

# World Energy Outlook 2016

**Tokyo, 25 November 2016**

# The global energy context today

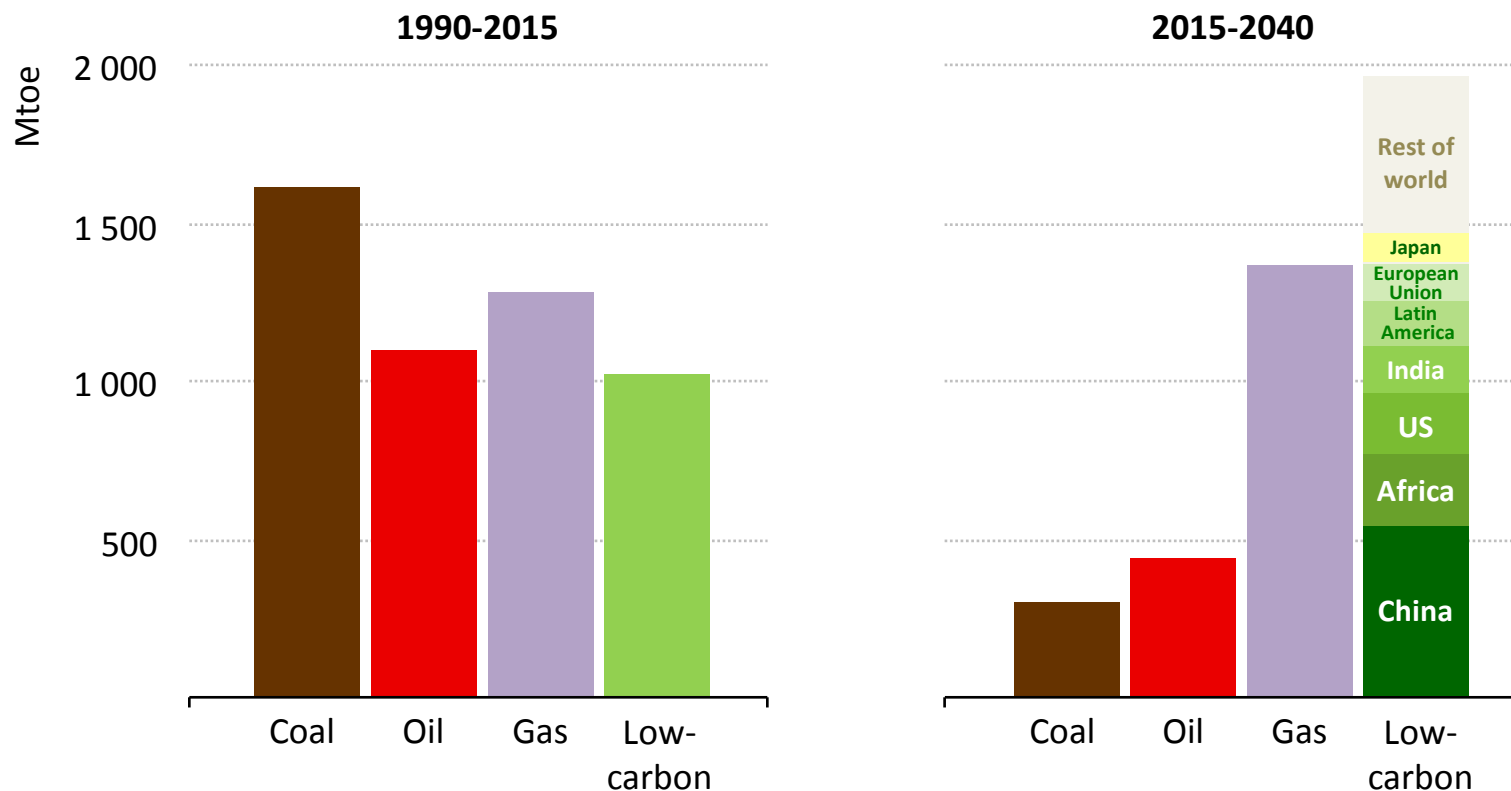
## ■ Key points of orientation:

- *Middle East share in global oil production in 2016 at highest level for 40 years*
- *Transformation in gas markets deepening with a 30% rise in LNG*
- *Additions of renewable capacity in the power sector higher in 2015 than coal, gas, oil and nuclear combined*
- *Energy sector in the spotlight as the Paris Agreement enters into force*
- *Billions remain without basic energy services*

