 Global Status Report

- Total global operating capacity of solar PV reached the **100 GW** milestone.
- Prices of solar PV modules fell by more than 30 % in 2012.

- By year's end, **Australia, China, India** and **Japan** had at least 1 GW of total capacity.
- **Australia, China** and **Japan** were among the 10 top markets for PV capacity.

# Concentrating Solar Thermal Power (CSP)



Source: REN21 Renewables 2013 Global Status Report

- **Interest in CSP is on the rise**, particularly in developing countries, with investment spreading across Africa, the Middle East, **Asia**, and Latin America.
- **Australia** added **9 MW** to its Liddell Power Station.
- **China, India, and South Korea** have small pilot plants in operation.

# Geothermal Energy

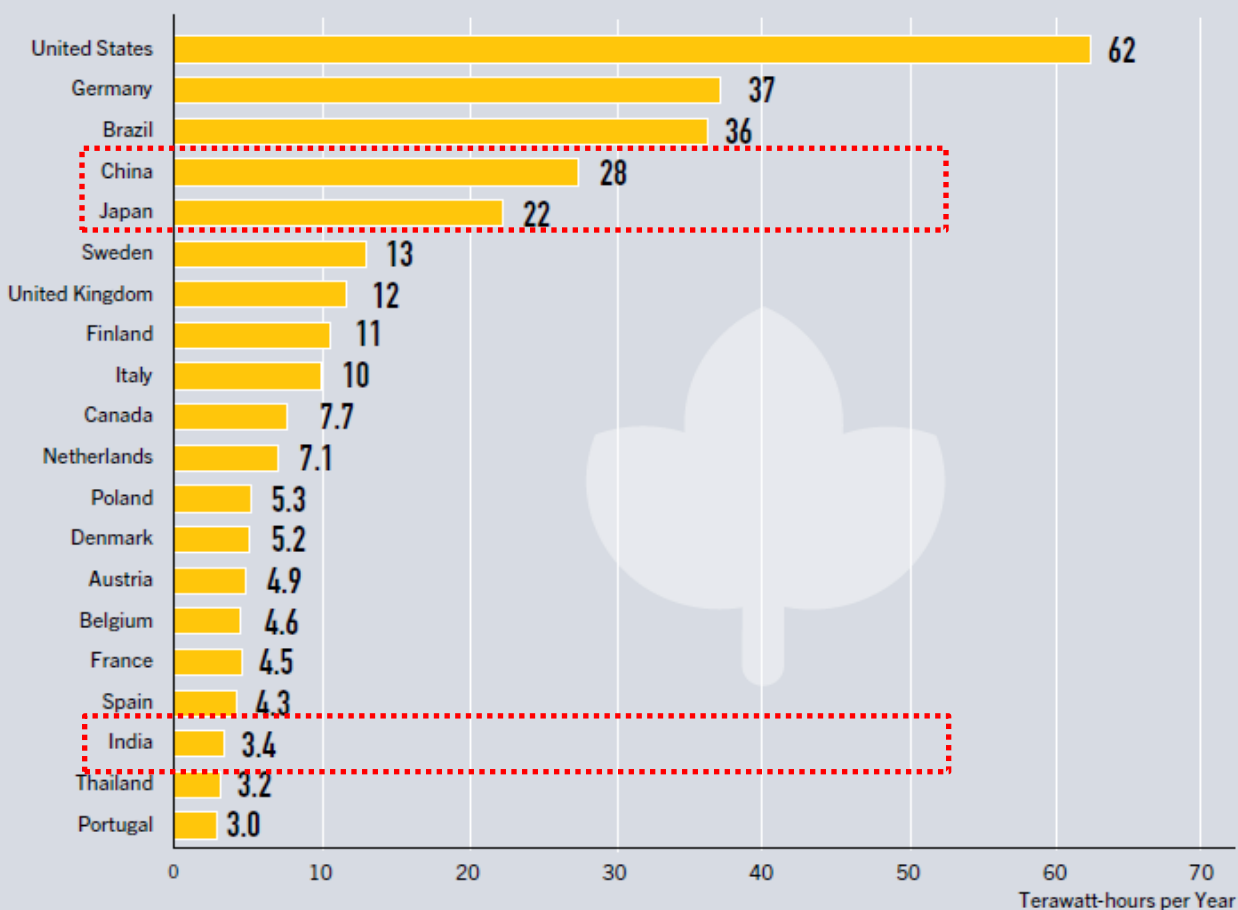


- 233 TWh (805PJ) of district heat and electricity was provided by geothermal resources in 2012.
- The use of ground-source heat pumps is growing fast and reached an estimated 50 GW<sub>th</sub> of capacity in 2012.
- Geothermal electric generating capacity grew by an estimated 300 MW during 2012, bringing the global total to 11.7 GW and generating at least 72 TWh.

