

# WORLD ENERGY OUTLOOK

## World Energy Outlook 2013

London, 12 November

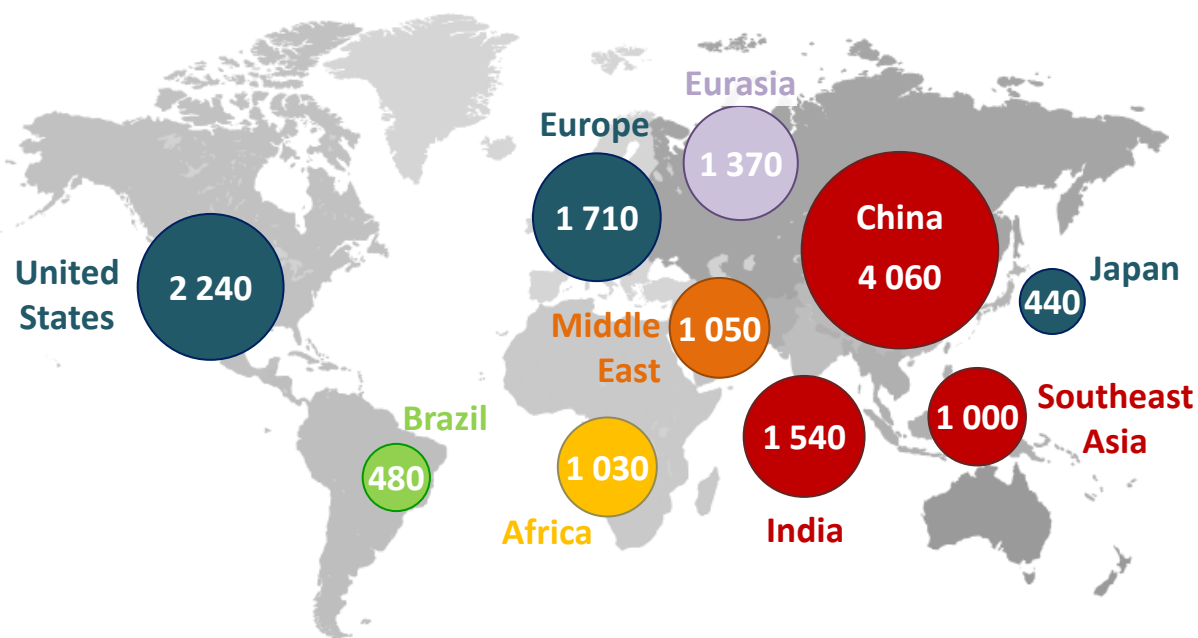
# The world energy scene today

- **Some long-held tenets of the energy sector are being rewritten**
  - *Countries are switching roles: importers are becoming exporters...*
  - *... and exporters are among the major sources of growing demand*
  - *New supply options reshape ideas about distribution of resources*
- **But long-term solutions to global challenges remain scarce**
  - *Renewed focus on energy efficiency, but CO<sub>2</sub> emissions continue to rise*
  - *Fossil-fuel subsidies increased to \$544 billion in 2012*
  - *1.3 billion people lack electricity, 2.6 billion lack clean cooking facilities*
- **Energy prices add to the pressure on policymakers**
  - *Sustained period of high oil prices without parallel in market history*
  - *Large, persistent regional price differences for gas & electricity*

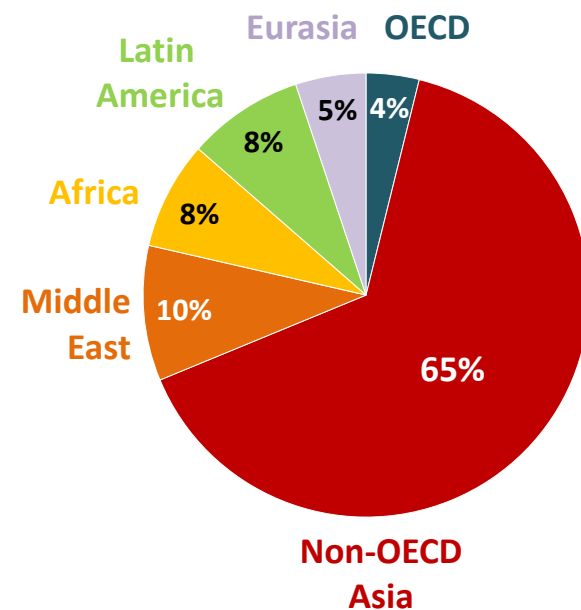
# The engine of energy demand growth moves to South Asia

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Primary energy demand, 2035 (Mtoe)