- **There is no single story about the future of global energy; policies will determine where we go from here**

# A new 'fuel' in pole position

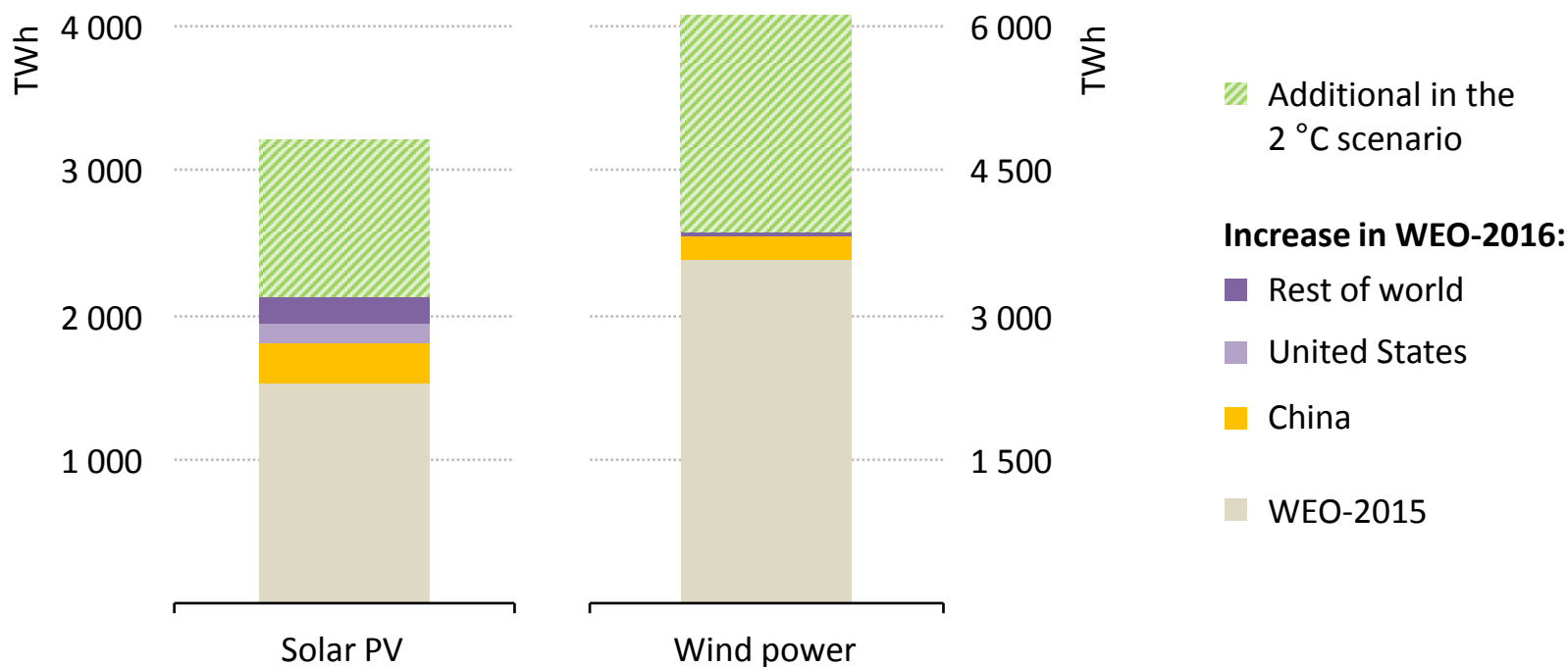
## Change in total primary energy demand