- 2/3 of global capacity is located in the US, **China**, Sweden, Germany and **Japan**.

# 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).

# Renewable Energy and Jobs

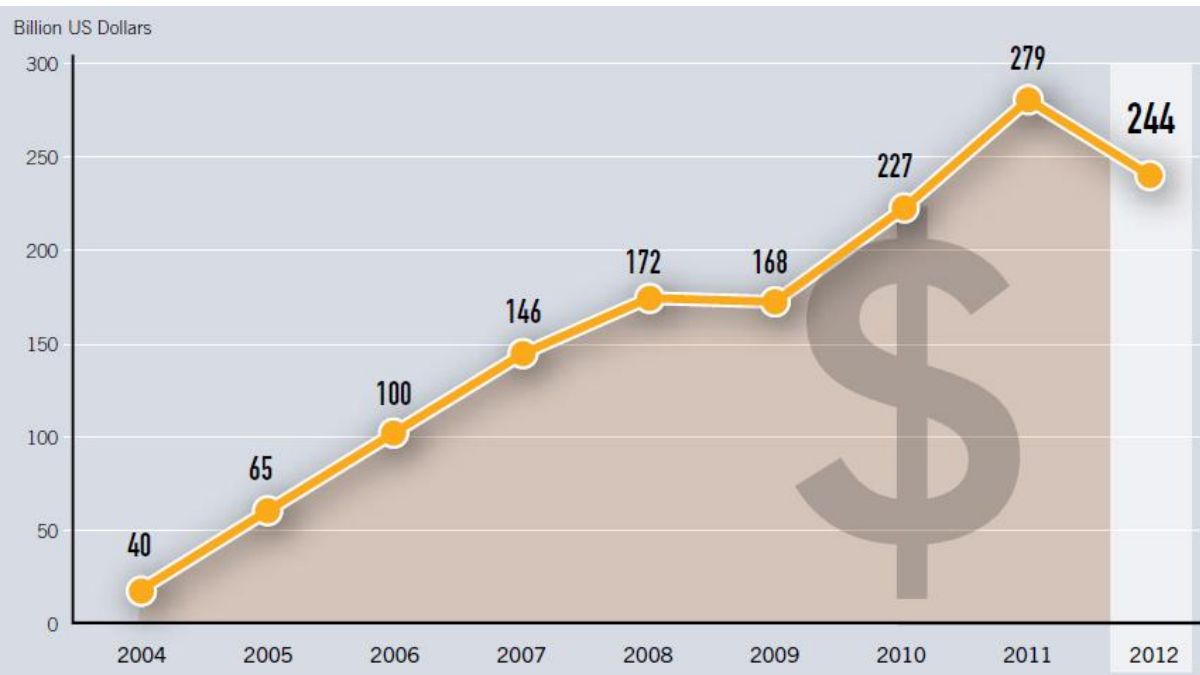


Data source: IRENA, Renewable Energy and Jobs 2013

- 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

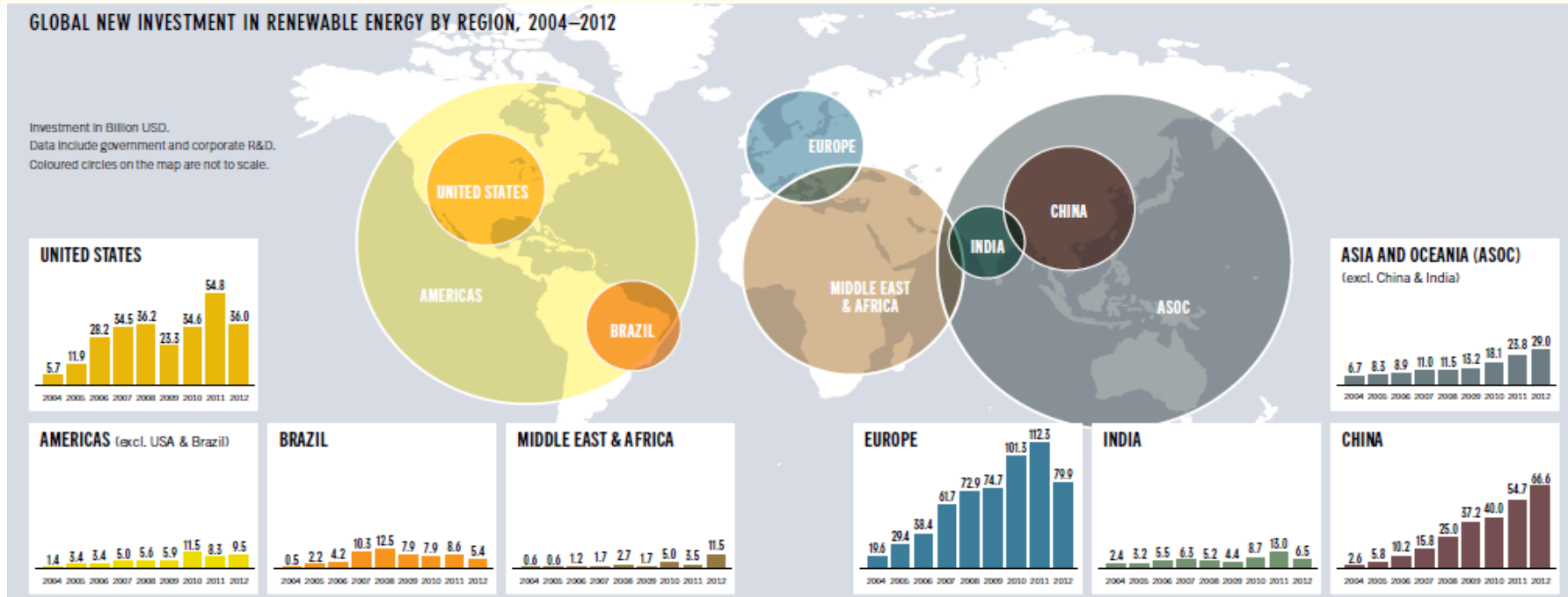


