

RENEWABLE ENERGY



Medium-Term Market Report 2013

Medium-Term Renewable Energy Market Report 2013

Maria van der Hoeven

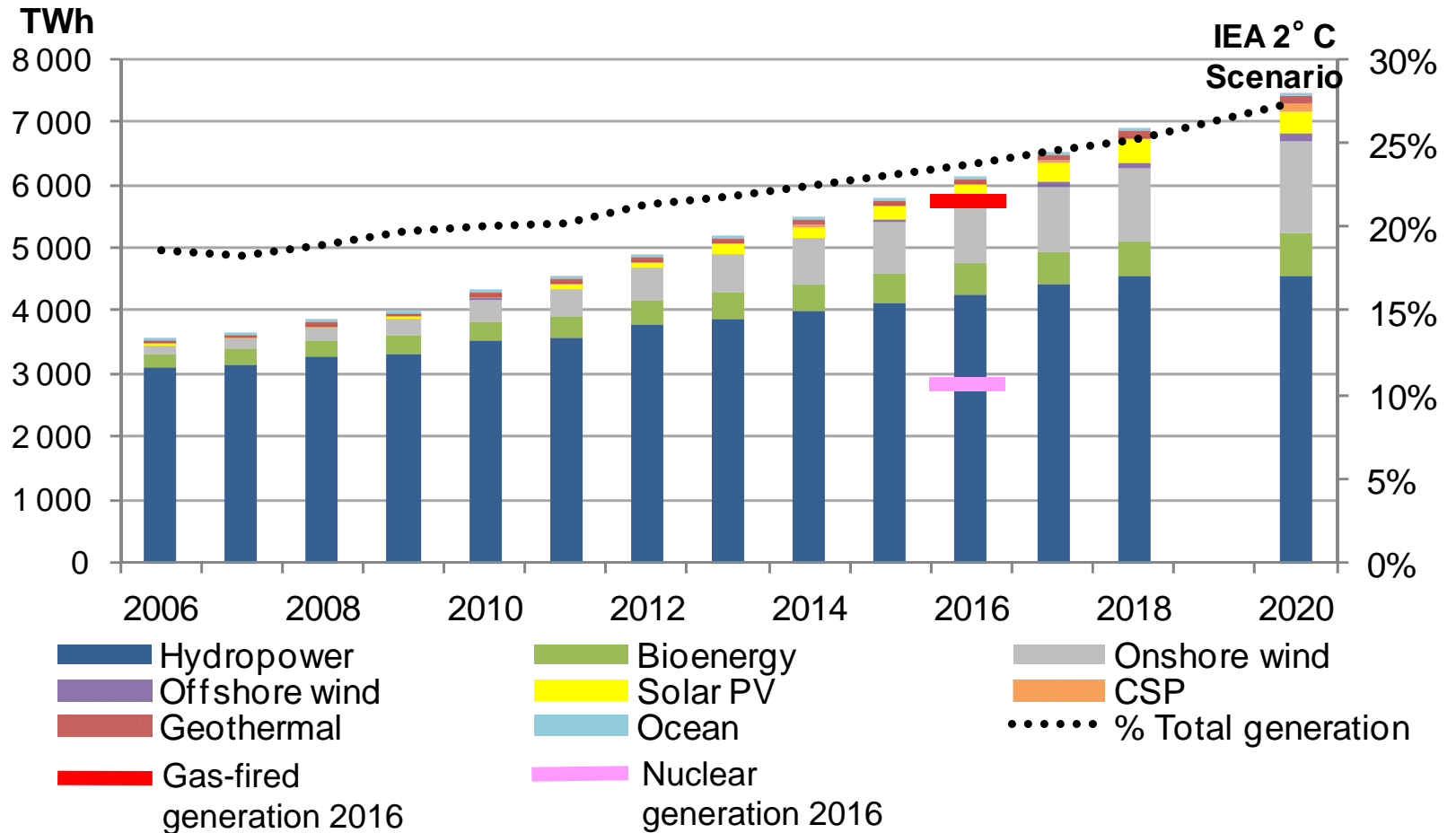
Executive Director, International Energy Agency

Market Trends and Projections to 2018

Report Launch, 10th Renewable Energy Finance Forum Wall Street, New York City, 26 June 2013

Positive outlook for renewable electricity

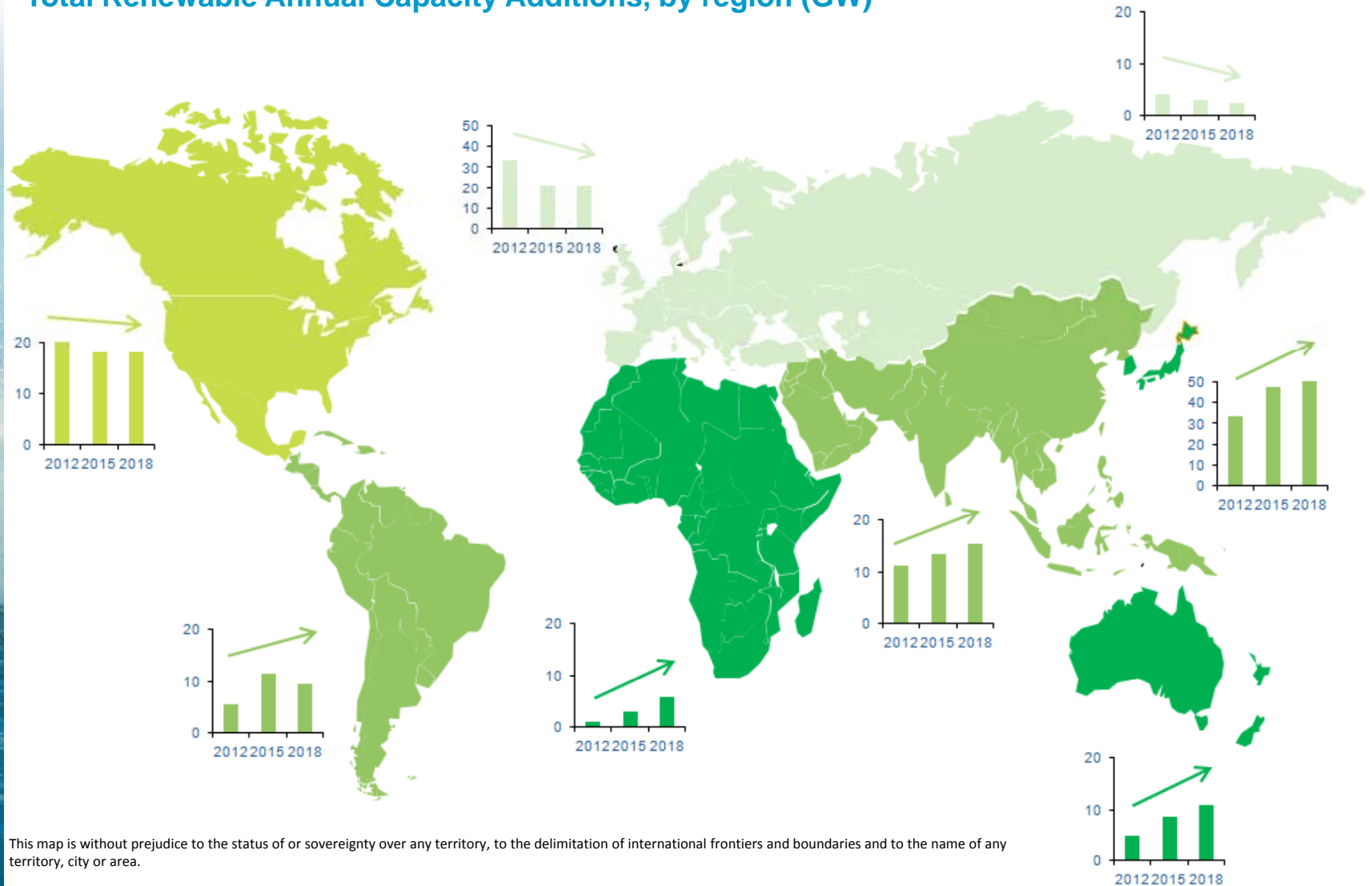
Global renewable electricity production, by technology (TWh)