***Low-carbon fuels & technologies, mostly renewables, supply nearly half of the increase in energy demand to 2040***

# Greater policy support boosts prospects for solar PV and wind

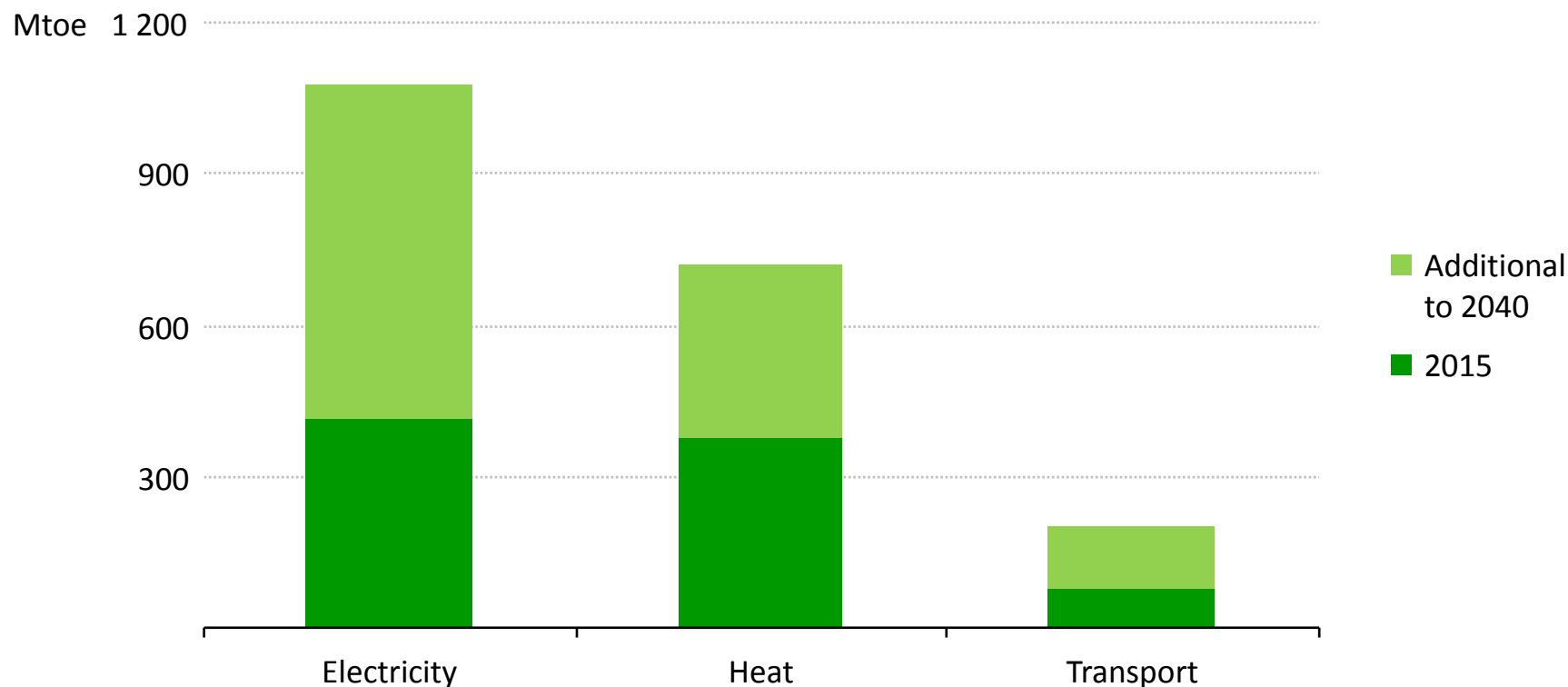
## Solar PV and wind generation, 2040



**Stronger policies on solar PV and wind help renewables make up 37% of electricity generation in 2040 in our main scenario – & nearly 60% in the 2 °C scenario**

