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# World Outlook Energy 2015

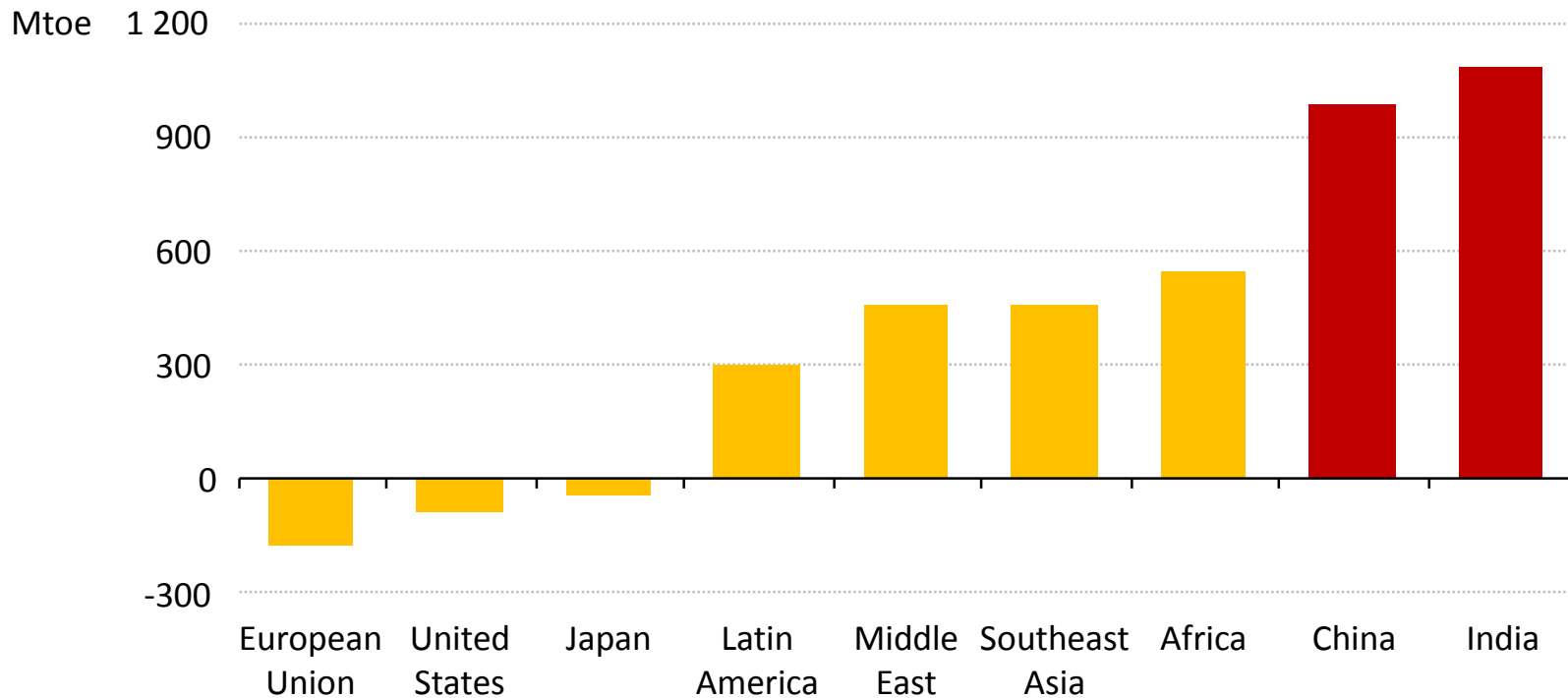
**Dr. Fatih Birol**  
**Executive Director**  
**International Energy Agency**  
**Istanbul, 11 January 2016**

# The start of a new energy era?

- **Universal agreement from COP21 is an historic milestone that can stimulate energy sector innovation**
  - *Pledges of 180+ countries account for 95% of energy-related emissions*
  - *Renewables capacity additions at a record-high of 130 GW in 2014*
- **2015 has seen lower prices for all fossil fuels**
  - *Oil & gas could face second year of falling upstream investment in 2016*
  - *Coal prices remain at rock-bottom as demand slows in China*