■ Renewable electricity projected to scale up by 40% from 2012 to 2018

Renewable power spreading out everywhere

Total Renewable Annual Capacity Additions, by region (GW)

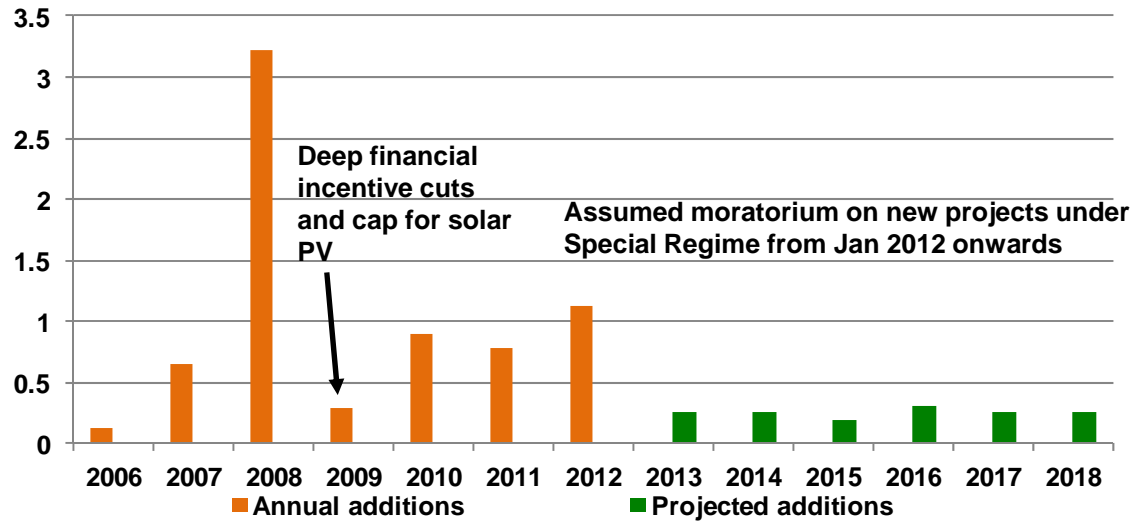


This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

- Emerging markets more than compensate for slowing growth and volatility in markets such as Europe and the US

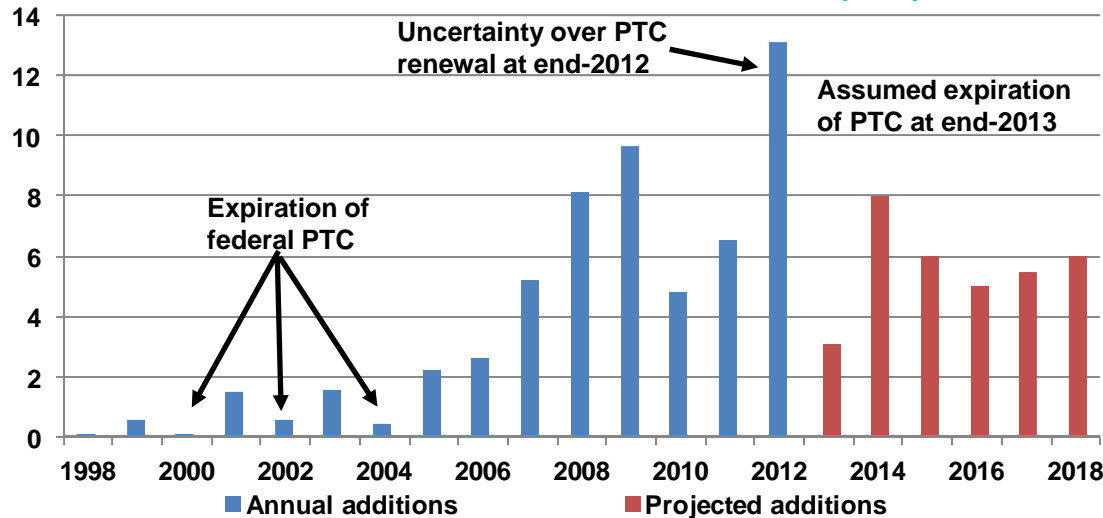
Policy uncertainty is the number one risk

Spain solar PV + CSP annual additions (GW)



Abrupt, retroactive policy changes

US onshore wind annual additions (GW)



Stop & go policies



Main messages to policy makers

- Many renewables no longer require high economic incentives
- But they do need long-term policies that continue to provide a predictable and reliable market and regulatory framework compatible with societal goals