# The next frontiers for renewables are heat and transport

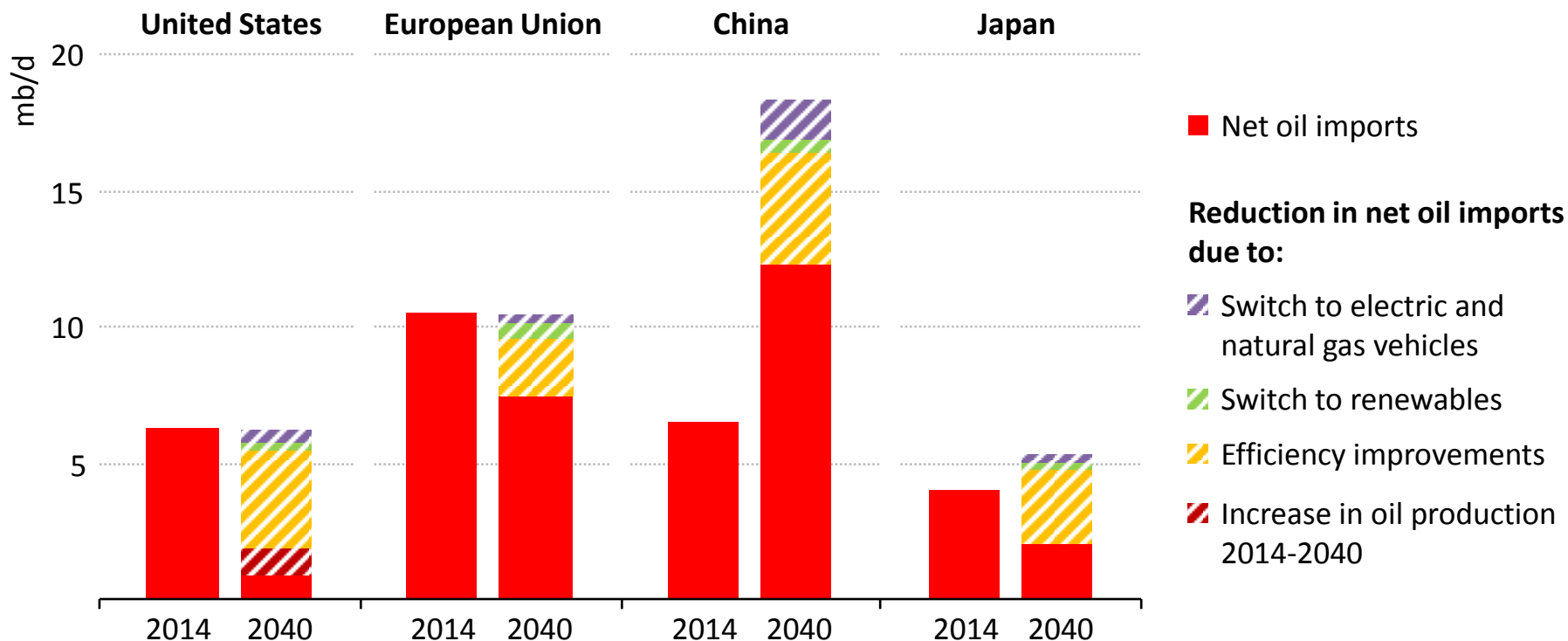
## Renewable energy use by sector



***Today renewables in electricity and heat use are nearly at par; by 2040, the largest untapped potential lies in heat and transport***

# A suite of tools to address energy security

## Net oil imports



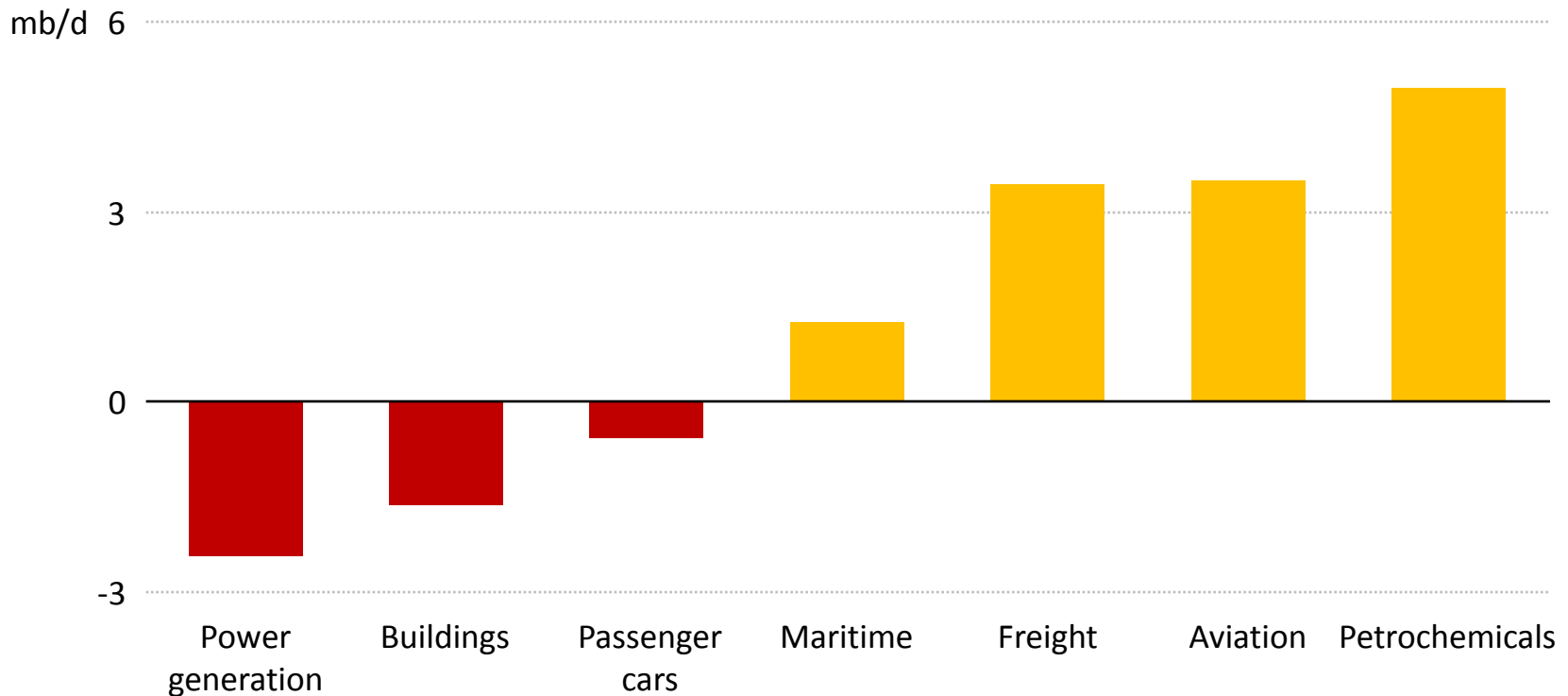
***The energy transition provides instruments to address traditional energy security concerns, while shifting attention to electricity supply***