# Demand growth in Asia – the sequel

## Change in energy demand in selected regions, 2014-2040



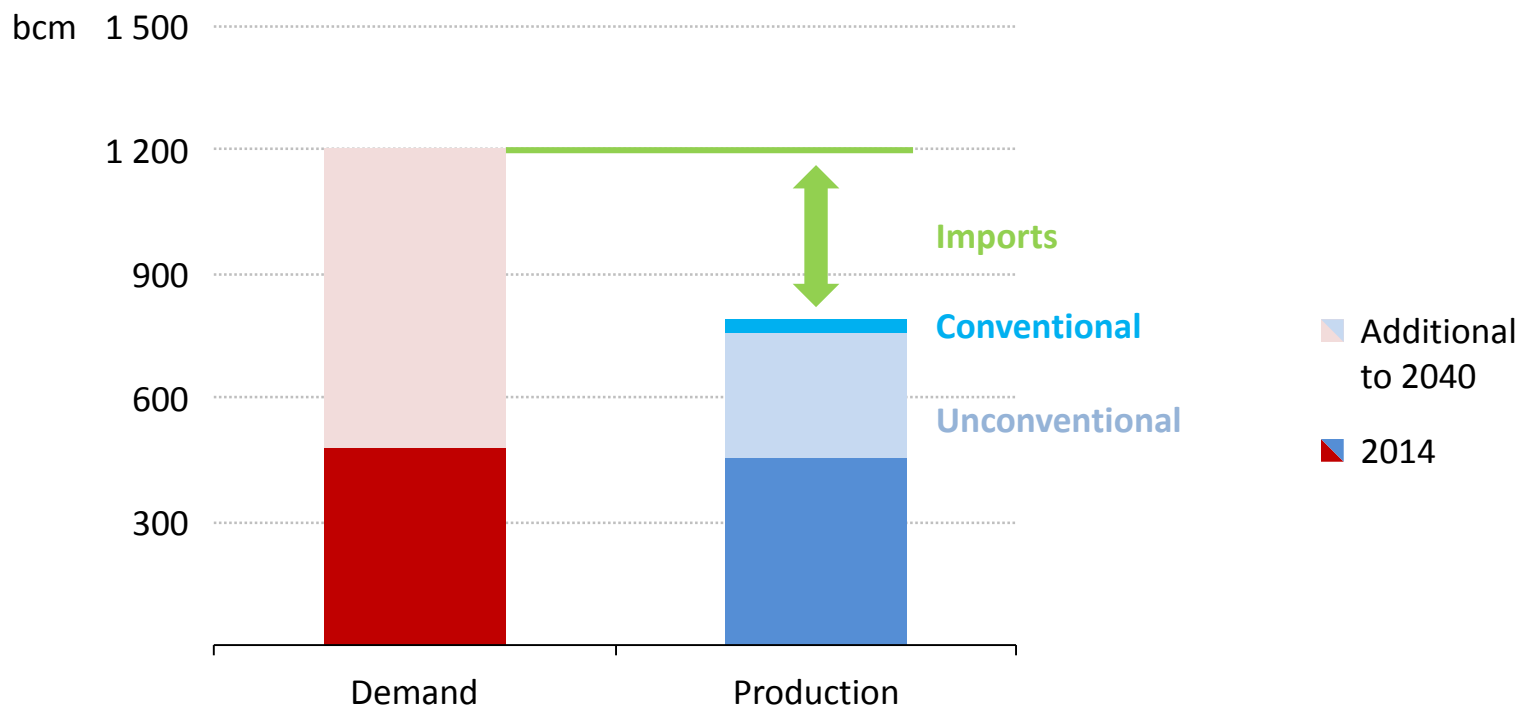
***By 2040, India's energy demand closes in on that of the United States, even though demand per capita remains 40% below the world average***

# If oil prices stay lower for much longer: what would it take, what would it mean?

- Much more resilient non-OPEC supply & higher output from a stable Middle East could maintain downward pressure on oil prices
- Oil importers gain, each \$1/bbl reduction is \$15 billion off import bills; major window of opportunity to press ahead with subsidy reform
- If lower prices persist for decades, reliance on Middle East oil gets back to 1970s levels; risk of a sharp market rebound if investment falls short
- Lower prices could undercut essential policy support for renewables & energy efficiency, key pillars of the energy transition
- Reduction in revenues to key producers & boost to global oil demand growth make a prolonged period of lower prices progressively less likely