Part Two – Snapshots

Technology, Regional, Country Breakdowns

Paolo Frankl

Head, Renewable Energy Division

IEA

Methodology and Scope

- Analysis of drivers and challenges for RE deployment at country level

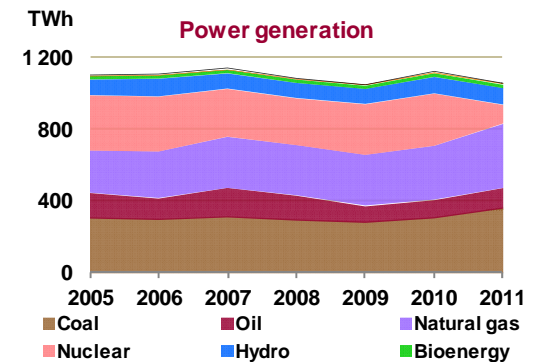
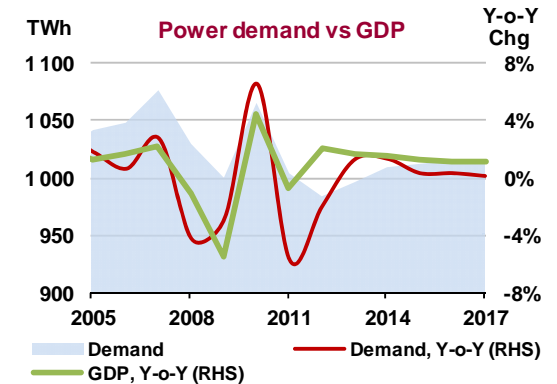
- Regulatory framework, power demand, competition with other fuels, grid integration, etc.

- Bottom-up RE power capacity and generation forecast

- USA, **Canada, Chile, Mexico**
- Japan, **Korea, Australia**
- Denmark, France, Germany, **Ireland**, Italy, Spain, Turkey, UK
- China, Brazil, India, **Thailand**, **Morocco, South Africa**

- Global biofuels production by country

- Regional breakdown RE for heat

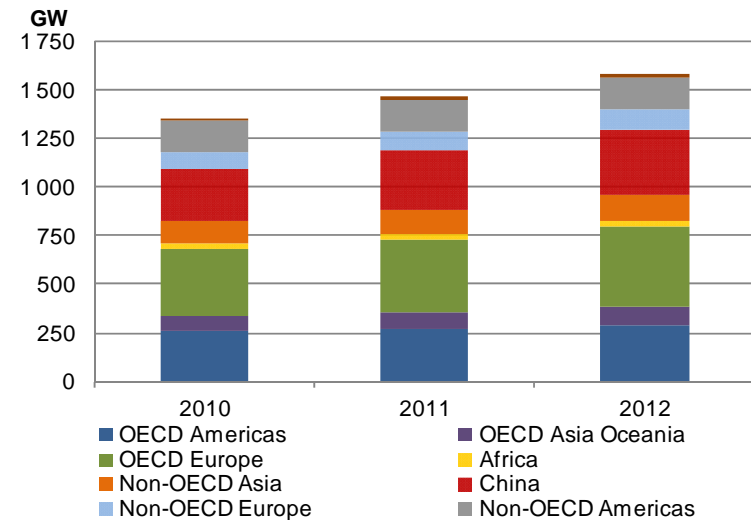


Despite Challenges, strong Renewable Drivers in 2012

- **Total renewable capacity and generation grew strongly in 2012 (+8%)**
 - Strength partly due to China hydropower
 - Global non-hydro capacity grew by 21% year-on-year
 - Onshore wind and solar PV capacity grew faster than expected

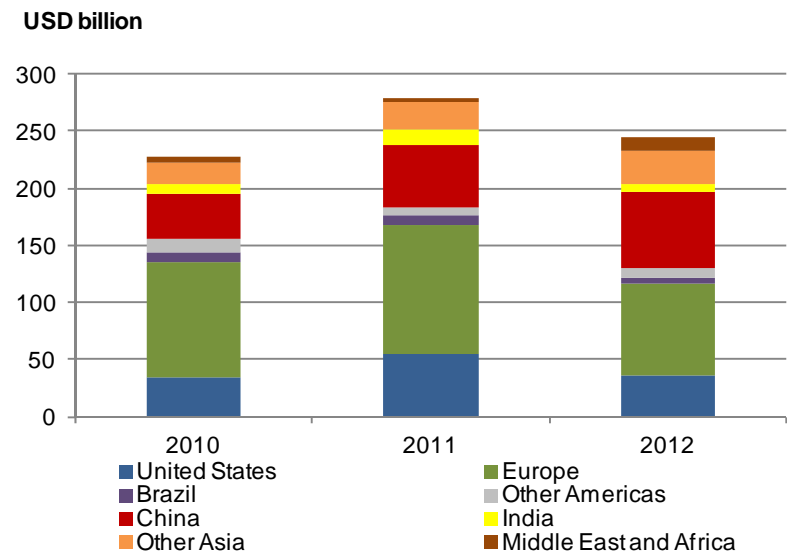
- **Still, some emerging challenges**
 - Global investment fell (-12%)
 - Policy uncertainty in some key countries
 - Grid integration issues emerging
 - Biofuels production growth stalled

Global renewable electricity capacity, by region



Source: IEA MTRMR 2013

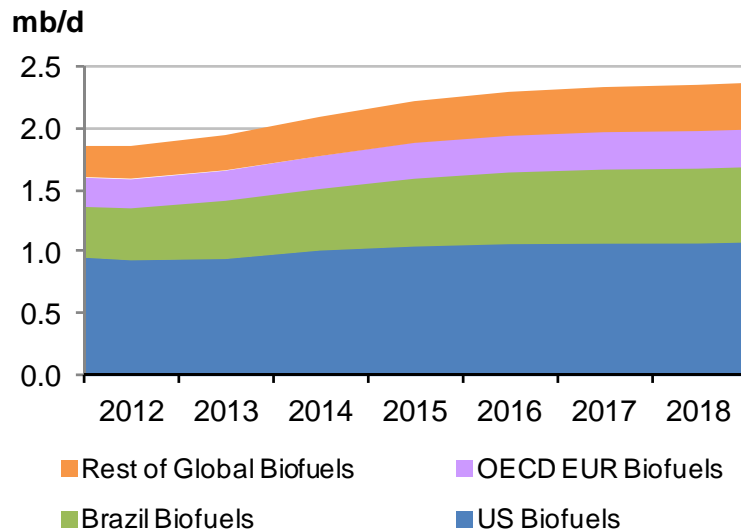
Global renewable new investment, by region



