

# Achieving ambition: Pre-2020 policies and technologies for the energy sector

## *The role of renewables*

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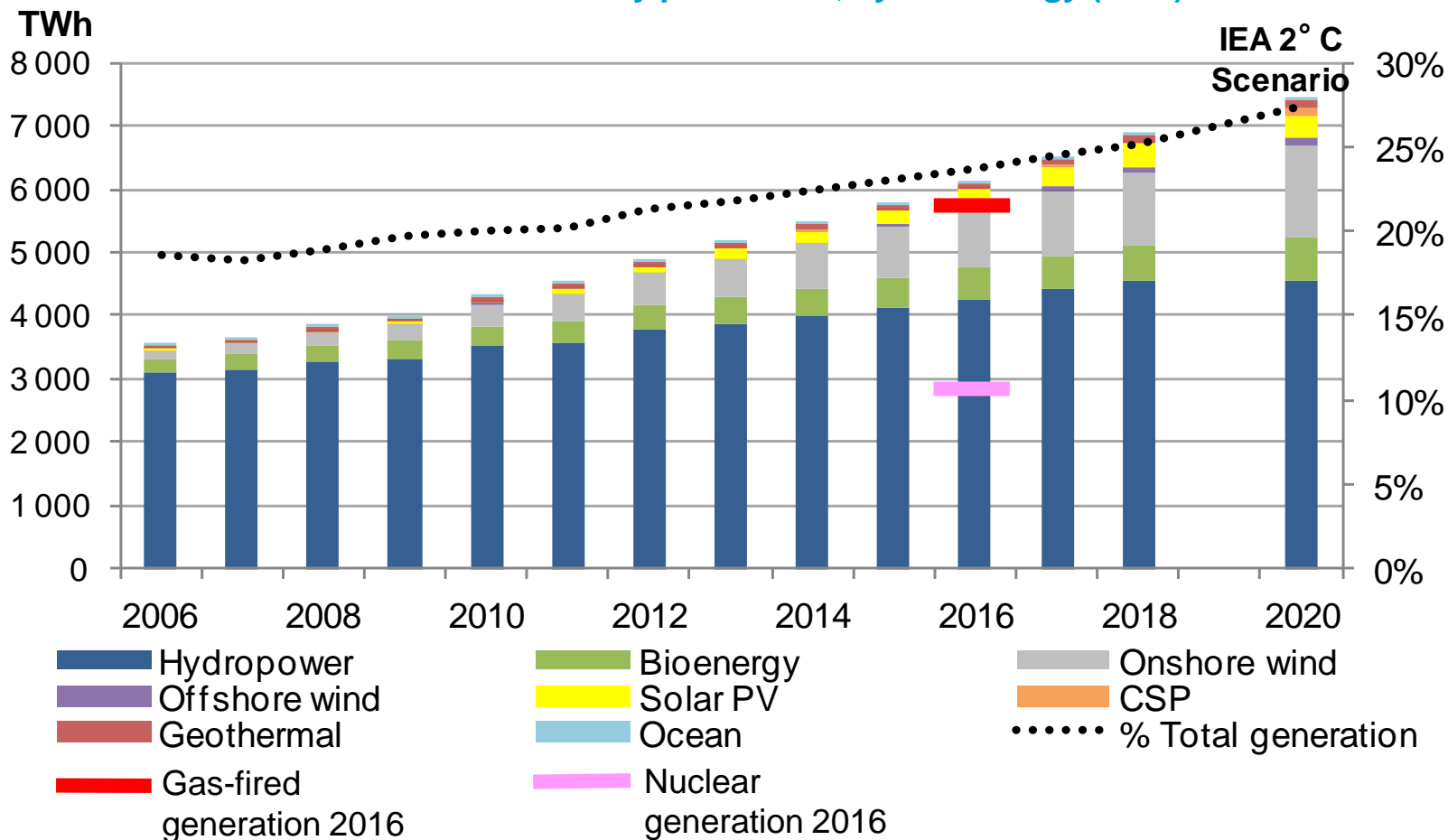
**Head, Renewable Energy Division  
International Energy Agency**

*IEA Side Event - COP19 – Warsaw, 18 November 2013*

# Renewables decarbonizing the electricity mix



Global renewable electricity production, by technology (TWh)