# The big opportunities & uncertainties for natural gas are in Asia

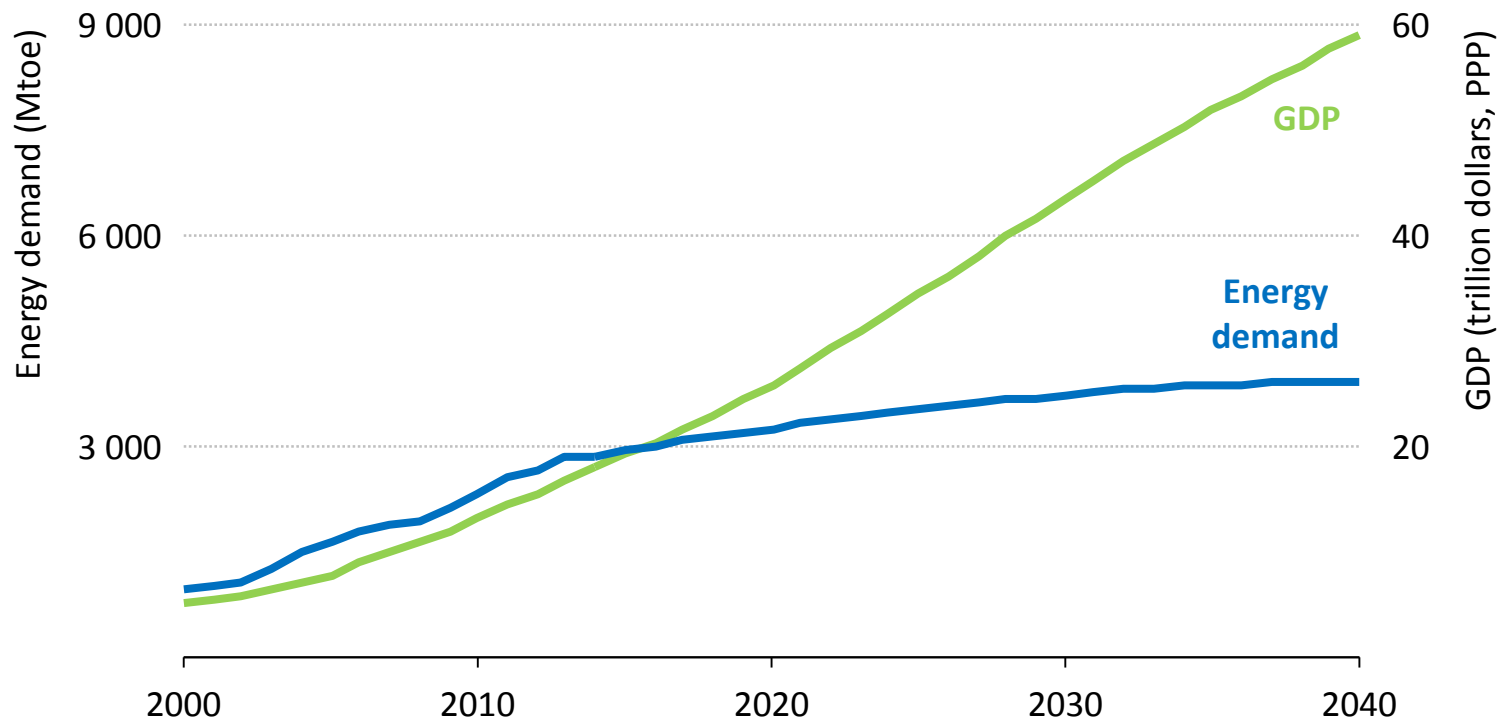
## Natural gas demand and supply in developing Asia, 2040



***Developing Asia accounts for almost half of the rise in global gas demand & 75% of the increase in imports, but gas faces strong competition from renewables & coal***