Share of global growth  
2012-2035

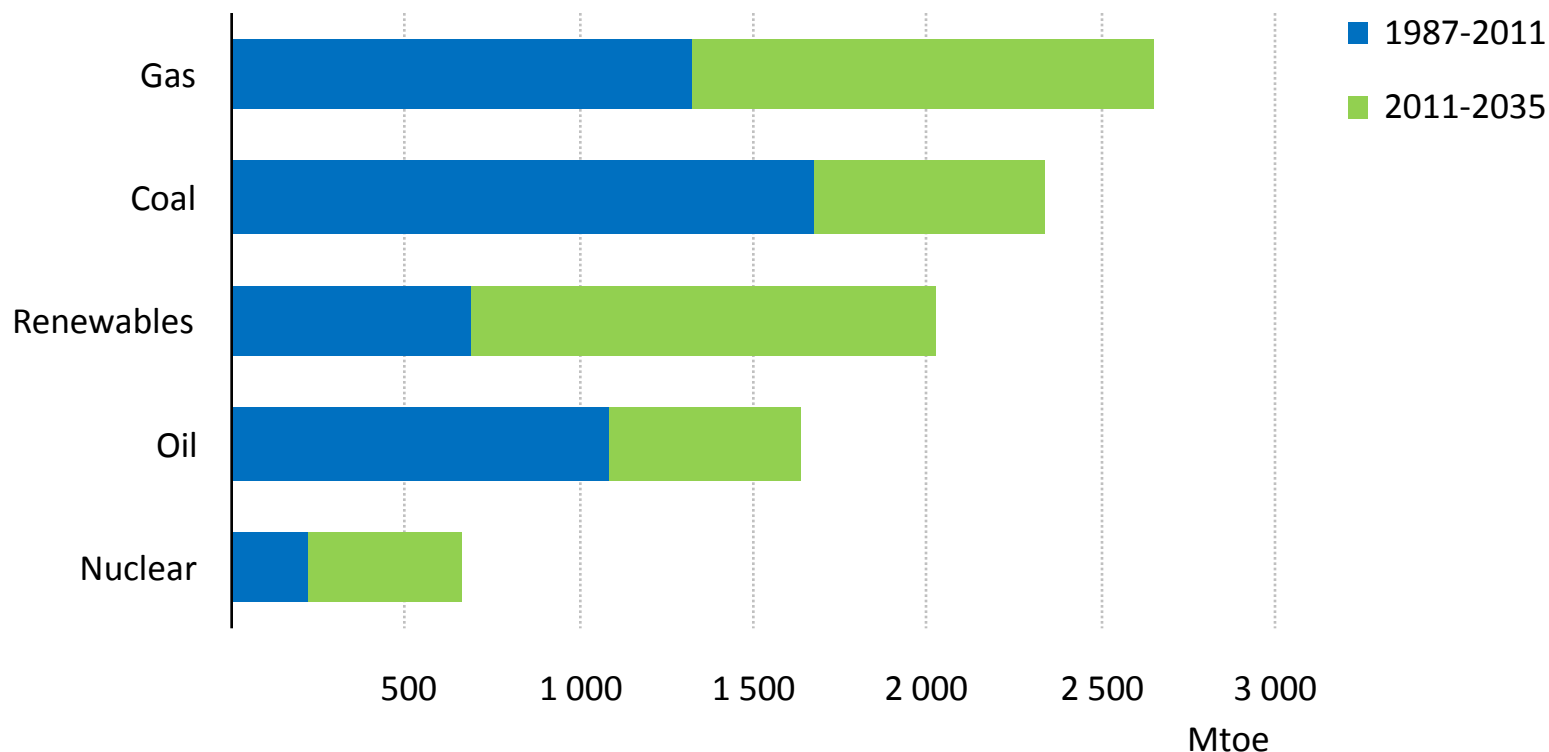


*China is the main driver of increasing energy demand in the current decade,  
but India takes over in the 2020s as the principal source of growth*

# A mix that is slow to change

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## Growth in total primary energy demand

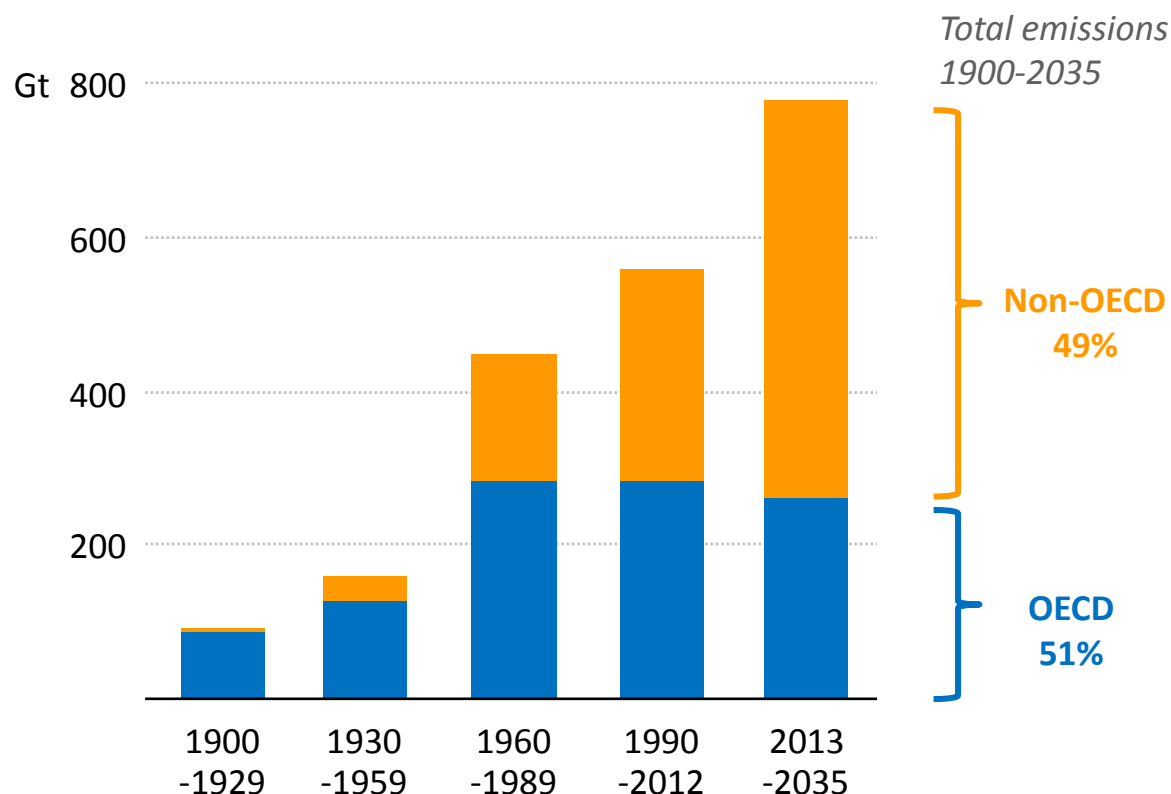


***Today's share of fossil fuels in the global mix, at 82%, is the same as it was 25 years ago; the strong rise of renewables only reduces this to around 75% in 2035***

