

World Energy Outlook

**Opportunities and challenges for
natural gas in future energy systems**

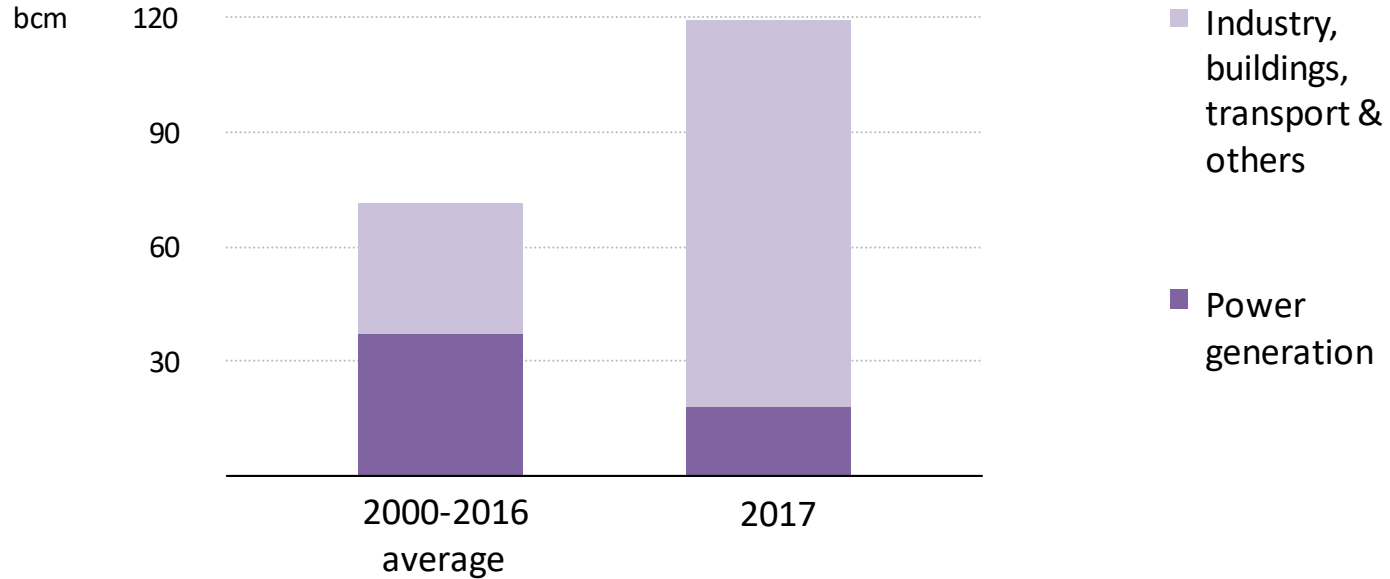
Tim Gould, International Energy Agency

**Natural Gas Day, Bariloche, Argentina
12 June 2018**

- Four large-scale upheavals in global energy set the scene:
 - The **United States** is turning into the undisputed global leader for oil & gas
 - **Solar PV** is on track to be the cheapest source of new electricity in many countries
 - The future is **electrifying**, spurred by cooling, electric vehicles & digitalization
 - **China's** new drive to “make the skies blue again” is recasting its role in energy
- All of these are providing a new policy and market context for natural gas
- There are many possible pathways ahead & many potential pitfalls if governments or industry misread the signs of change
 - **New Policies Scenario** (where we are heading)
 - **Sustainable Development Scenario** (reaching climate, access & air quality ambitions)

2017: a golden year for natural gas?