# A new chapter in China's growth story

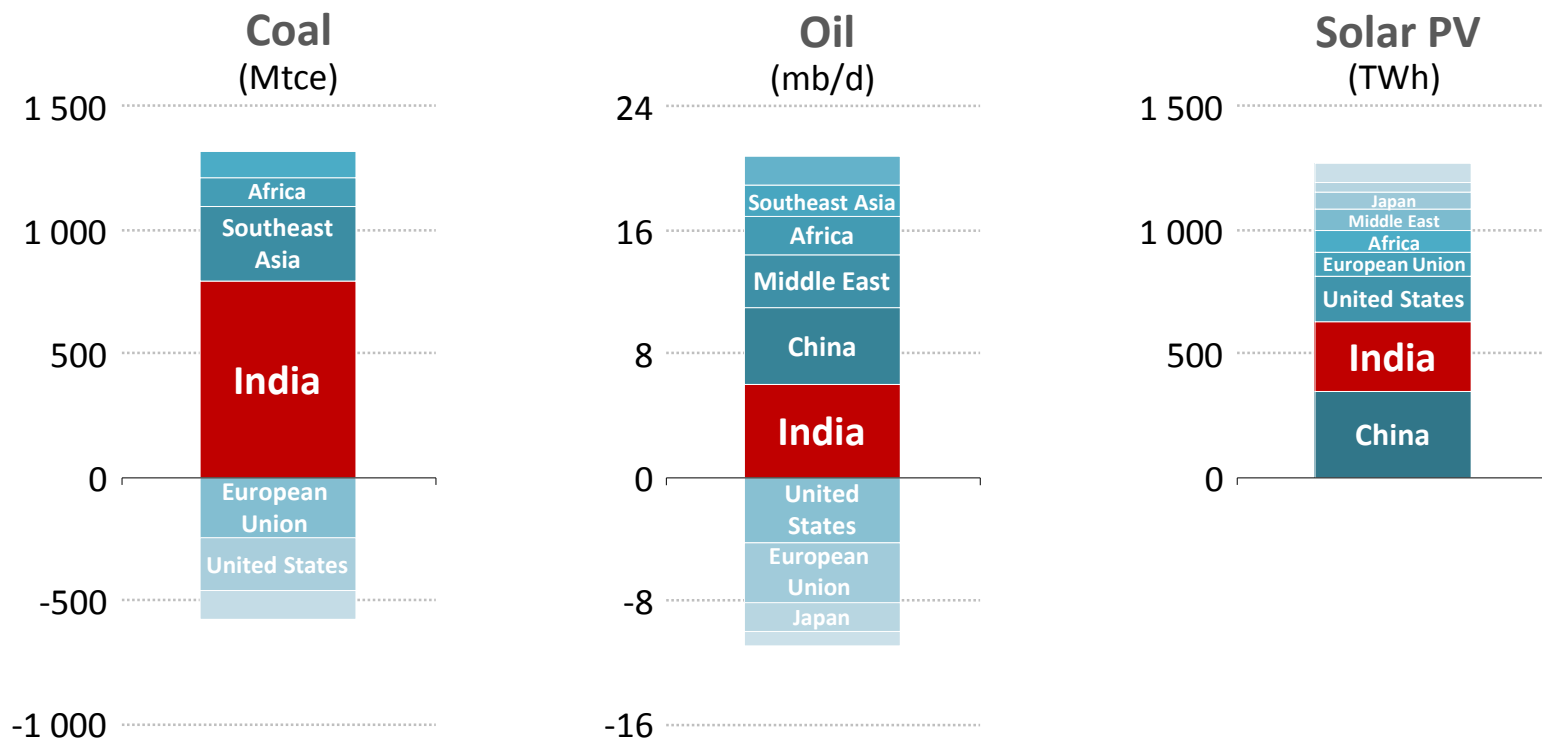
## Energy demand & GDP in China



***Along with energy efficiency, structural shifts in China's economy favouring expansion of services, mean less energy is required to generate economic growth***