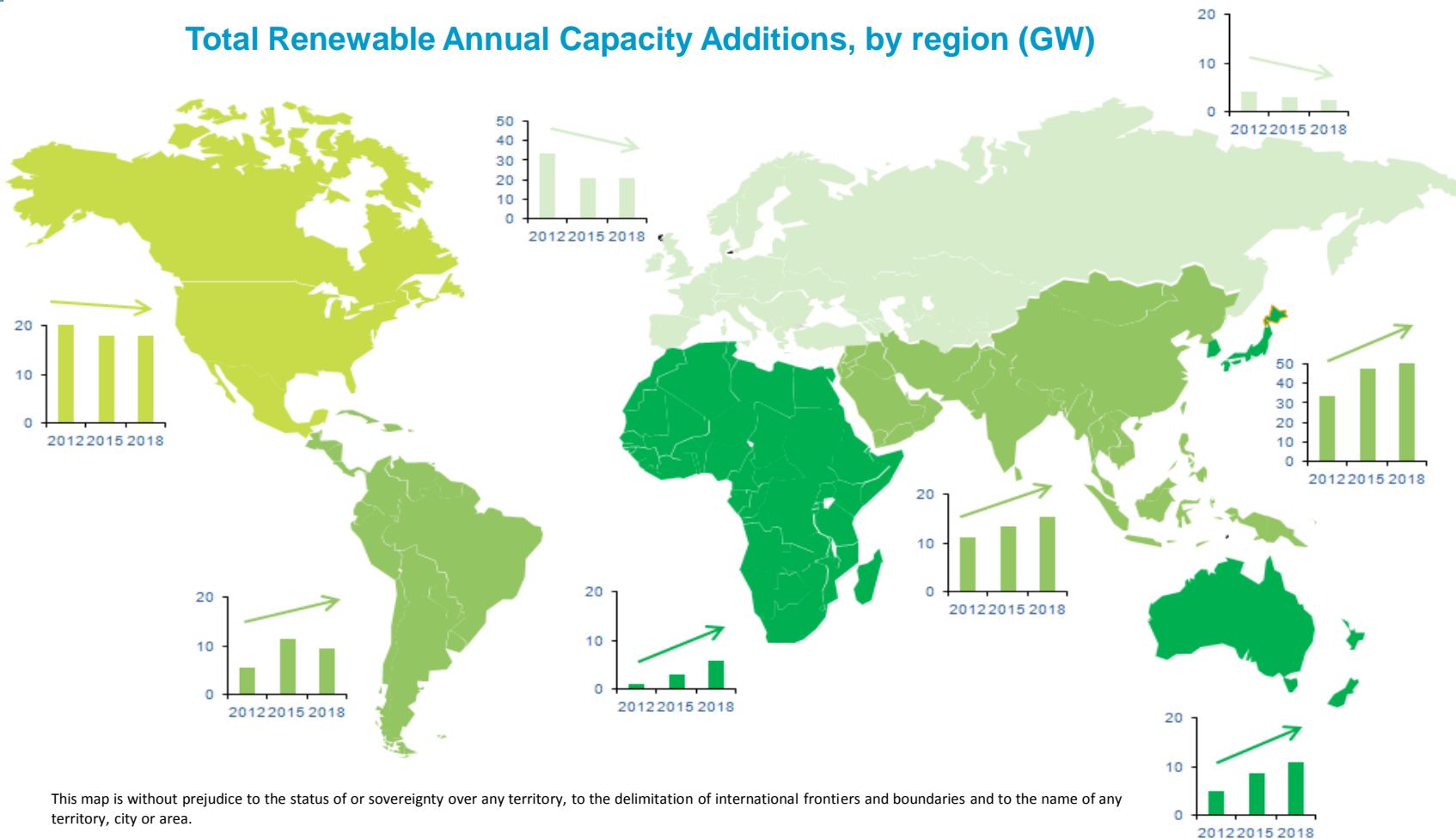


- Renewable electricity projected to scale up by 40% from 2012 to 2018
- Broadly on track with 2020 IEA 2°C scenario targets