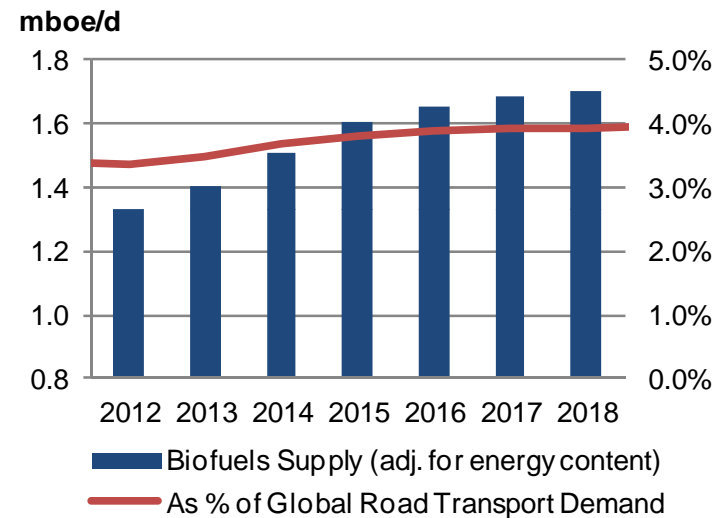
Source: Bloomberg New Energy Finance

Biofuels production to grow by 25%

Biofuels supply by region



Global biofuels supply adjusted for energy content vs road transport oil demand

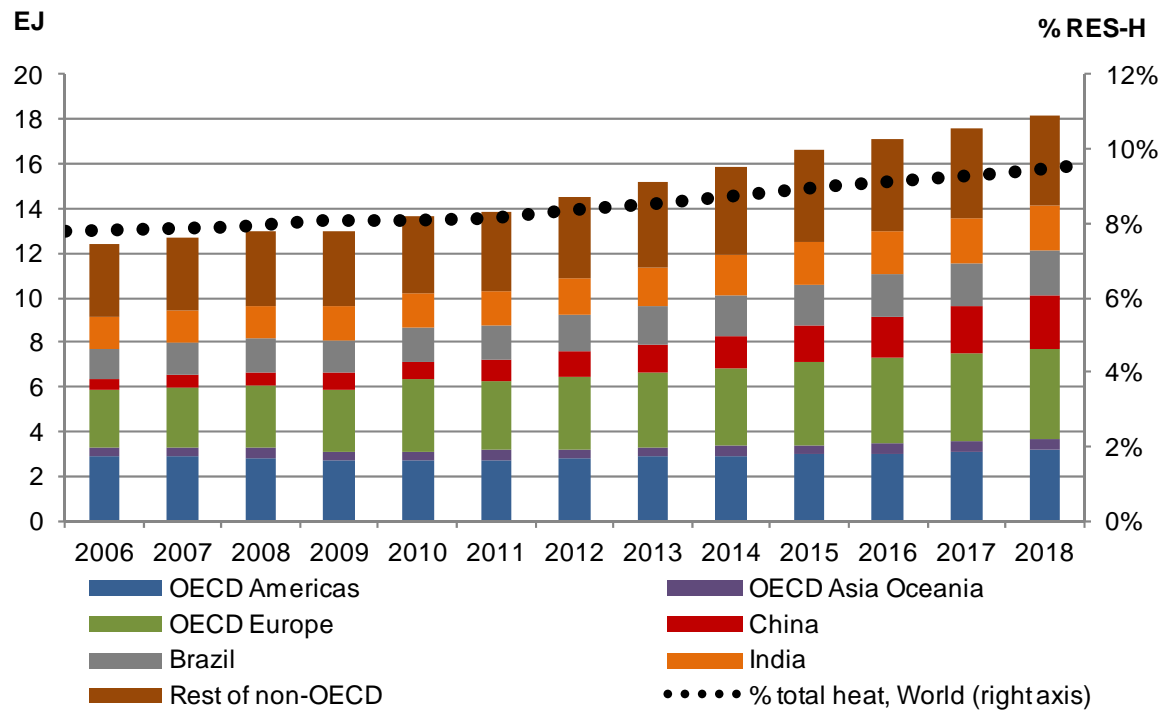


- Biofuels to cover 3.9% of global road transport by 2018,
- But downside risk from growing policy uncertainty in the EU and US; and advanced biofuels not making enough progress

Final energy use of renewables for heat rises by 24%

- As % of final energy consumption for heat, renewables rise to almost 10% in 2018, up from just over 8% in 2012 and 8% in 2006
- China accounts for 39% of global growth
- OECD Europe drives 22% of growth, with EU 2020 targets and rising bioenergy (direct use and commercial heat) and solar thermal use

Final energy use of renewable sources for heat (including commercial heat) by region