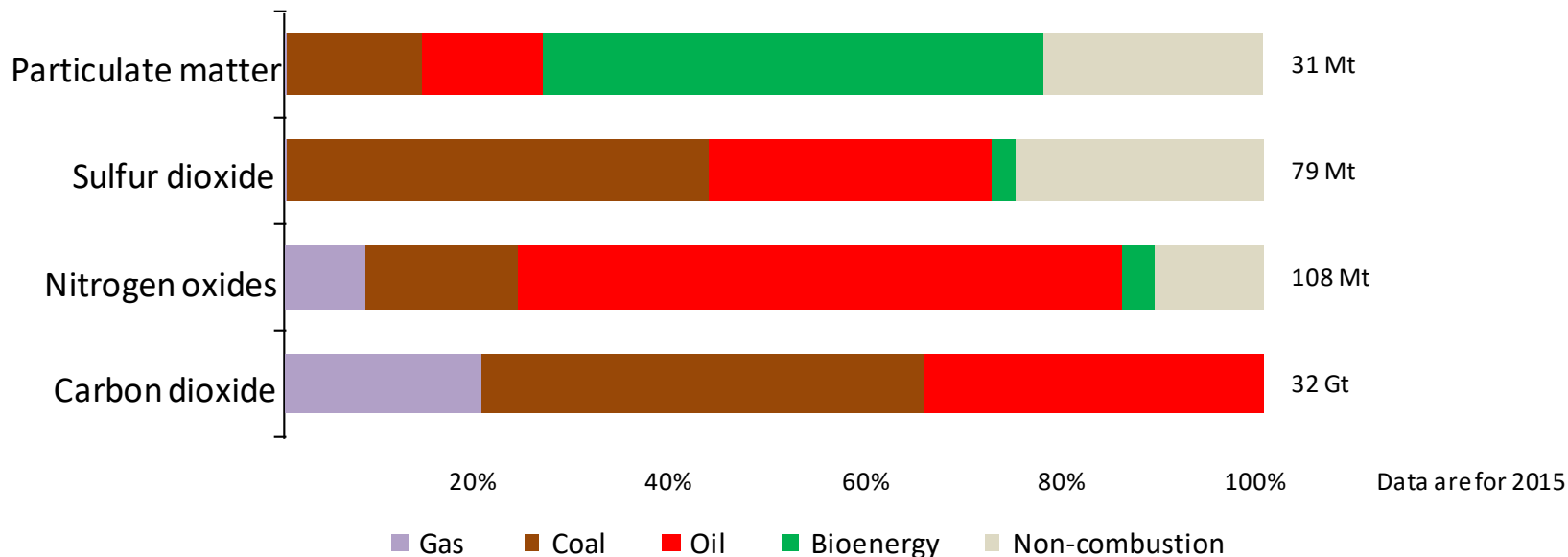
Growth in global gas demand



The strong growth in gas demand in 2017 was not driven by the power sector, but by greater use in industry & buildings; China accounted for 30% of the increase in global gas demand