# Entering a period of greater oil market volatility

- **Approvals of new conventional crude oil projects in 2015-2016 have fallen to the lowest level since the 1950s**
- **If approvals remains low in 2017, an unprecedented effort will be needed to avoid a supply-demand gap in a few years' time**
- **US tight oil provides a potential lifeline, but cannot be relied upon to cover a major shortfall in the 'baseload' of oil supply**
- **Without a pick-up in investment, or a rapid slowdown in demand growth, the stage is set for the next boom-and-bust cycle for oil**

# No peak yet in sight, but a slowdown in growth for oil demand

## Change in oil demand by sector, 2015-2040

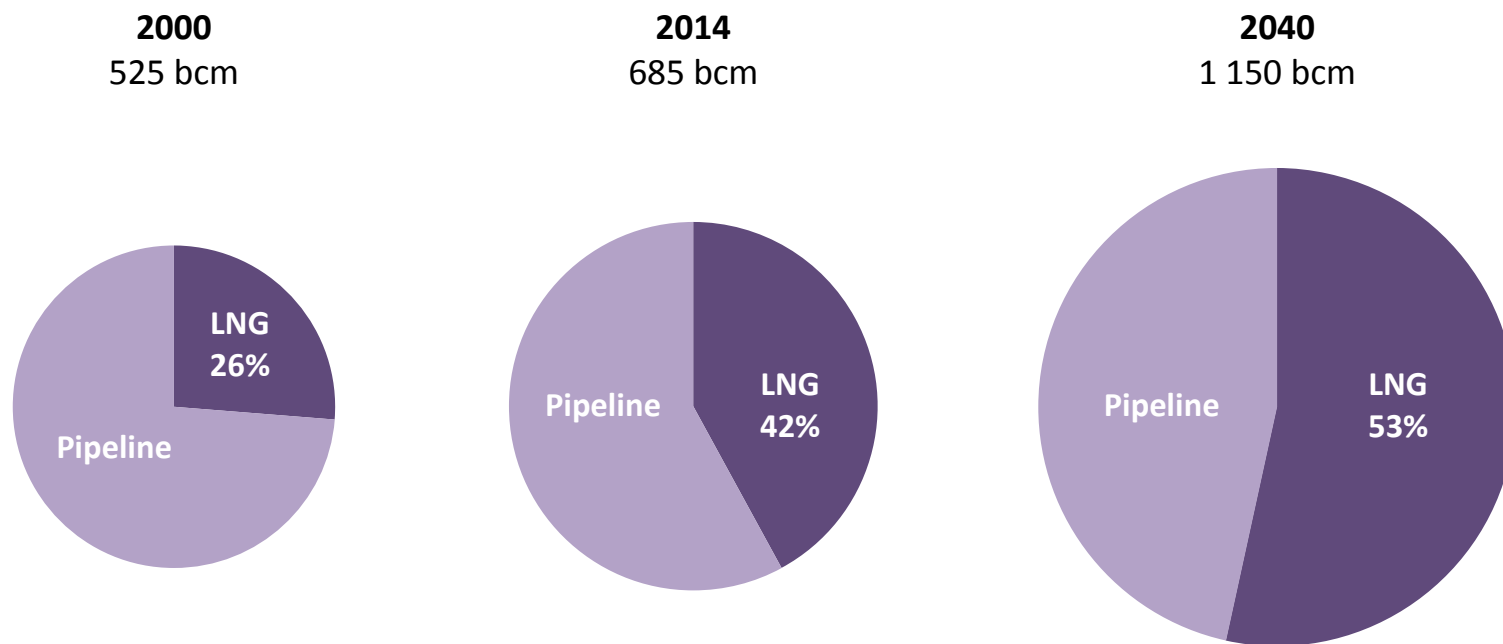


*The global car fleet doubles, but efficiency gains, biofuels & electric cars reduce oil demand for passenger cars; growth elsewhere pushes total demand higher*



# A wave of LNG spurs a second natural gas revolution

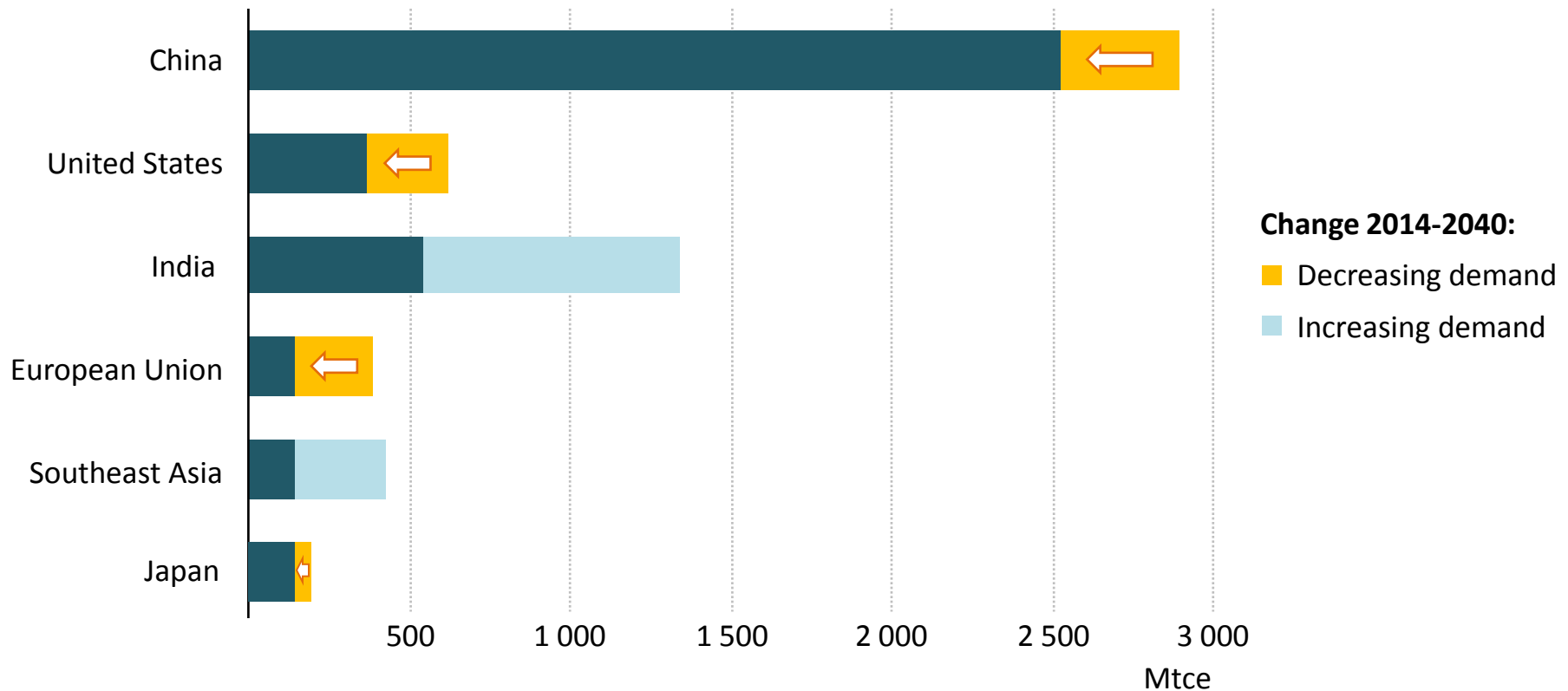
## Share of LNG in global long-distance gas trade