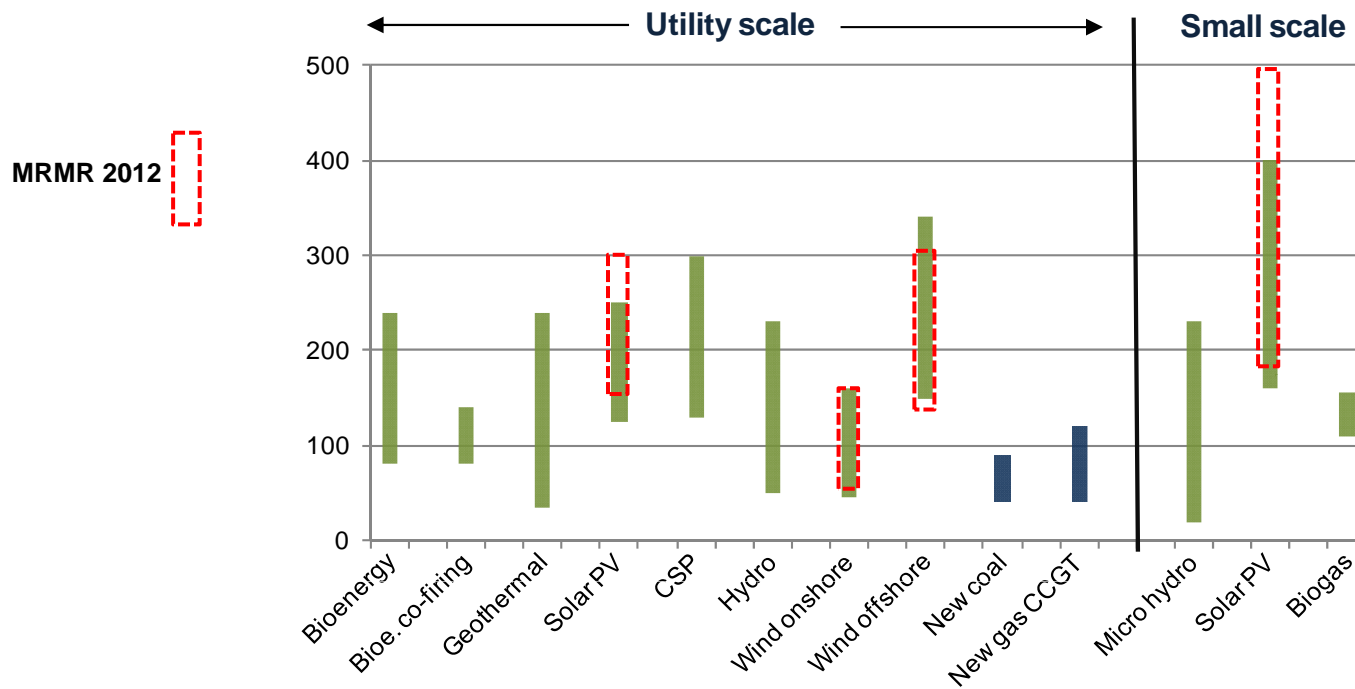


Note: excludes traditional biomass

Improving competitiveness

- Most dynamic technologies – onshore wind and solar PV – increasingly competitive in a number of markets
- But market framework matters
 - Deployment with little support occurring in some areas with rising energy needs, good resources, and predictable long-term revenues

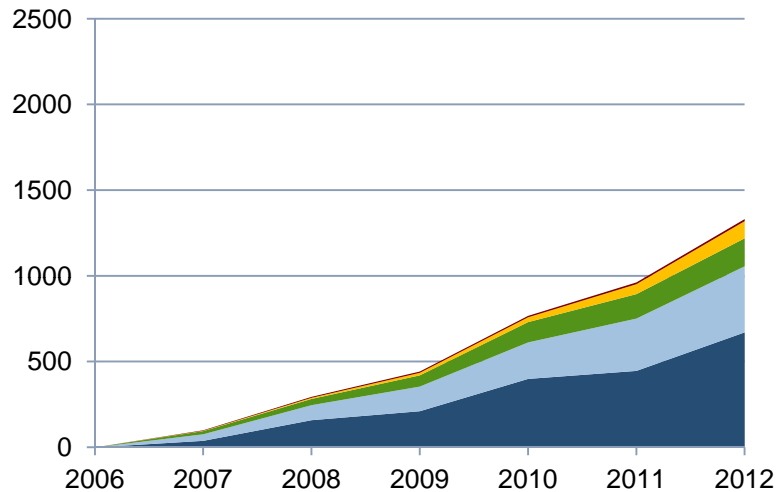
Global levelised costs of power generation ranges (USD per MWh)



Note: costs reflect differences in resource, local conditions, and the choice of sub-technology.

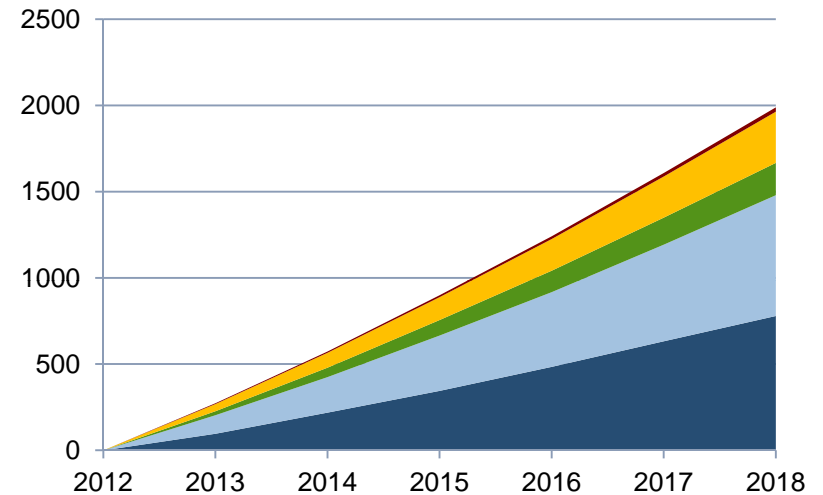
Growth of the whole RE power accelerating

Historical cumulative additions (TWh)



■ Geothermal ■ Solar ■ Bioenergy ■ Wind ■ Hydro

Forecast cumulative additions (TWh)



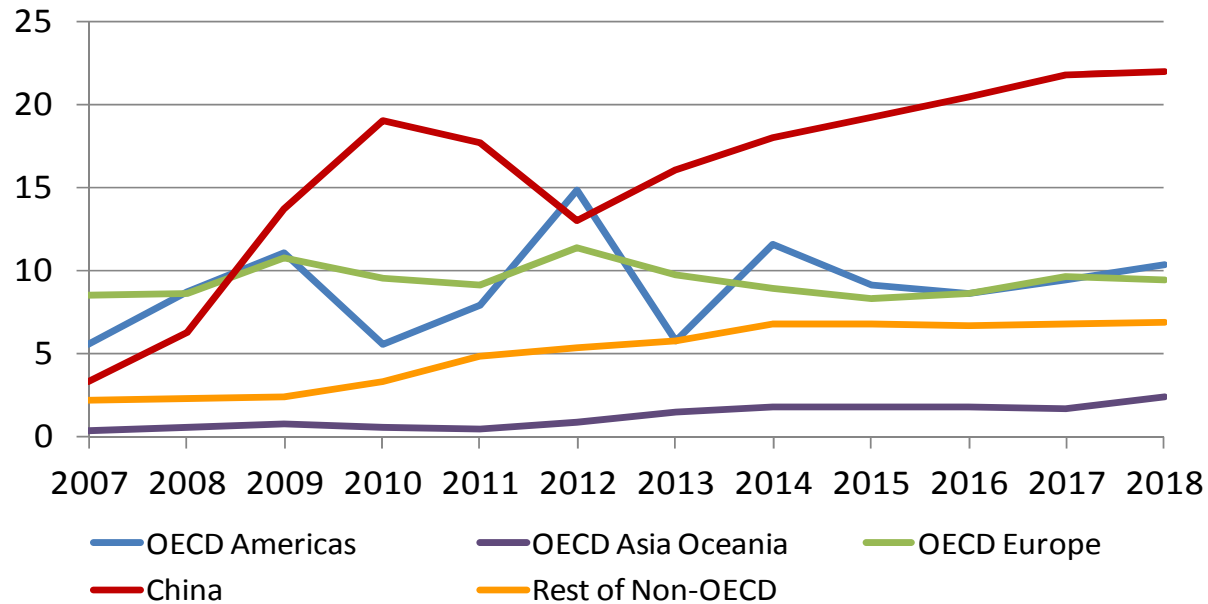
■ Geothermal ■ Solar ■ Bioenergy ■ Wind ■ Hydro