Data source: UNEP FS/ BNEF Global Trends in Renewable Energy Investment 2013

- Global new investment in renewable power went down 12% from the previous year's record (still the second highest ever).
- **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.



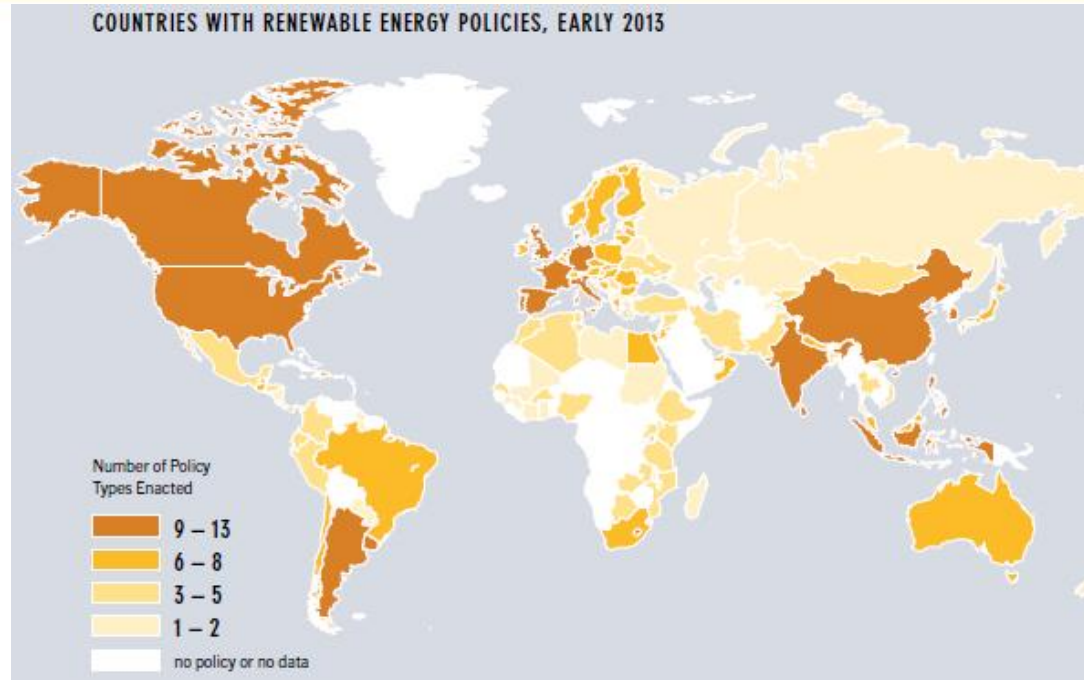
# Investment Flows



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

- **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.