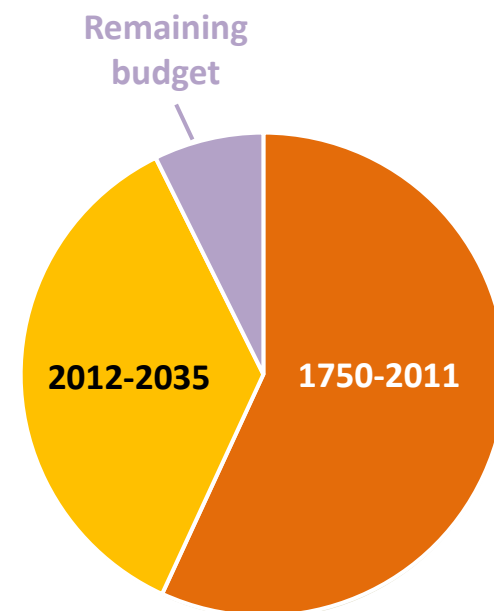
# Emissions off track in the run-up to the 2015 climate summit in France

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## Cumulative energy-related CO<sub>2</sub> emissions



## 'Carbon budget' for 2 °C

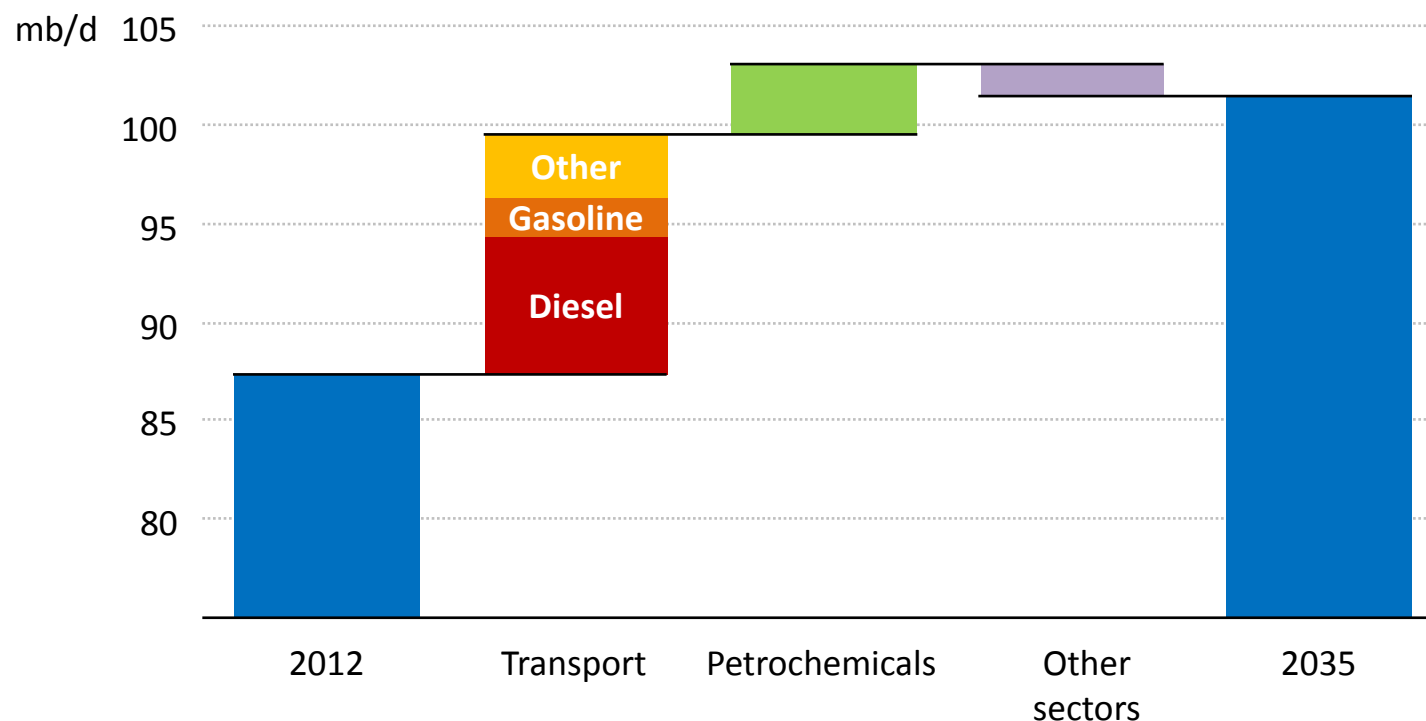


***Non-OECD countries account for a rising share of emissions, although 2035 per capita levels are only half of OECD; the 2 °C 'carbon budget' is being spent much too quickly***