***Contractual terms and pricing arrangements are all being tested as new LNG from Australia, the US & others collides into an already well-supplied market***

# Coal: a rock in a hard place

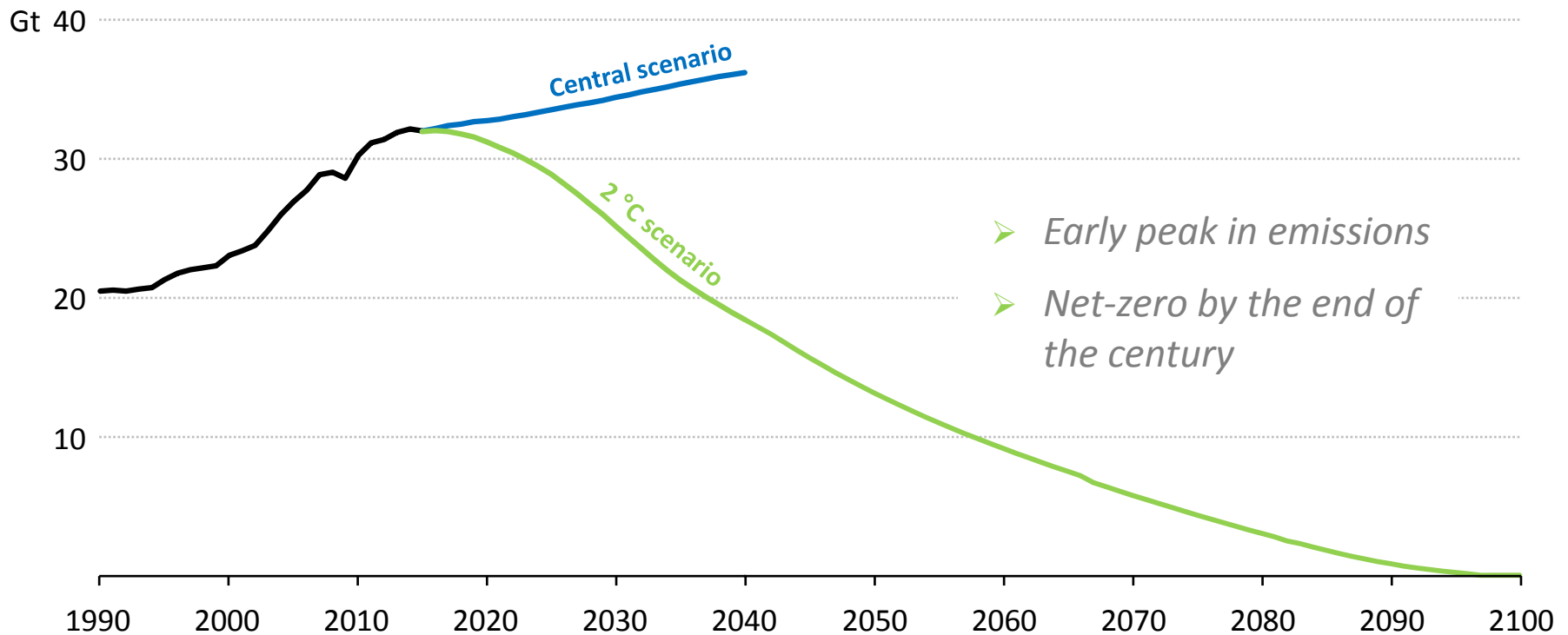
## Coal demand in key regions



***The peak in Chinese demand is an inflexion point for coal; held back by concerns over air pollution & carbon emissions, global coal use is overtaken by gas in the 2030s***

# Still a long way from a pathway to energy sector decarbonisation

## Energy-sector CO<sub>2</sub> emissions



**Current pledges fall short of limiting the temperature increase to below 2 °C; raising ambition to 1.5 °C is uncharted territory**

# Conclusions

- **Energy security remains a major concern; potential vulnerabilities are growing, so too is the range of tools available to address them**
- **New oil market dynamics & subdued upstream investment are ushering in a period of greater market volatility**
- **A wave of LNG is the catalyst for a second natural gas revolution, with far-reaching implications for gas pricing & contracts**
- **The next chapter in the rise of renewables requires policies to push their role in heat & transport & changes in power market design**
- **The Paris Agreement is a framework; its impact on energy depends on how its goals are translated into real government policy actions**

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