- Hydro remains the largest increasing single renewable technology
- But for the first time additional generation from all non-hydro sources exceeds that from hydro

Global RE capacity additions led by wind

- Onshore outlook more optimistic than in *MRMR 2012*
- Policy uncertainties make additions volatile in some areas
- Offshore wind outlook more pessimistic than *MRMR 2012*, with financing and integration challenges

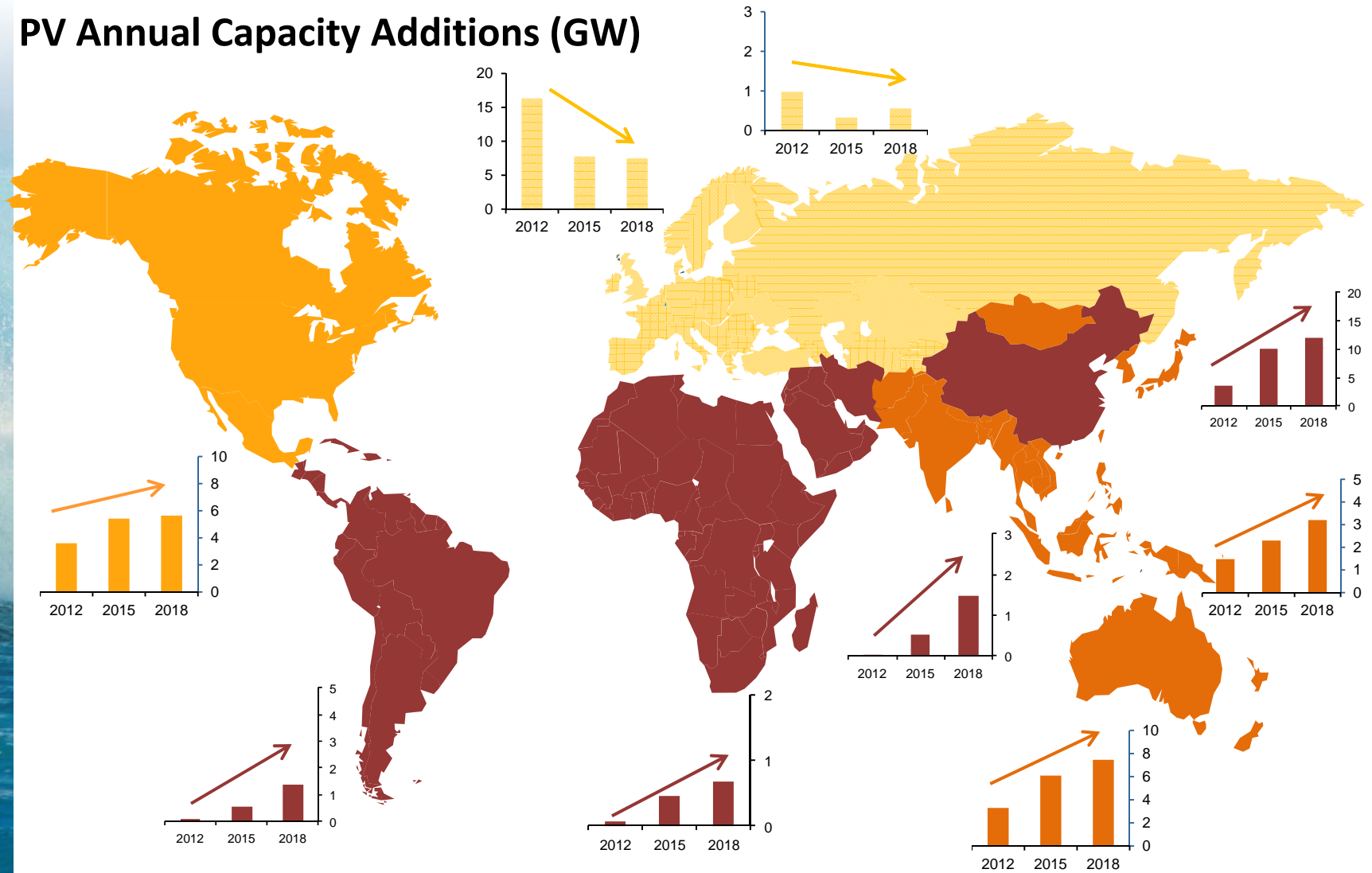
Total wind (onshore + offshore) annual capacity additions by region (GW)



GW	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
World Onshore	19.5	26.0	38.4	36.9	38.9	44.0	36.5	43.8	42.6	42.4	44.2	45.4
World Offshore	0.3	0.4	0.4	1.1	1.1	1.4	2.3	3.3	2.6	3.8	5.1	5.7

Solar PV growing out of Europe

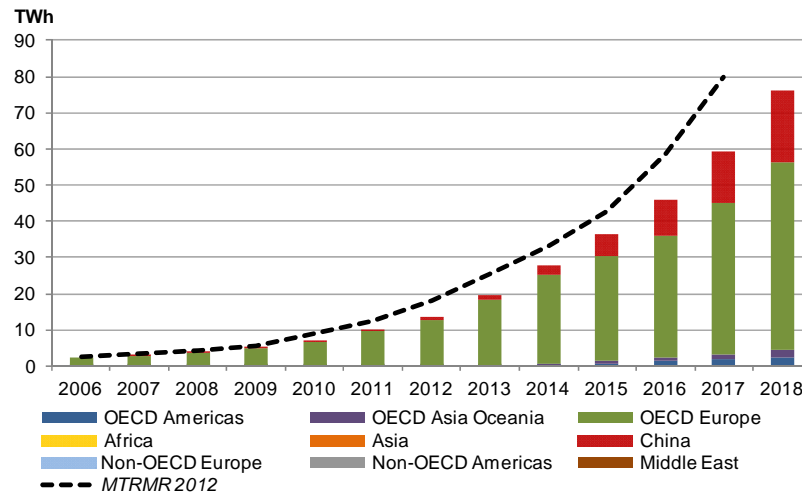
PV Annual Capacity Additions (GW)