# Oil use grows, but in a narrowing set of markets

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Oil demand by sector



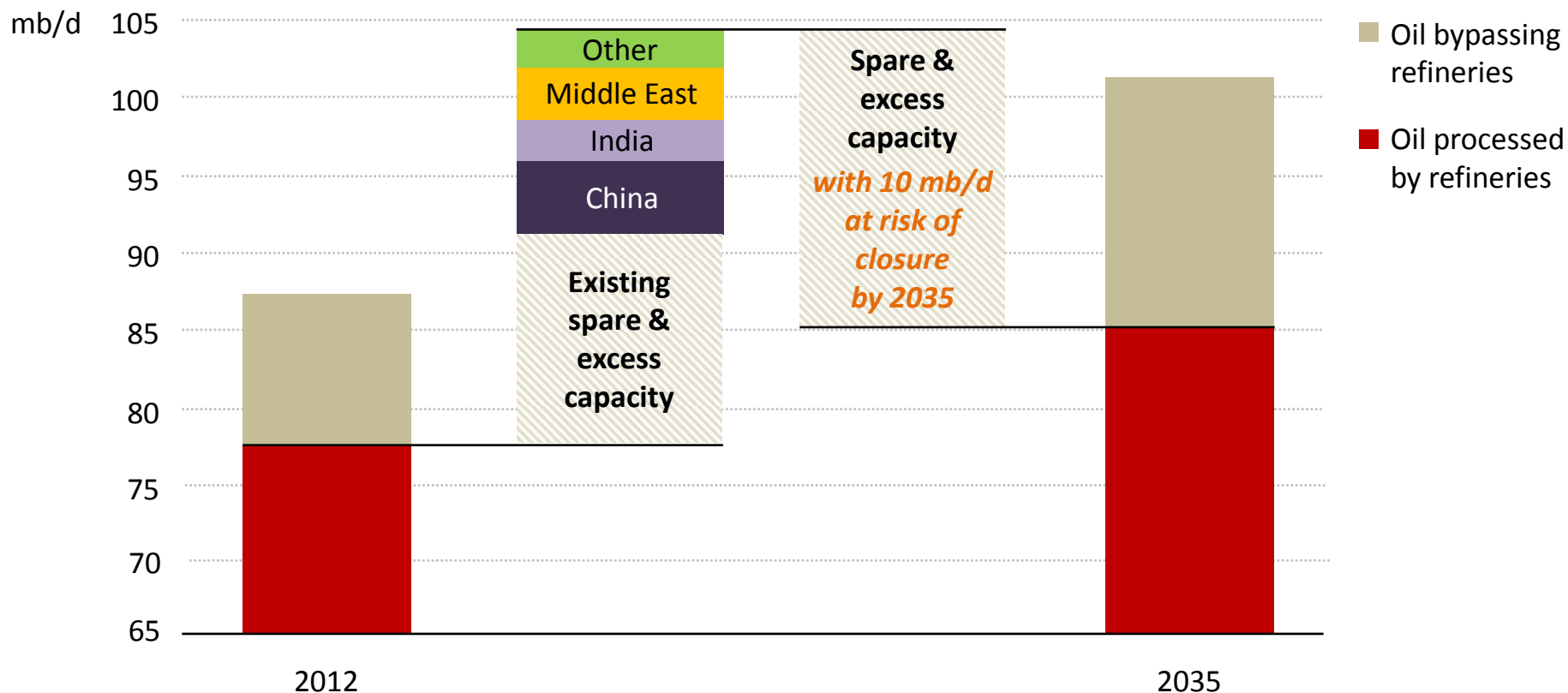
***China becomes the largest consumer of oil by 2030, as OECD oil use drops; demand is concentrated in transport, where diesel use surges by 5.5 mb/d, & petrochemicals***



# Turbulent times for the refining sector

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## Refinery capacity and operation