# India moving to the centre of the world energy stage

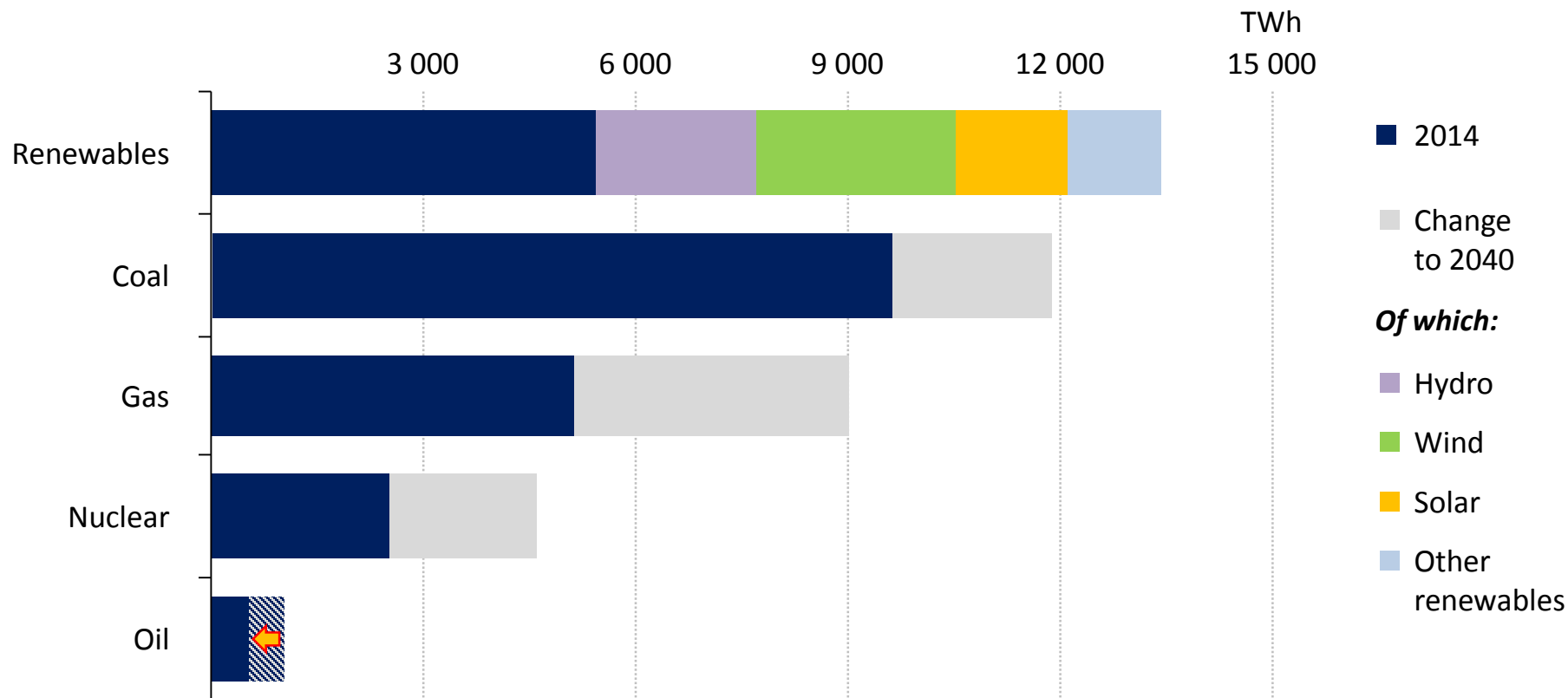
## Change in demand for selected fuels, 2014-2040



***New infrastructure, an expanding middle class & 600 million new electricity consumers mean a large rise in the energy required to fuel India's development***