# Renewable Energy Policy Landscape



Source: REN21 Renewables 2013 Global Status Report

- At least **138 countries** had renewable energy targets by the end of 2012.
- The number of countries with renewable energy targets more than doubled between 2005 and 2012.

## 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

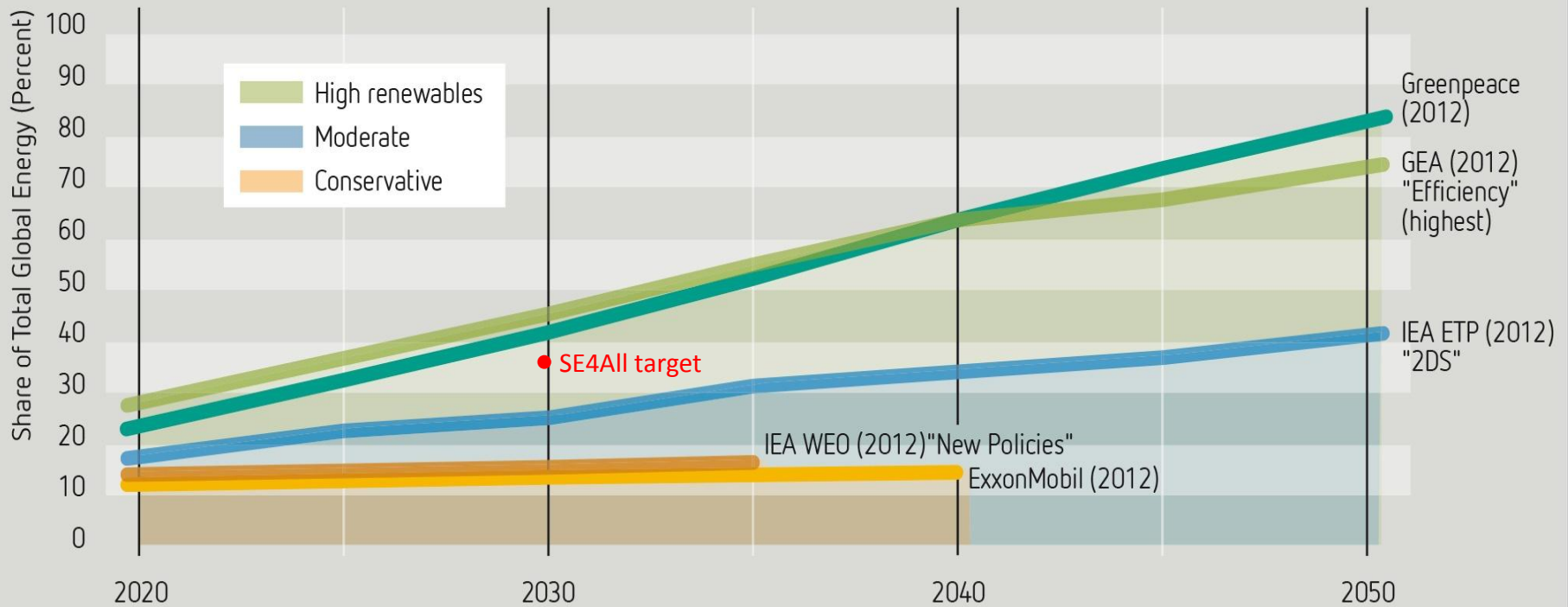
# Starting point for SE4ALL goals can be established on this basis

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
<b>2010</b>	<b>83</b>	<b>59</b>		<b>18.0</b>
2030	100	100	-2.6	36.0