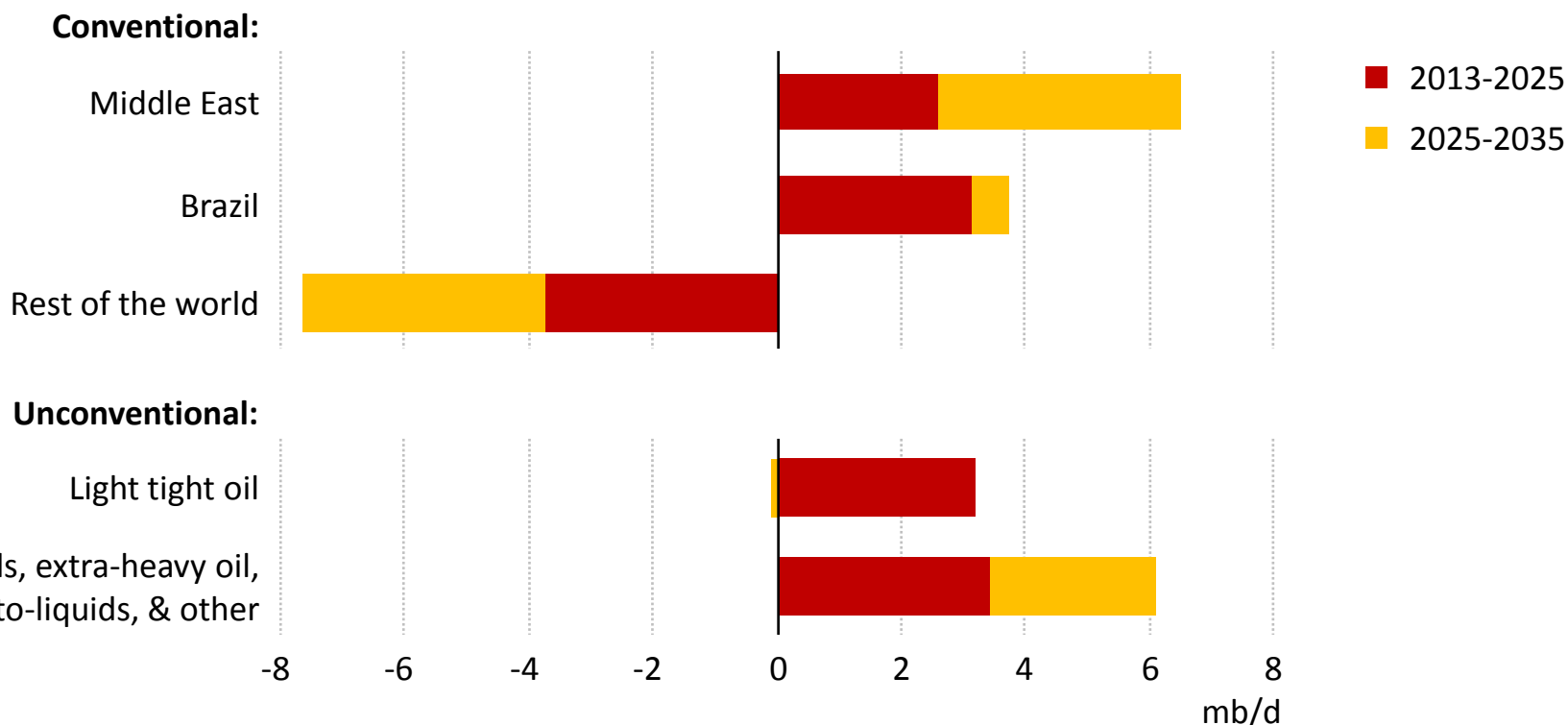


***More oil bypassing the refining system and new capacity in growing non-OECD markets piles pressure on existing refiners, especially in Europe***

# Two chapters to the oil production story

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## Contributions to global oil production growth



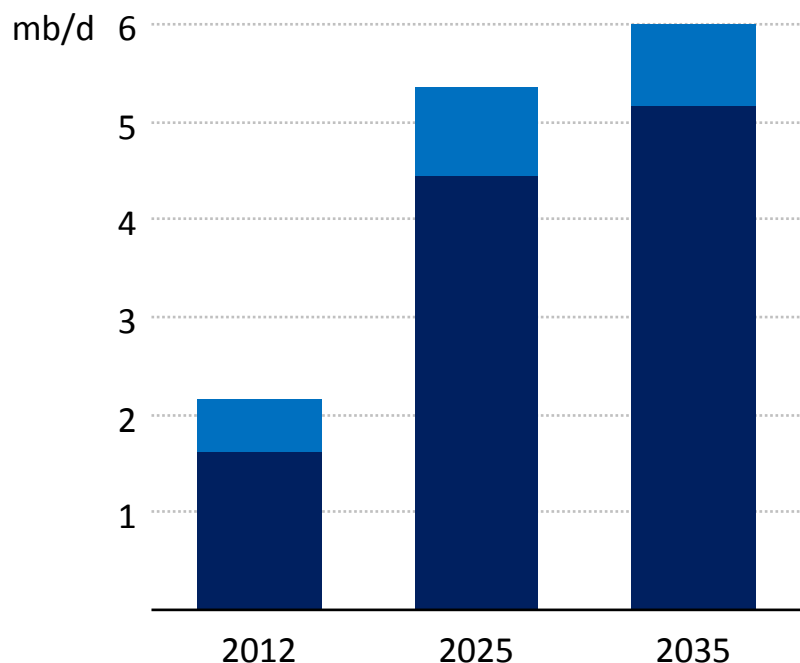
***The United States (light tight oil) & Brazil (deepwater) step up until the mid-2020s, but the Middle East is critical to the longer-term oil outlook***



# Brazil cuts a distinctive profile

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## Brazil oil production



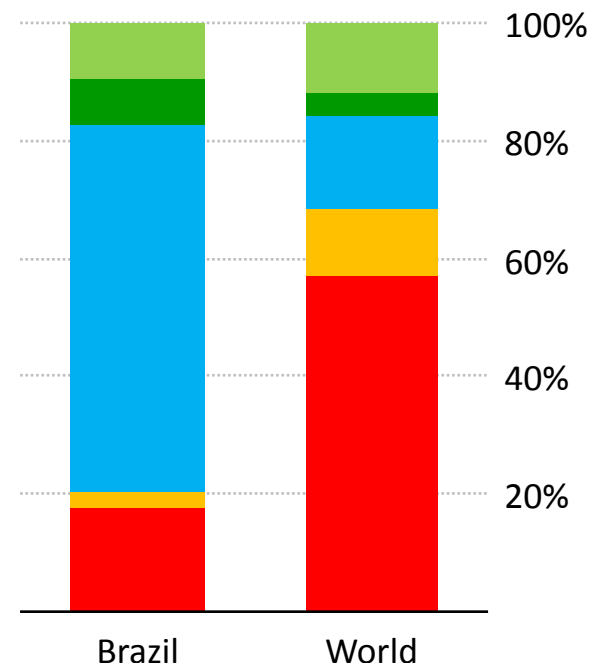
### Oil production:

- Other
- Deepwater

### Electricity generation:

- Other renewables
- Bioenergy
- Hydropower
- Nuclear
- Fossil fuels

## Electricity mix by fuel, 2035

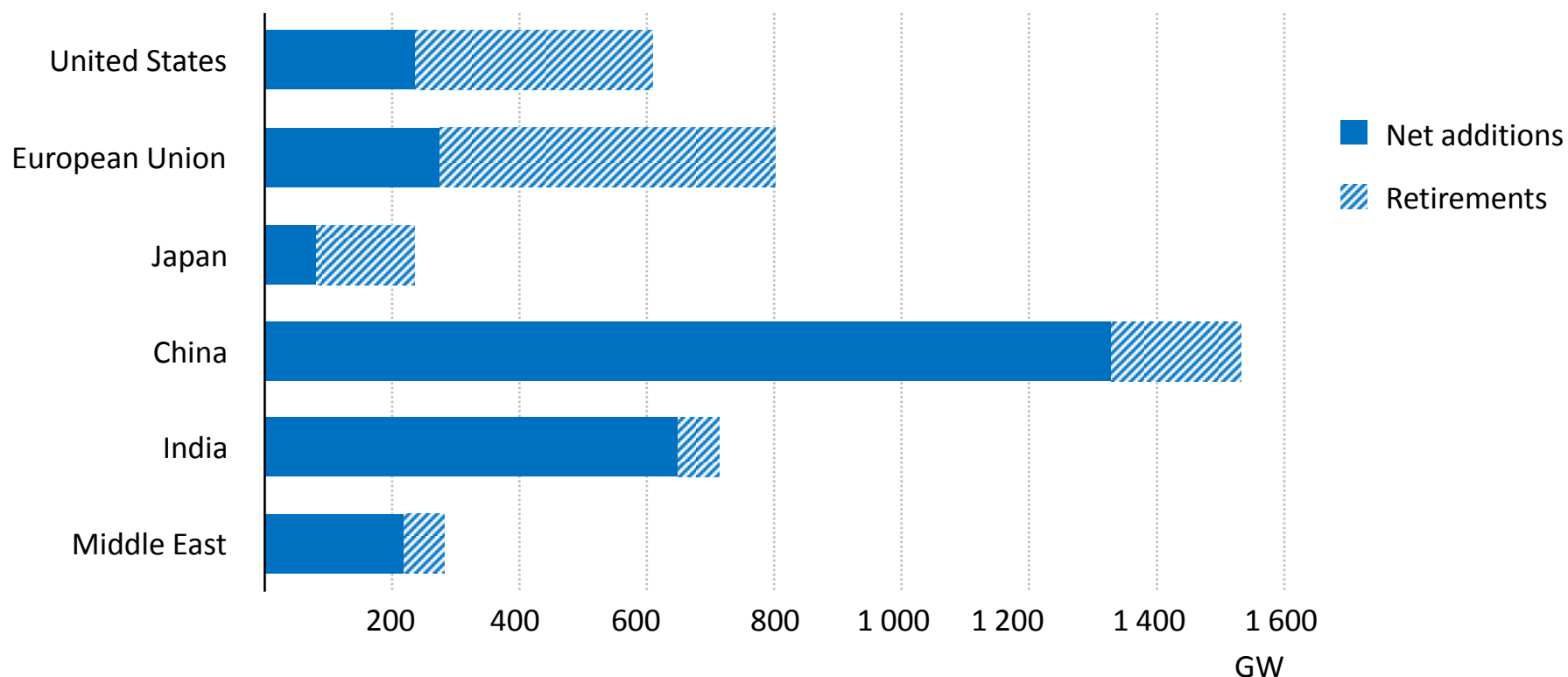


***Complex deepwater projects see Brazil joining the top ranks of global oil producers, while the domestic power mix remains one of the least carbon-intensive in the world***

# Capacity to change?

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## Power generation capacity additions and retirements, 2013-2035

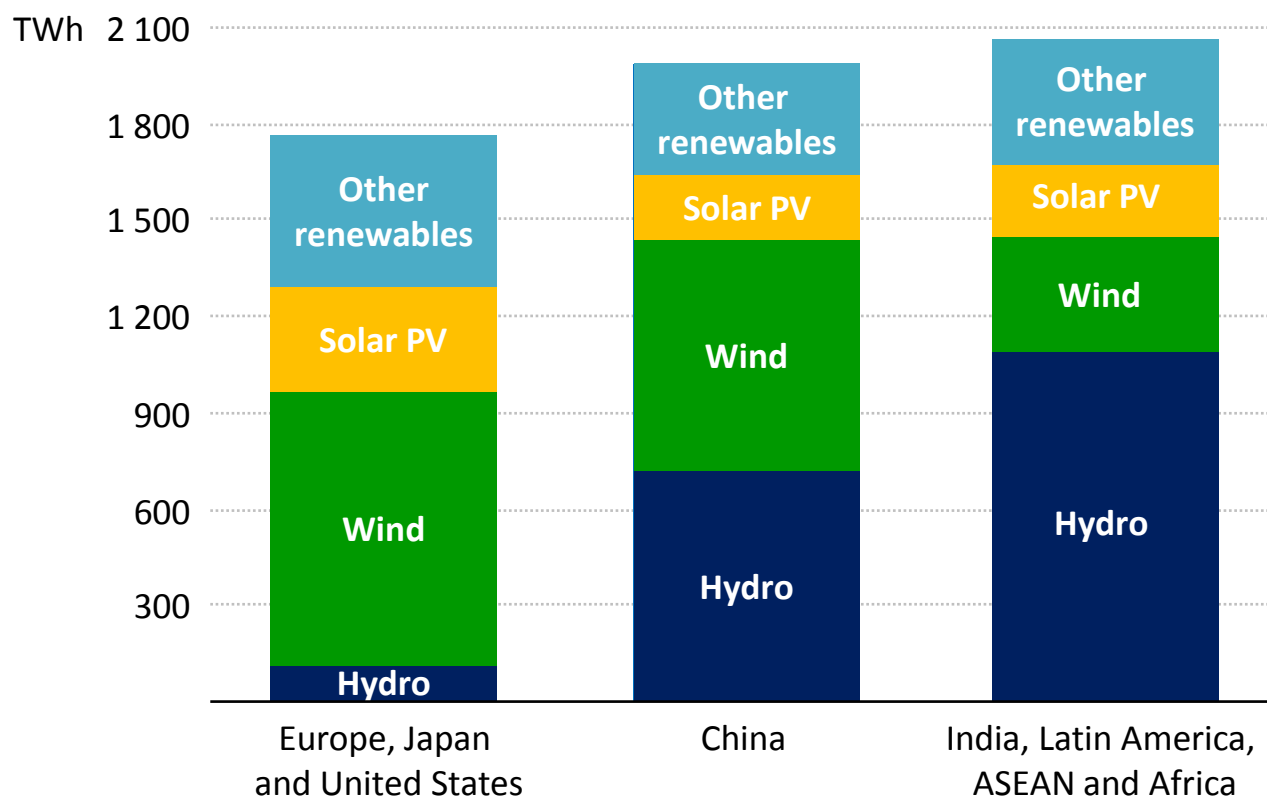


***China & India together build almost 40% of the world's new capacity;  
60% of capacity additions in the OECD replace retired plants***