# Renewable power spreading out everywhere



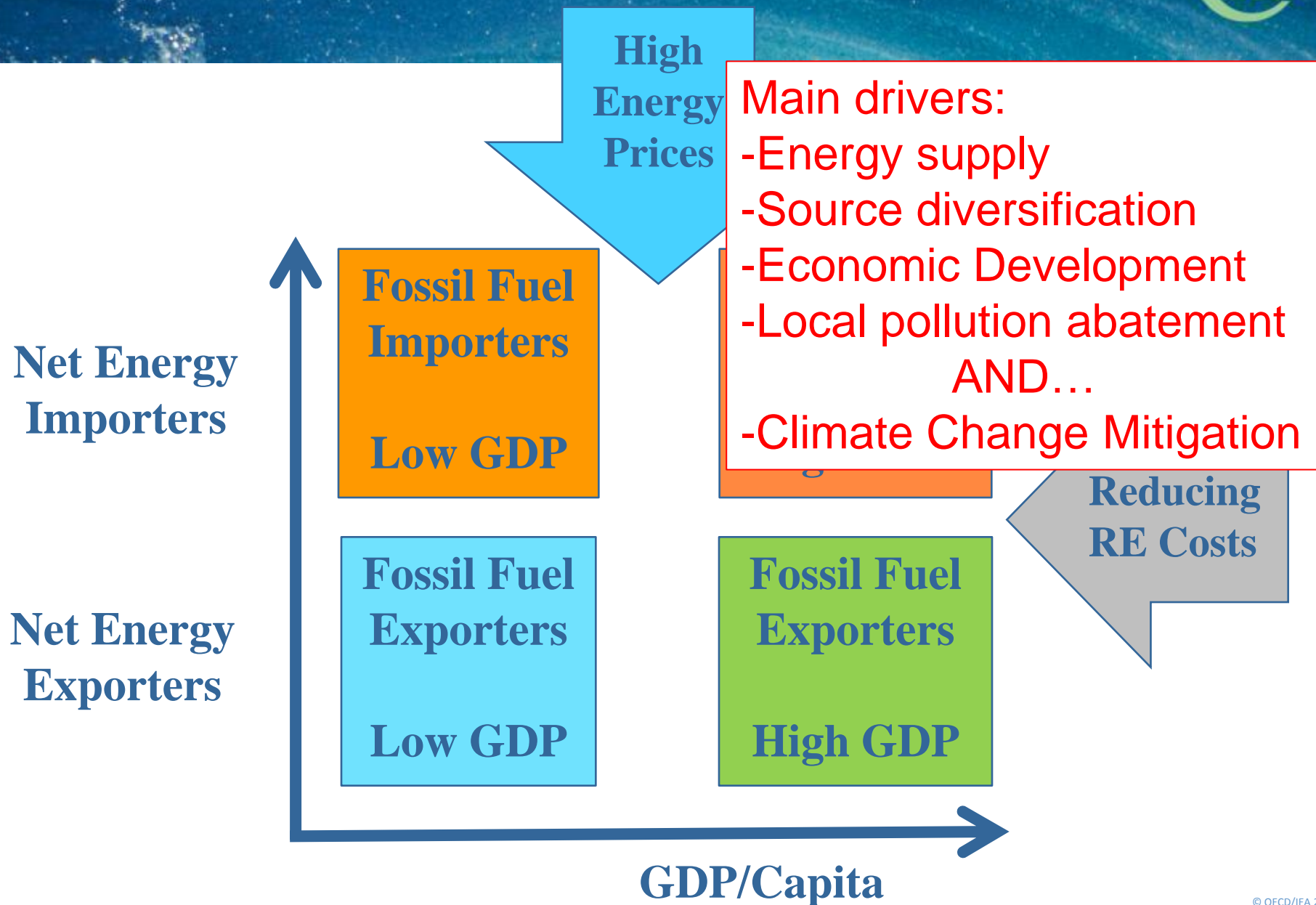
## Total Renewable Annual Capacity Additions, by region (GW)



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
- Renewable targets/policy frameworks present in around 140 countries