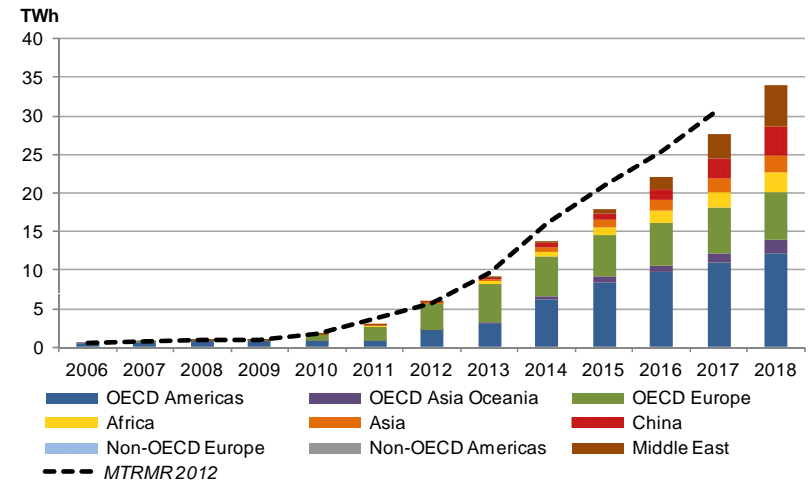
Strong growth seen in China, Africa, Middle East, and Latin America

But other technologies lagging behind

Wind offshore



Concentrated Solar Power

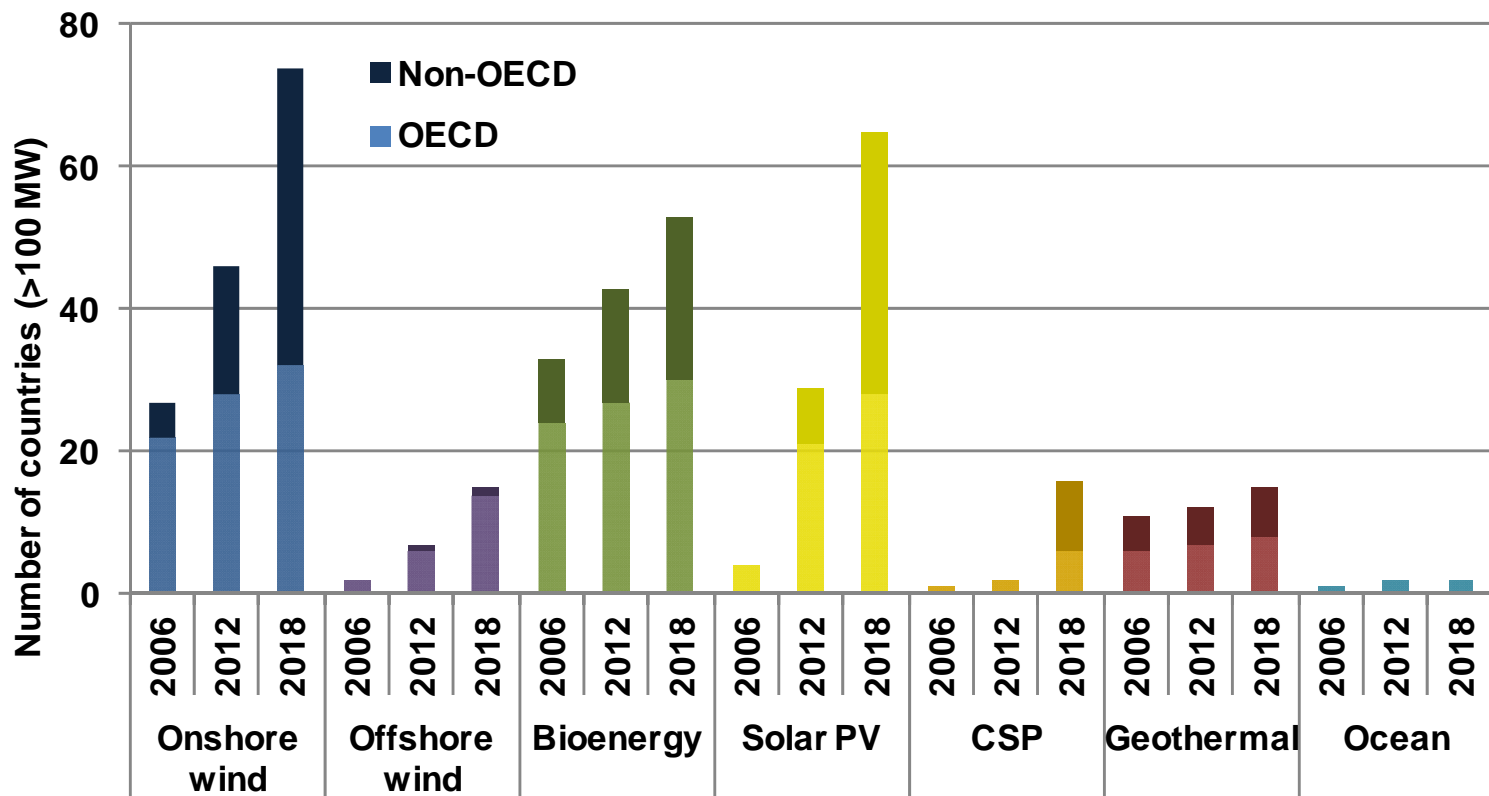


- Potential of offshore power remains high, but technical, financial and grid connection issues pose challenges
- Storage adds value to CSP, but deployment hampered by relatively high costs