# Renewables power up around the world

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## Growth in electricity generation from renewable sources, 2011-2035

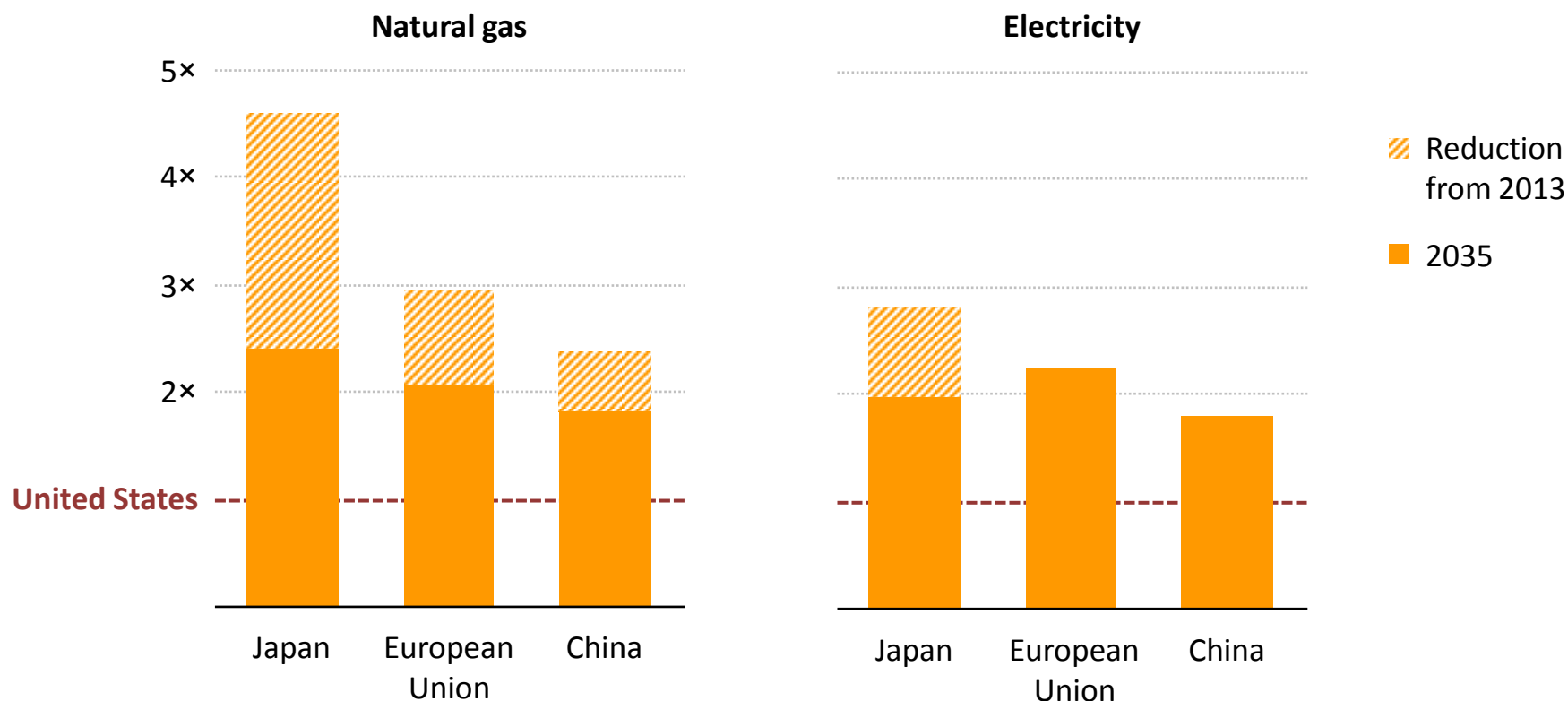


*The expansion of non-hydro renewables depends on subsidies that more than double to 2035; additions of wind & solar have implications for power market design & costs*

# Who has the energy to compete?

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## Ratio of industrial energy prices relative to the United States