# RE Market Expansion Drivers

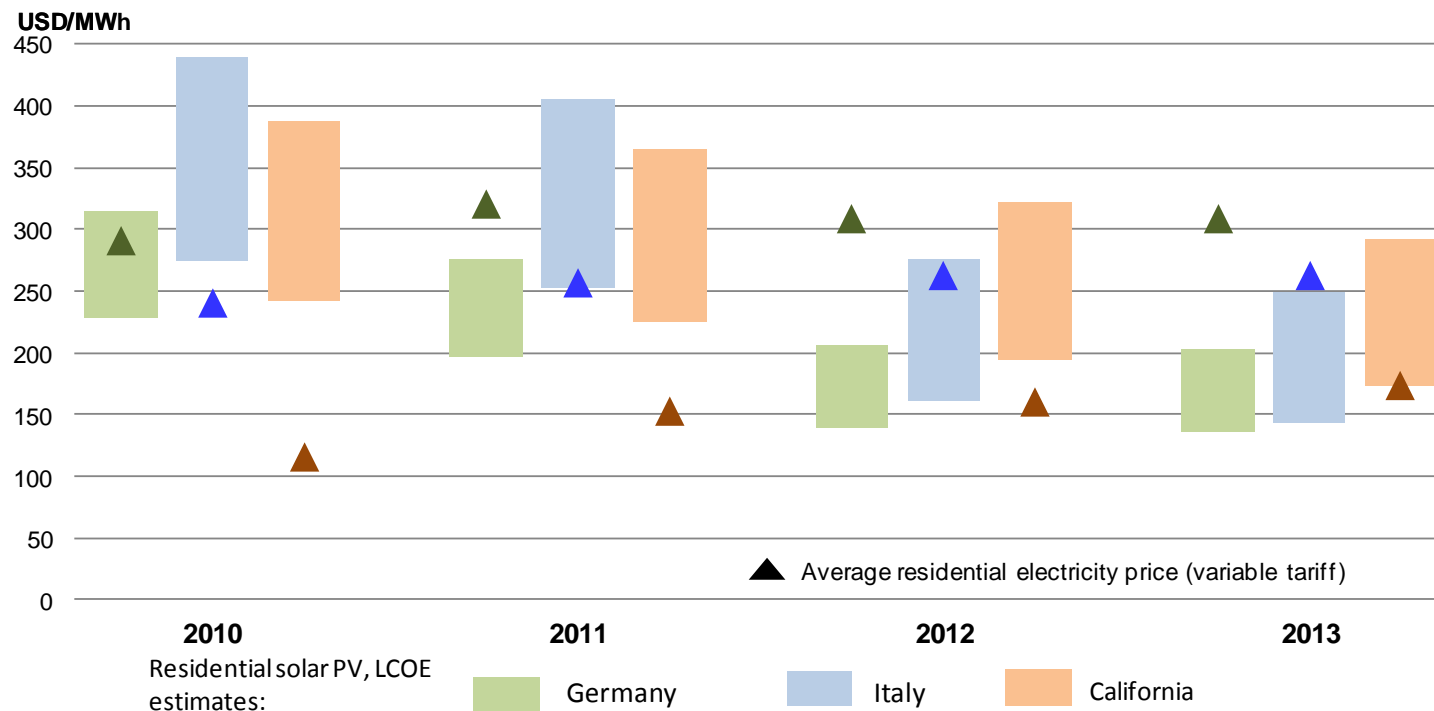


# Competitiveness is improving



- Decreasing technology costs – particularly PV and wind
- Market framework matters
  - Wind fully competitive in long-term auction systems (e.g. Brazil)
  - Residential PV becoming attracting for investors, but system impacts to be considered