Deployment transitioning to more markets

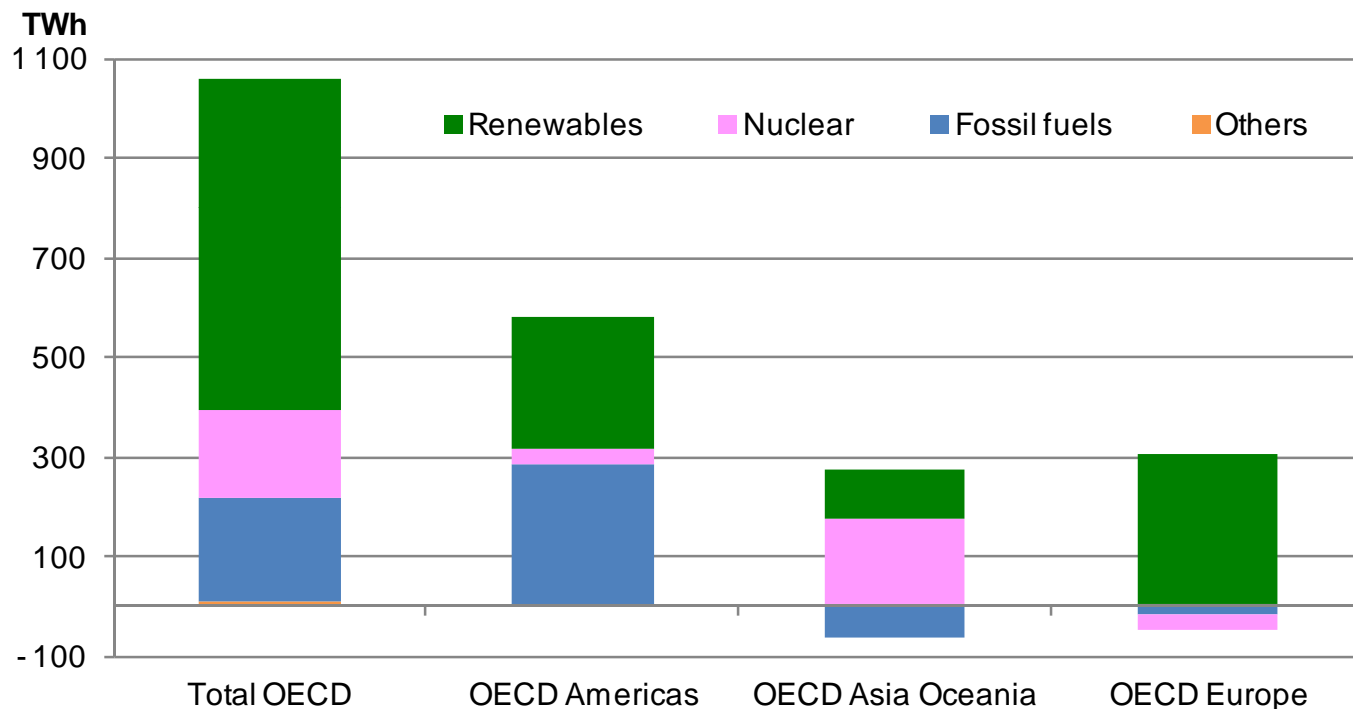
- Non-hydro renewable electricity development becoming increasingly widespread – *more optimistic than MTRMR 2012*

Number of countries with non-hydro renewable capacity above 100 MW



RE largest contributor to total electricity increase in OECD

Changes in power generation by source and region, OECD, 2012-18



- Renewables expected to grow almost like fossils in America, and more than total demand in Europe

Progress tracked on different scales

Incremental TWh (2012-18)	
1. China	+ 750
2. USA	+ 150
3. Brazil	+ 130
4. India	+ 95
5. Germany	+ 70

Avg annual growth (2012-18)	
1. Morocco	+ 24.9%
2. South Africa	+ 20.1%
3. Korea	+ 14.1%
4. Australia	+ 14.0%
5. UK	+ 13.0%

- Detailed reporting only on 21 focus countries
- Other countries also show very significant progress (e.g. Saudia Arabia, UAE, Cambodia, Tunisia, Ethiopia, Kenya)



Country example

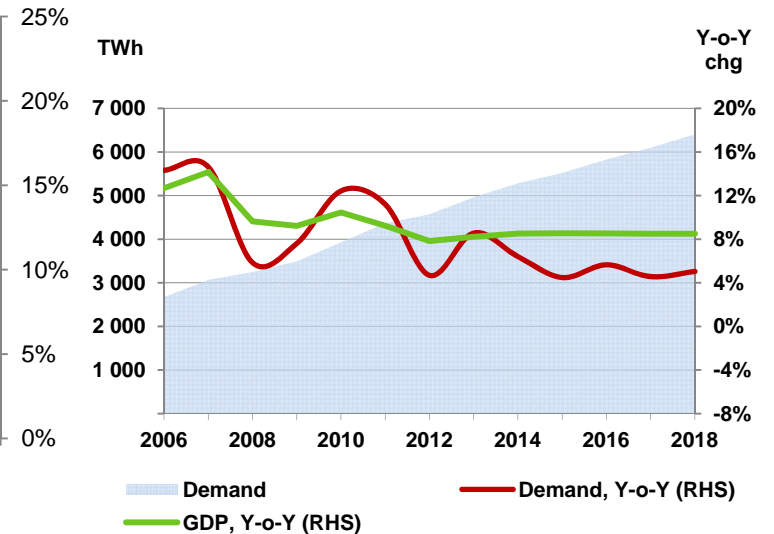
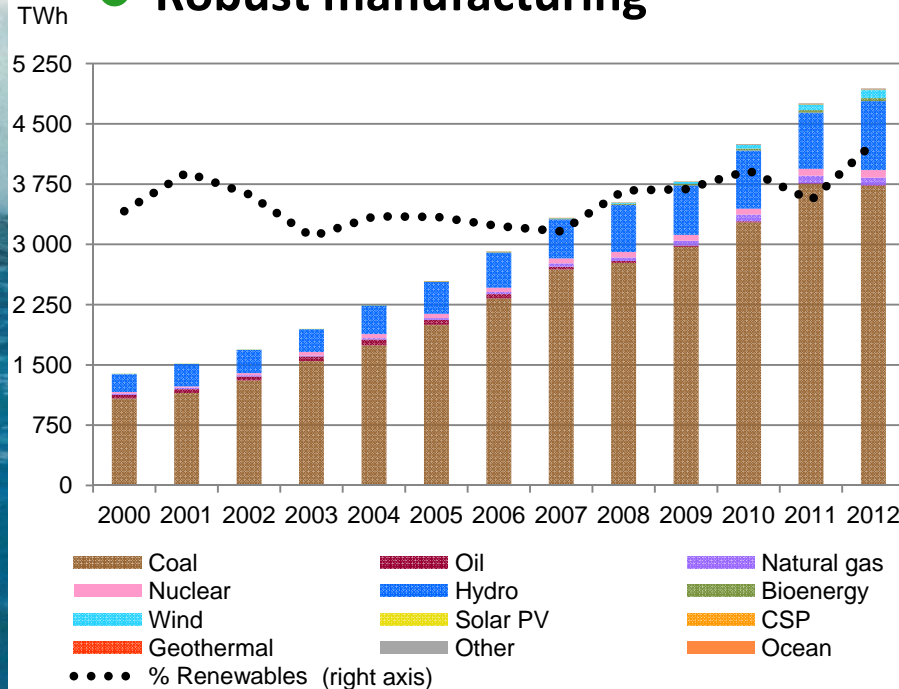
China accounts for 40% of global growth

Drivers:

- Strong gov't backing with FYPs
- Eased rules for grid connection
- Announced generation incentives
- Ample low-cost finance
- Robust manufacturing

Challenges:

- Lack of pricing framework
- Priority dispatch
- Grid upgrades
- Supply chain bottlenecks
- Deployment history





For further insights and analysis...



- The Medium-Term Renewable Energy Market Report 2013 can be purchased online at:

www.iea.org

- Thank you for your attention!