# Power is leading the transformation of the energy system

## Global electricity generation by source

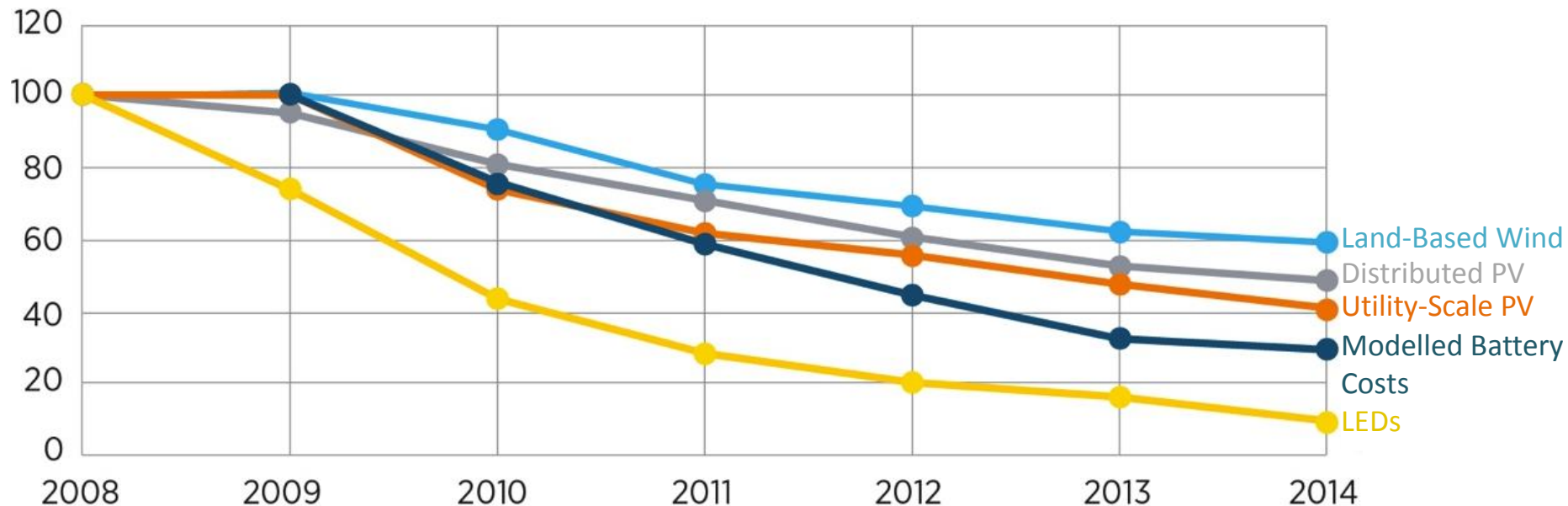


**Driven by continued policy support, renewables account for half of additional global generation, overtaking coal around 2030 to become the largest power source**



# Policies support innovation and the balance shifts towards low-carbon technologies

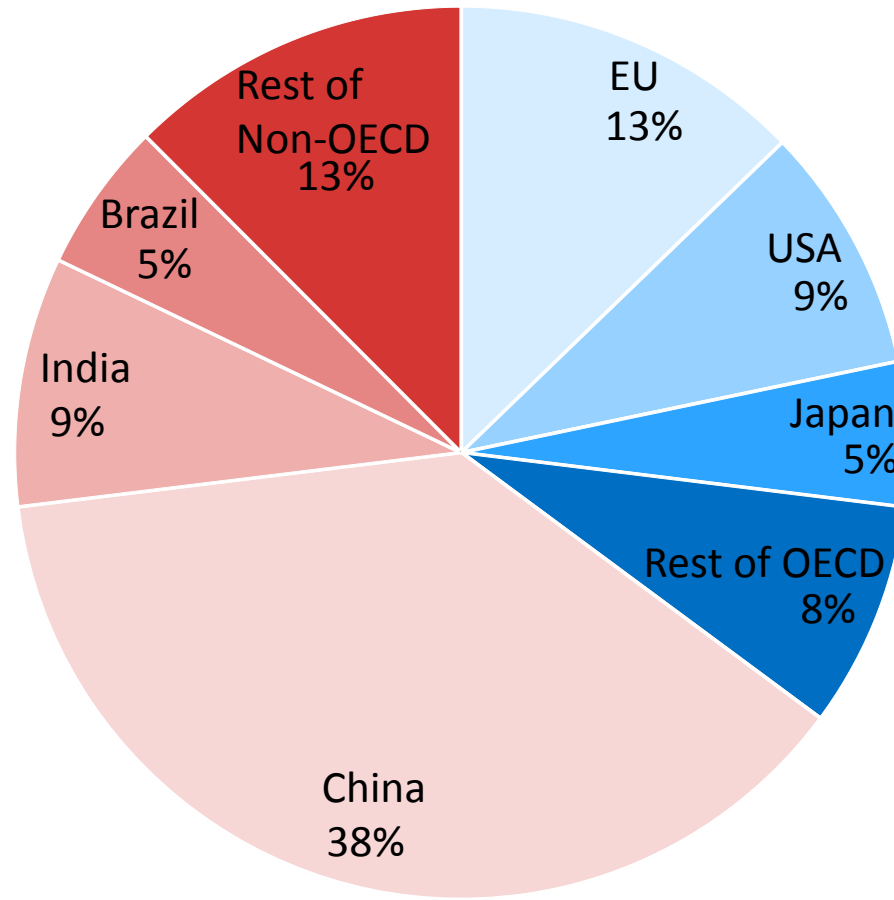
## Indexed cost reductions for clean energy technologies since 2008