## Residential solar PV LCOE vs average retail power prices (variable tariff)

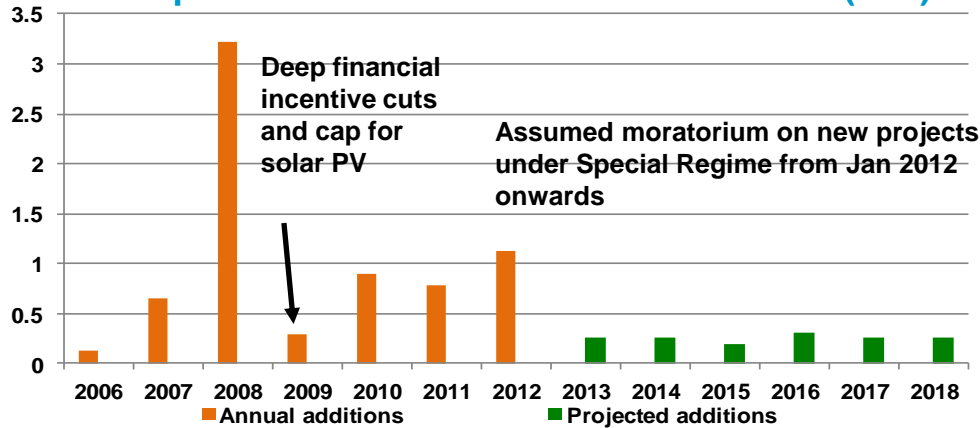


# But important barriers persist



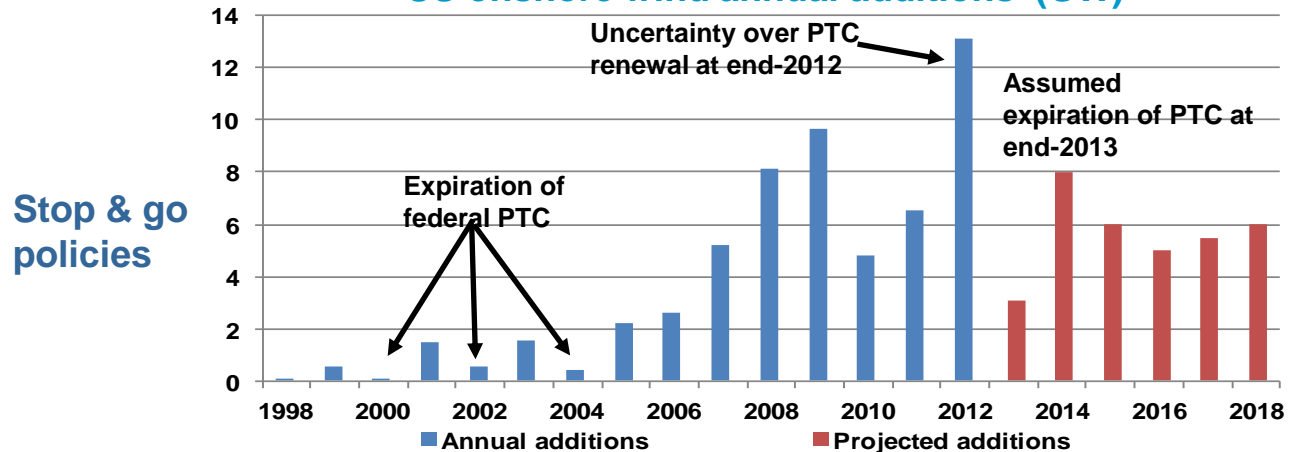
- Continuing challenging financing environment in 2012-2013
- Policy uncertainty is the number one risk

Spain solar PV + CSP annual additions (GW)



Abrupt, retroactive policy changes

US onshore wind annual additions (GW)