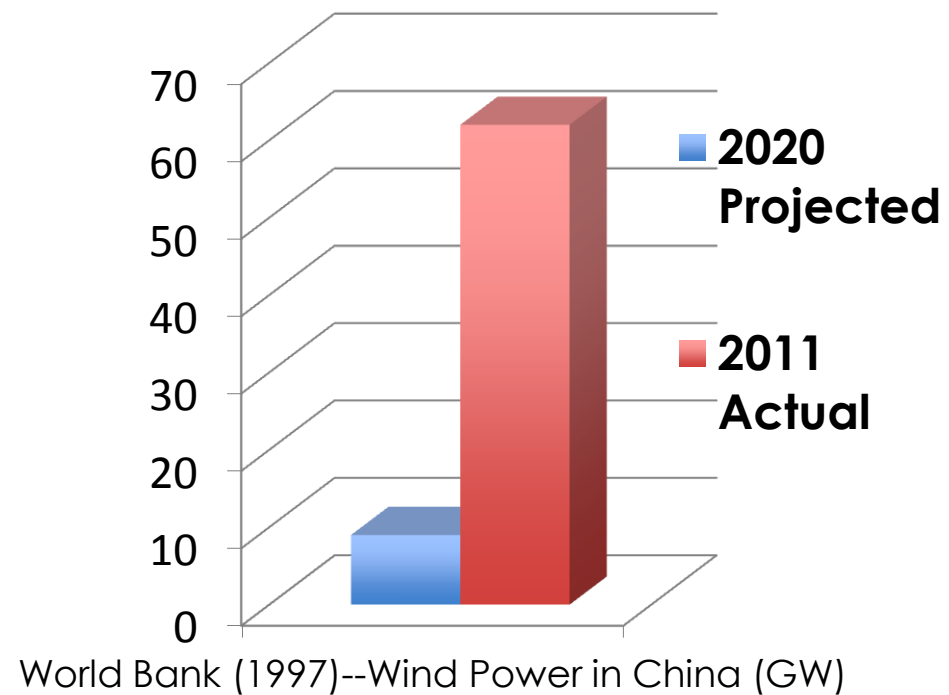
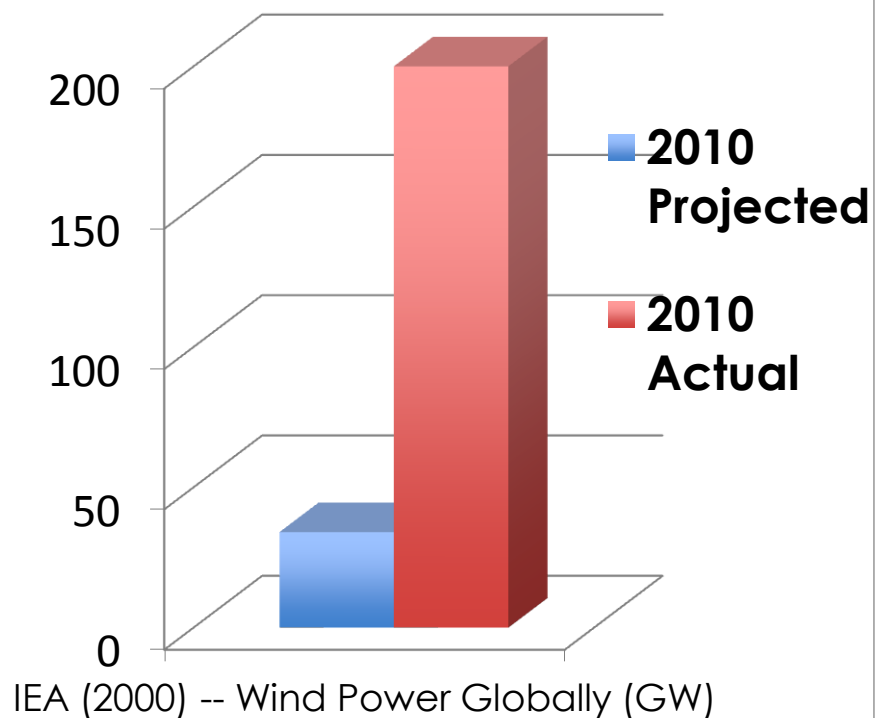
Source: Global Tracking Framework @ International Energy Agency and World Bank, 2013

# Future outlook

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



# Historic Projections Fall Short...



# In conclusion

- Achieving objectives will take bold policy action aimed at doubling or tripling financial flows.
- Stable and predictable policy frameworks are key for the industry.
- 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.
- Both centralised and decentralised renewables will be needed.
- Phase out of untargeted fossil fuel subsidies is indispensable (RE support is still 6 times less than fossil fuel subsidies).
- Integration of renewable energy will become more important.



# REN21 Flagship Products & Activities

## REN21 FLAGSHIP PRODUCTS AND ACTIVITIES

**Renewables Global Status Report**  
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**Renewables Interactive Map**  
[www.map.ren21.net](http://www.map.ren21.net)



**Renewables Global Futures Report**  
[www.ren21.net/gfr](http://www.ren21.net/gfr)



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