***Policy support, innovation and learning-by-doing yield continued cost reductions for key renewable and efficient technologies***

# Growth shifting to emerging markets and developing countries

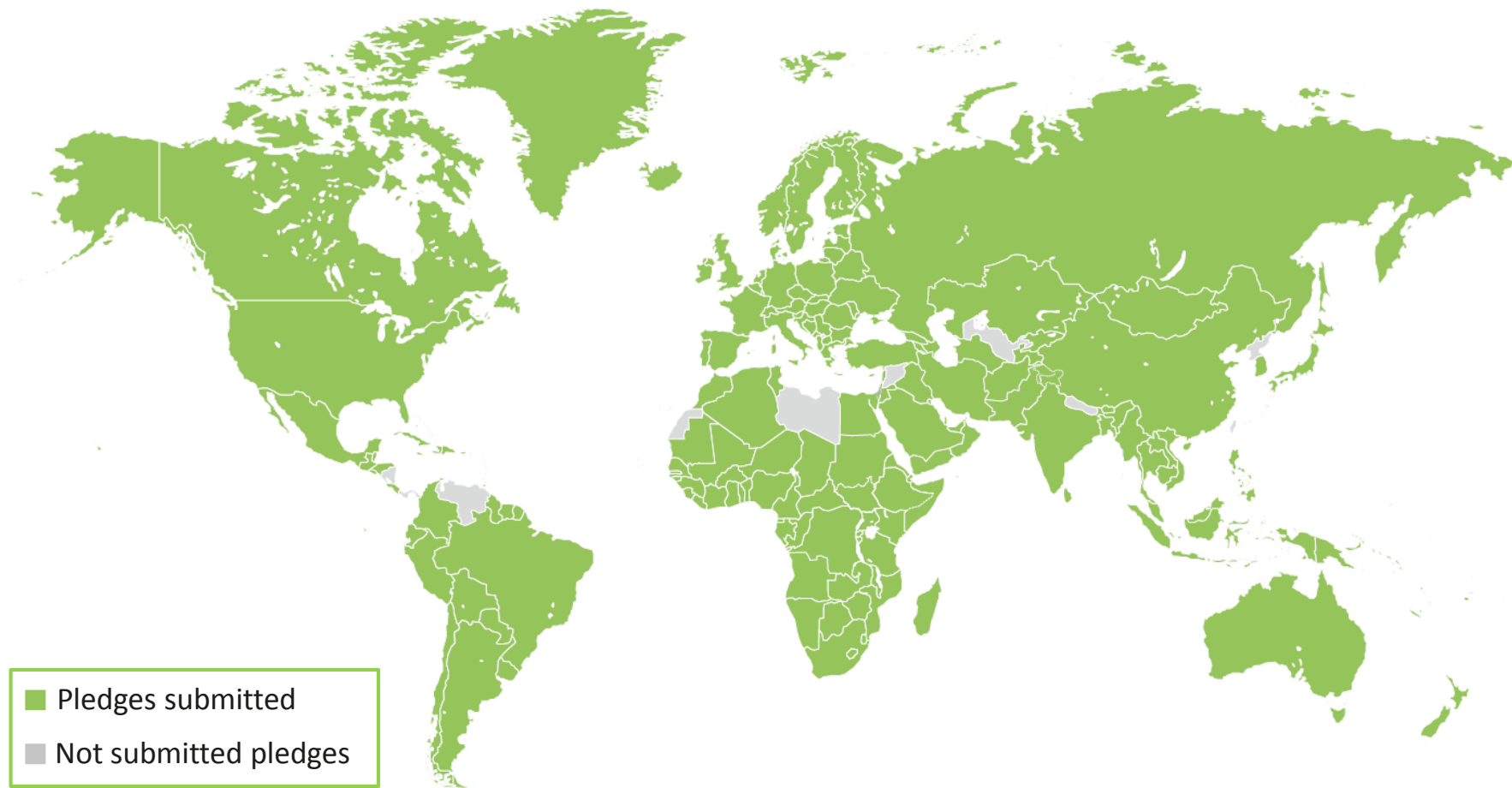
## Shares of net additional renewable capacity, 2014-20



***As the OECD slows, non-OECD countries account for two-thirds of renewable growth, driven by fast-growing power demand, diversification needs and local pollution concerns***