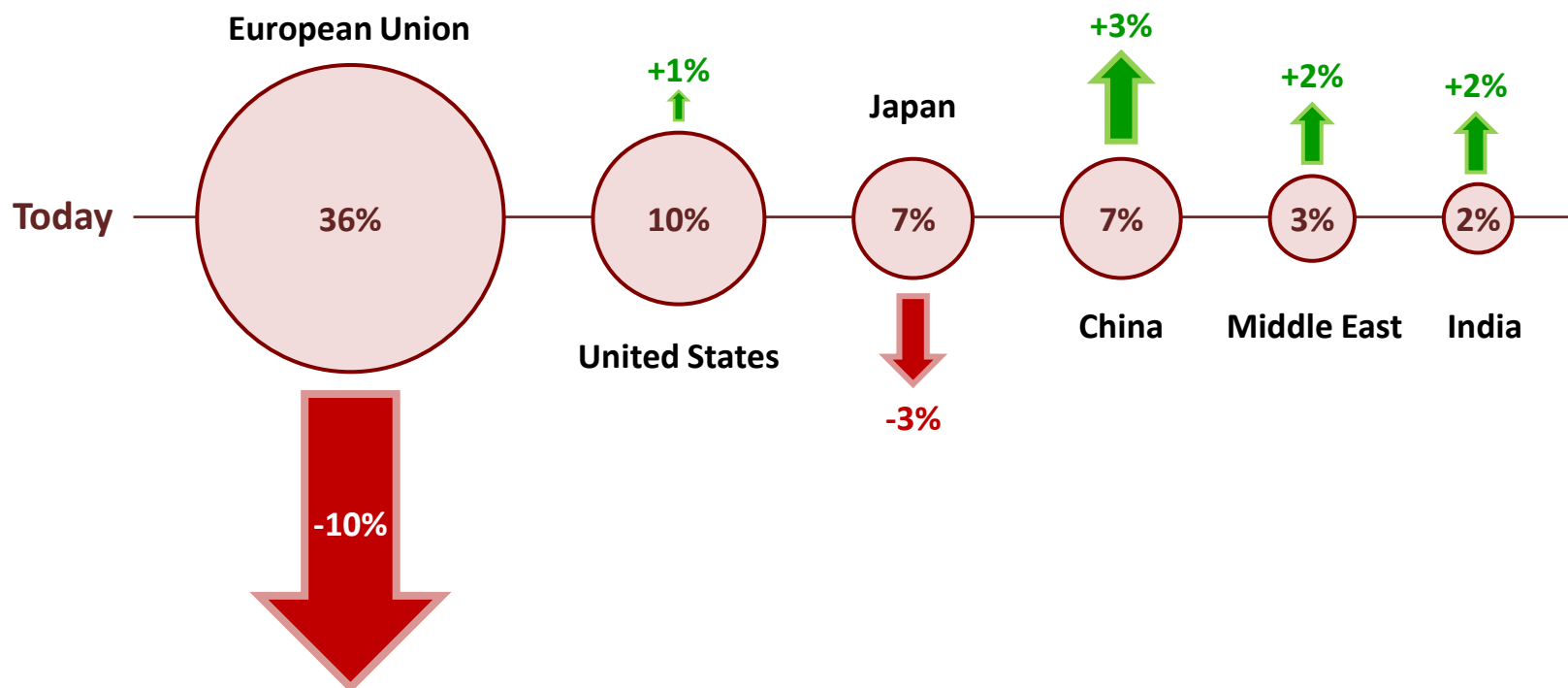


***Regional differences in natural gas prices narrow from today's very high levels but remain large through to 2035; electricity price differentials also persist***

# An energy boost to the economy?

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## Share of global export market for energy-intensive goods

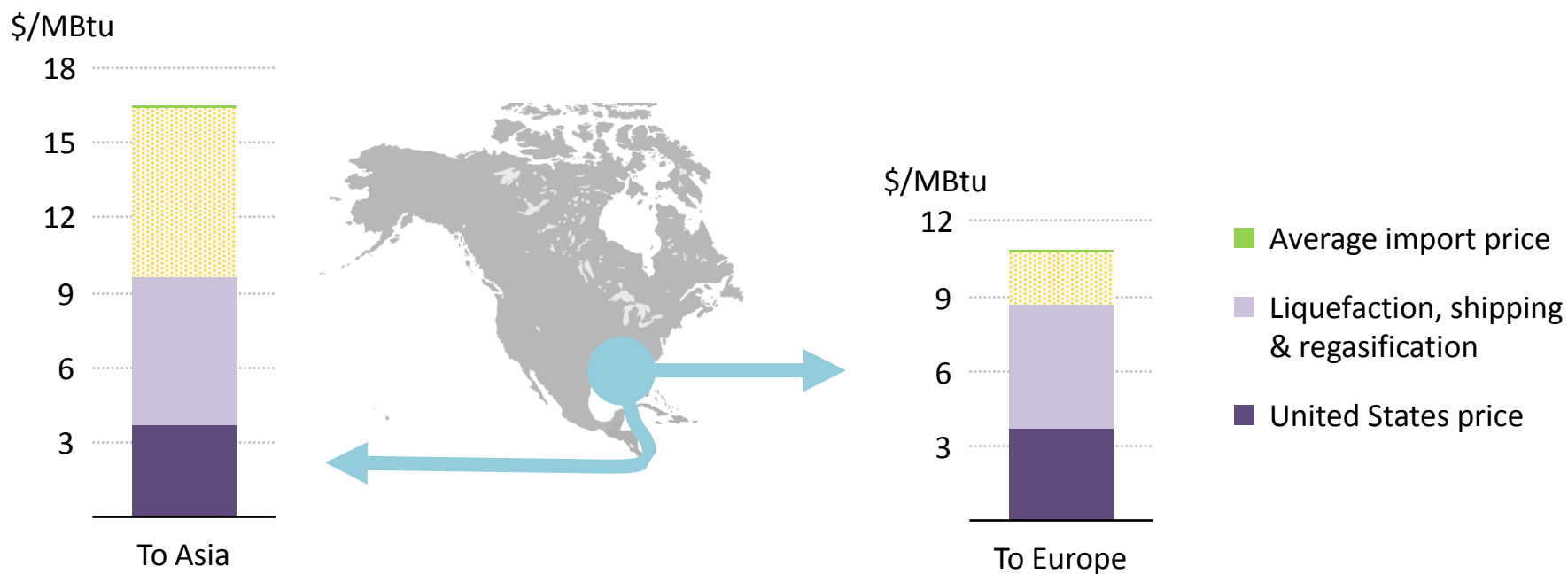


*The US, together with key emerging economies, increases its export market share for energy-intensive goods, while the EU and Japan see a sharp decline*

# LNG from the United States can shake up gas markets

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## Indicative economics of LNG export from the US Gulf Coast (at current prices)



***New LNG supplies accelerate movement towards a more interconnected global market, but high costs of transport between regions mean no single global gas price***



# Orientation for a fast-changing energy world

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- China, then India, drive the growing dominance of Asia in global energy demand & trade
- Technology is opening up new oil resources, but the Middle East remains central to the longer-term outlook
- Regional price gaps & concerns over competitiveness are here to stay, but there are ways to react – with efficiency first in line
- The transition to a more efficient, low-carbon energy sector is more difficult in tough economic times, but no less urgent