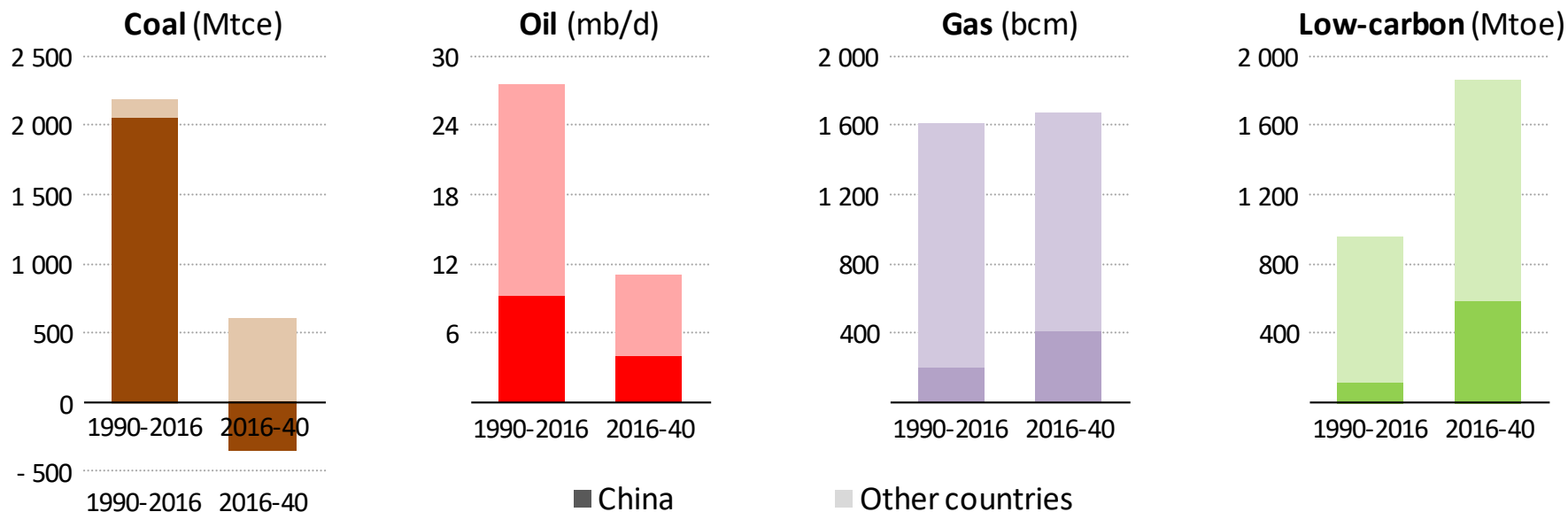
Combustion emissions from gas are low

Share of gas in total energy-related emissions of air pollutants and CO₂



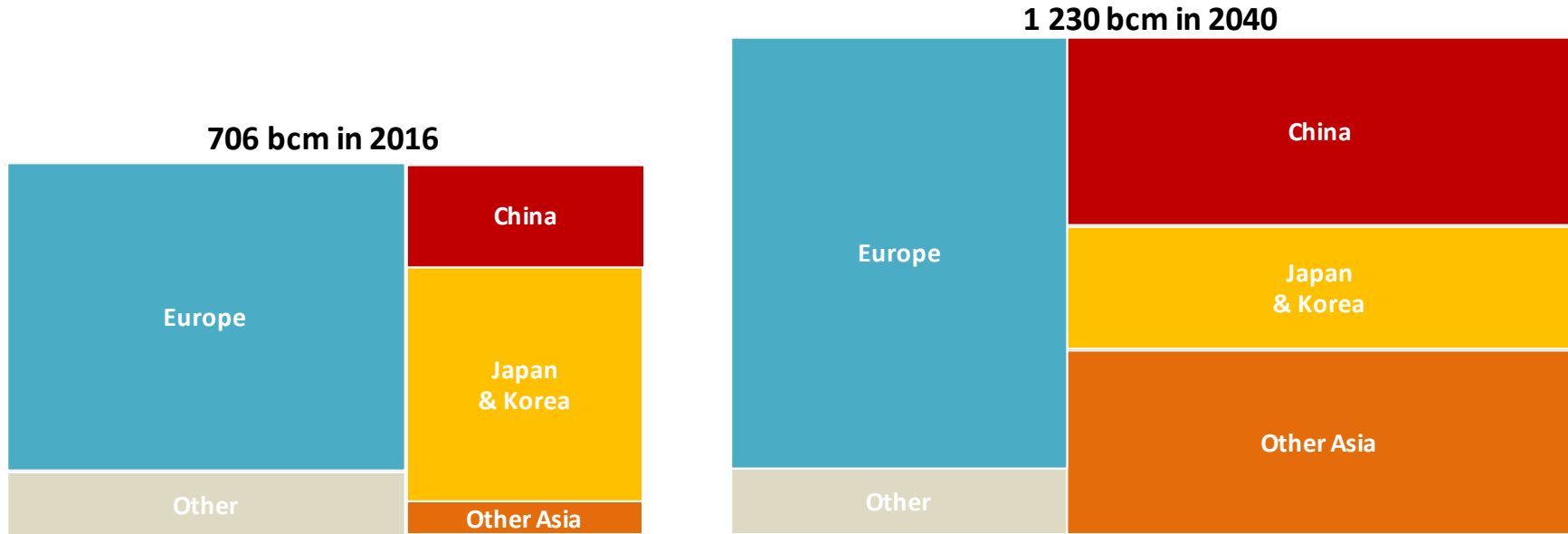
Compared with other sources, natural gas makes only a minor contribution towards today's combustion-related emissions

Change in world energy demand by fuel, New Policies Scenario



Low-carbon sources & natural gas meet 85% of the increase in global demand: China's switch to a cleaner energy mix plays a major role in driving global trends

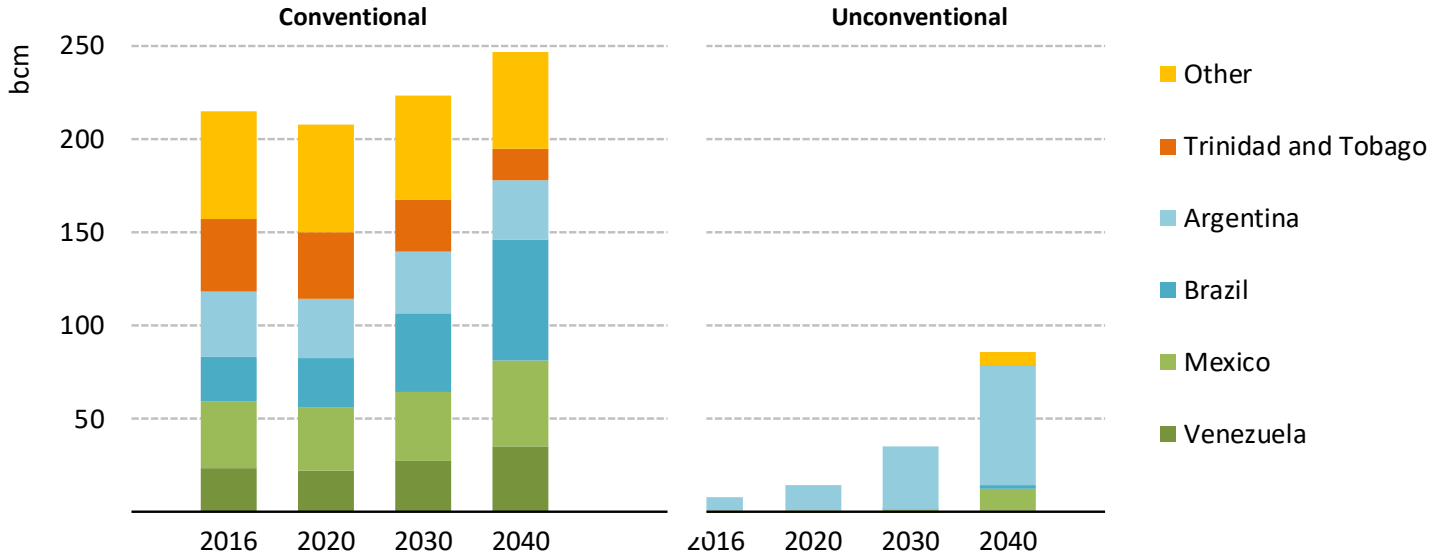
Gas importers in the New Policies Scenario