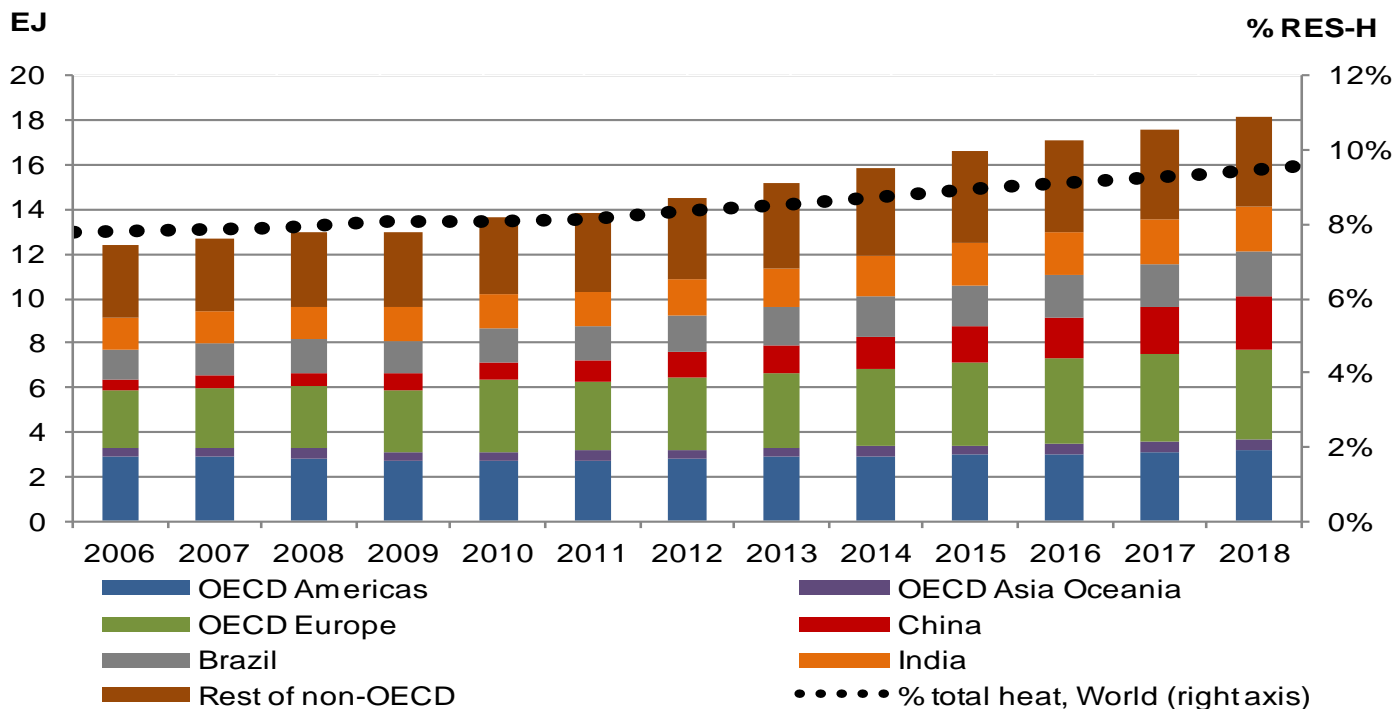
Stop & go policies

# Renewable Heat largely unexploited



- Heat represents 50% of total final energy demand
- But RE share on total heat is small (8% in 2012)
- RE heat to increase by 24% in the next years, driven by China and Europe