# The coverage of climate pledges is impressive

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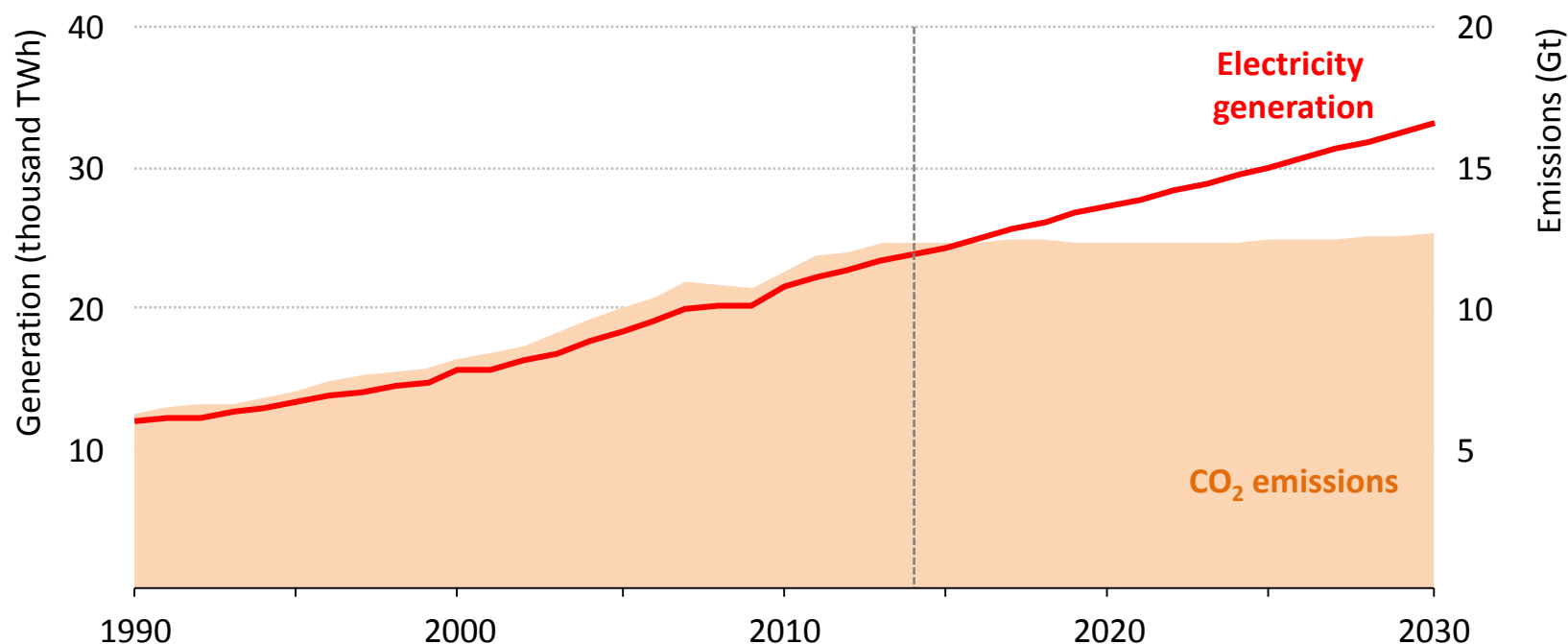


***Climate pledges for COP21 are consistent with a temperature rise of 2.7 °C, with investment needs of \$13.5 trillion in low-carbon technologies & efficiency to 2030***

# Climate pledges decouple power sector emissions from electricity demand

World Energy Outlook 2015

## World electricity generation and related CO<sub>2</sub> emissions



***The share of low-carbon power generation grows to almost 45% in 2030 so that power emissions remain flat, while electricity demand grows by more than 40%***

- **COP21 sends strong signal for a low-carbon transition – focus must turn to implementation, tracking & building ambition**
- **Low prices bring gains to consumers, but can also sow the seeds of future risks to energy security: no room for complacency**
- **India's energy needs are huge: there is a strong shared interest to support India's push for clean & efficient technologies**
- **China's transition to a more diversified & much less energy-intensive model for growth re-shapes energy markets**
- **With looming energy security & environmental challenges, international cooperation on energy has never been more vital**



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