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

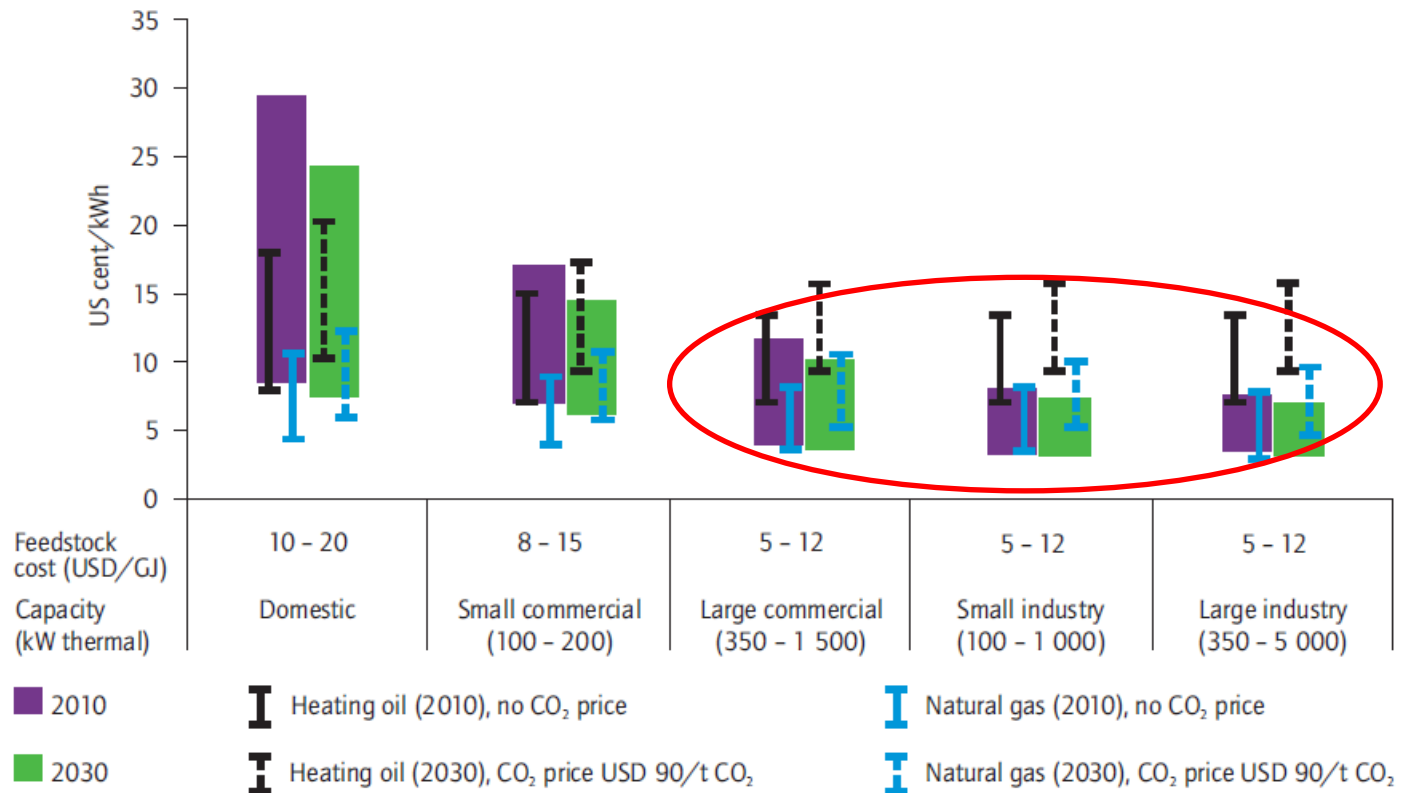


Note: excludes traditional biomass

# Competitive opportunities exist for RE-H, but policies are lacking



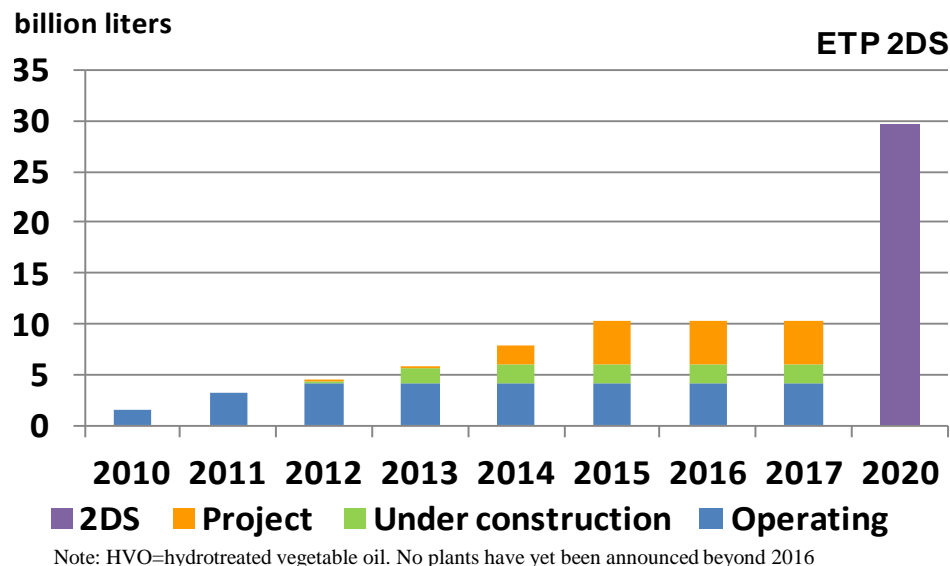
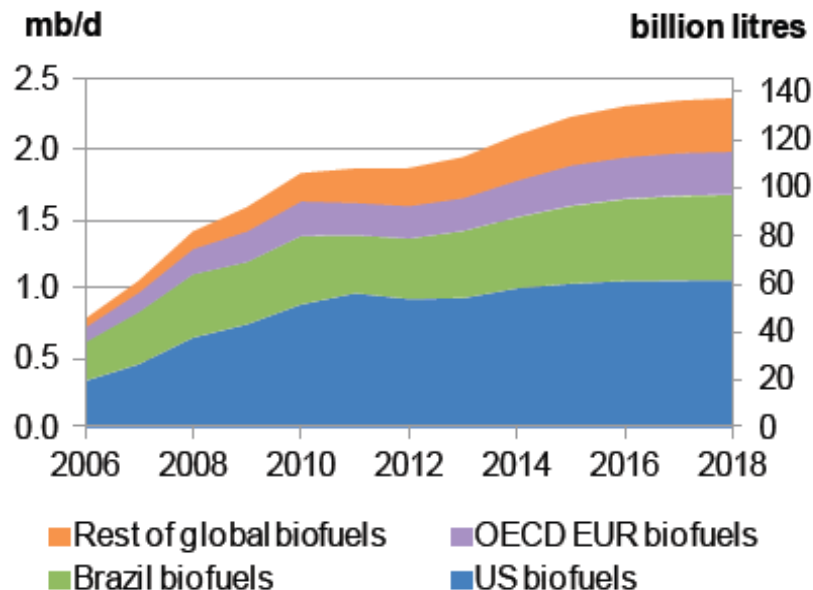
Bioenergy heat production costs 2010 and 2030, compared to heating oil and natural gas based heat production



- Only around 40 countries in the world have targets/policies supporting renewable heat – mostly in the EU



# Biofuels grow by 25% but uncertainty increases

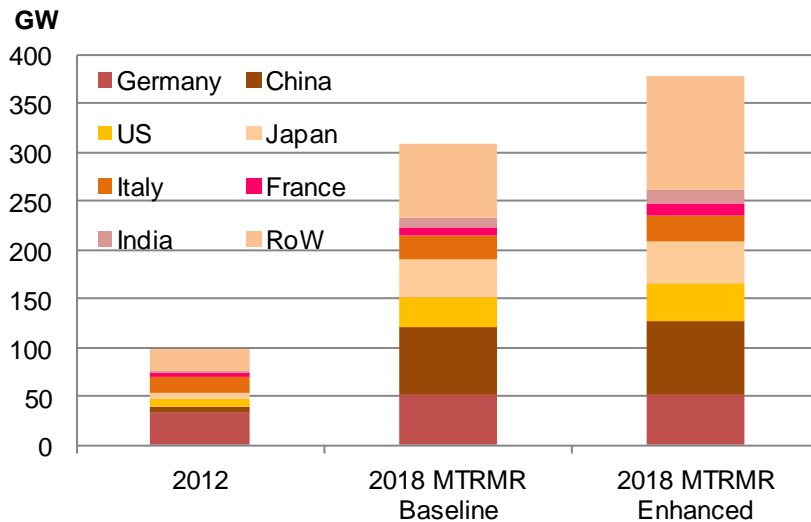


- Biofuels to cover 3.9% of global road transport by 2018
- But downside risk from growing policy uncertainty in the EU and US
- And advanced biofuels not making enough progress

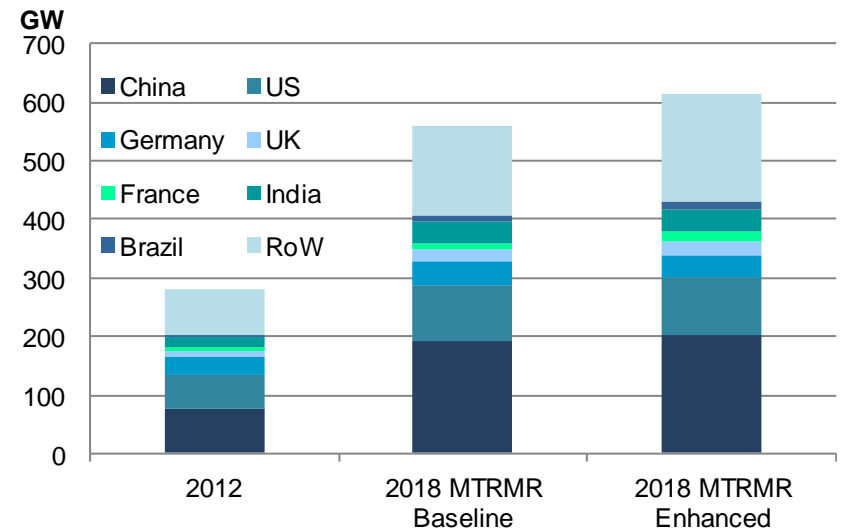
# Can more be achieved?



## Solar PV cumulative capacity and projection

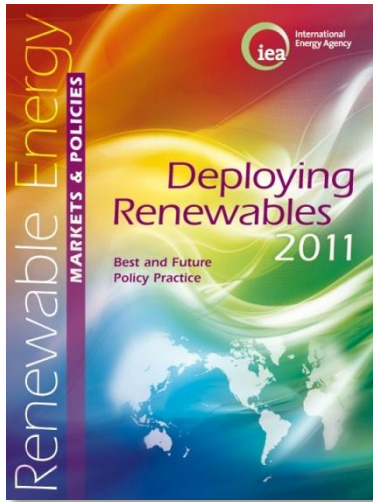


## Total wind cumulative capacity and projection



1. Enhanced deployment possible when market-specific challenges (e.g. policy, grids, economic attractiveness) are overcome
2. Focus more on renewable heat policies, addressing
  - Immaturity of RES-H markets and industry
  - Non-economic barriers (e.g. in buildings)
  - Unexploited opportunities, including in industrial applications
3. Increase R,D&D and commercialisation efforts in advanced biofuels

# Four Key Policy Ingredients



**System  
Integration**

**Non Economic  
Barriers**

**Smart Incentives**

**Clear Strategy and Targets**

- **Robust fundamentals and drivers; huge long-term potential**
- **Renewables accelerating deployment over five years, with growth in new markets, but**
  - Strong differences in sectors
  - Challenging financing environment and policy uncertainty looming
- **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**
- **Need for a better focus on the entire portfolio of renewable technology options**
  - With specific respect to renewable heat
  - In synergy with energy efficiency

# More information available



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

[www.iea.org/publications](http://www.iea.org/publications)

- The roadmaps can be downloaded from:

[www.iea.org/roadmaps](http://www.iea.org/roadmaps)