Asia's growing gas import requirements are largely met by LNG, with exports from the US accelerating a shift towards a more flexible, liquid global market

Natural gas on the rise in South America

Production by country and type in Central & South America in the New Policies Scenario



The potential upside for conventional gas production in South America is led by Brazil, mostly associated gas, but the major upstream gas opportunity is shale in Argentina

The “Golden Rules” are principles that can allow governments, industry & others to address potential environmental & social impacts from unconventional gas development:

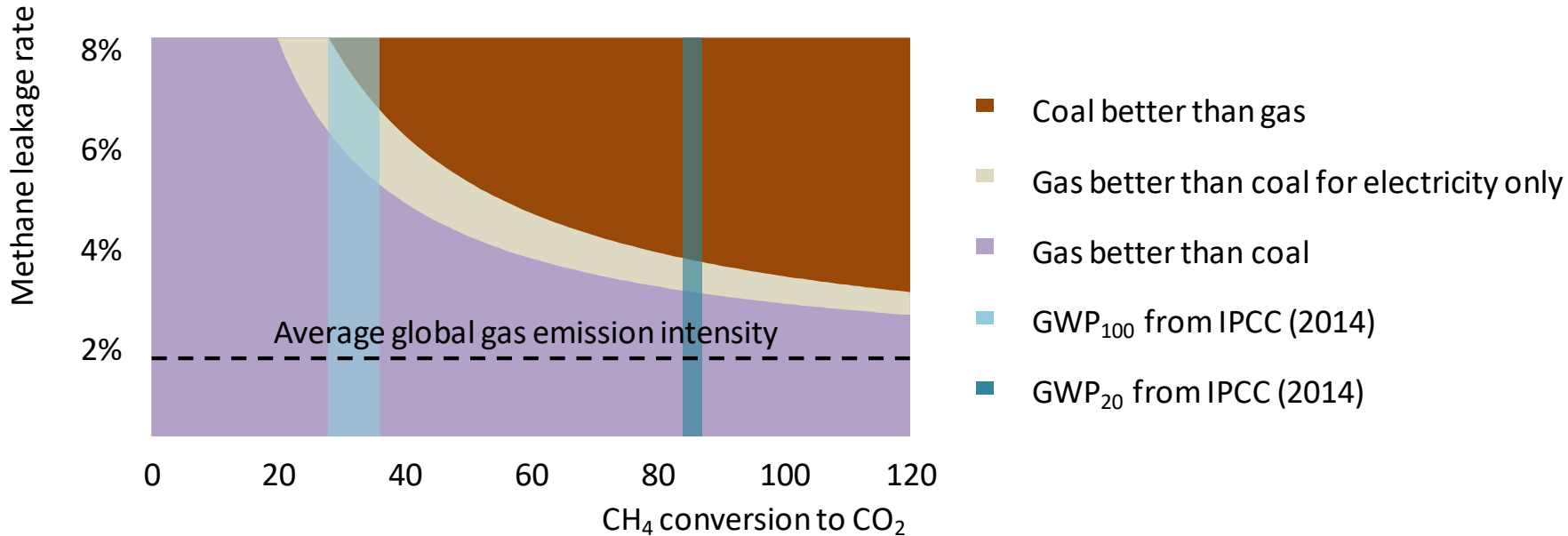
- Measure, disclose & engage
- Watch where you drill
- Isolate wells & prevent leaks
- Treat water responsibly
- Eliminate venting, minimise flaring & other emissions
- Be ready to think big to capture benefits & mitigate risks
- Ensure a consistently high level of environmental performance



4th IEA Unconventional Gas Forum,
Buenos Aires, April 2016

The lifecycle emissions of gas are lower than coal

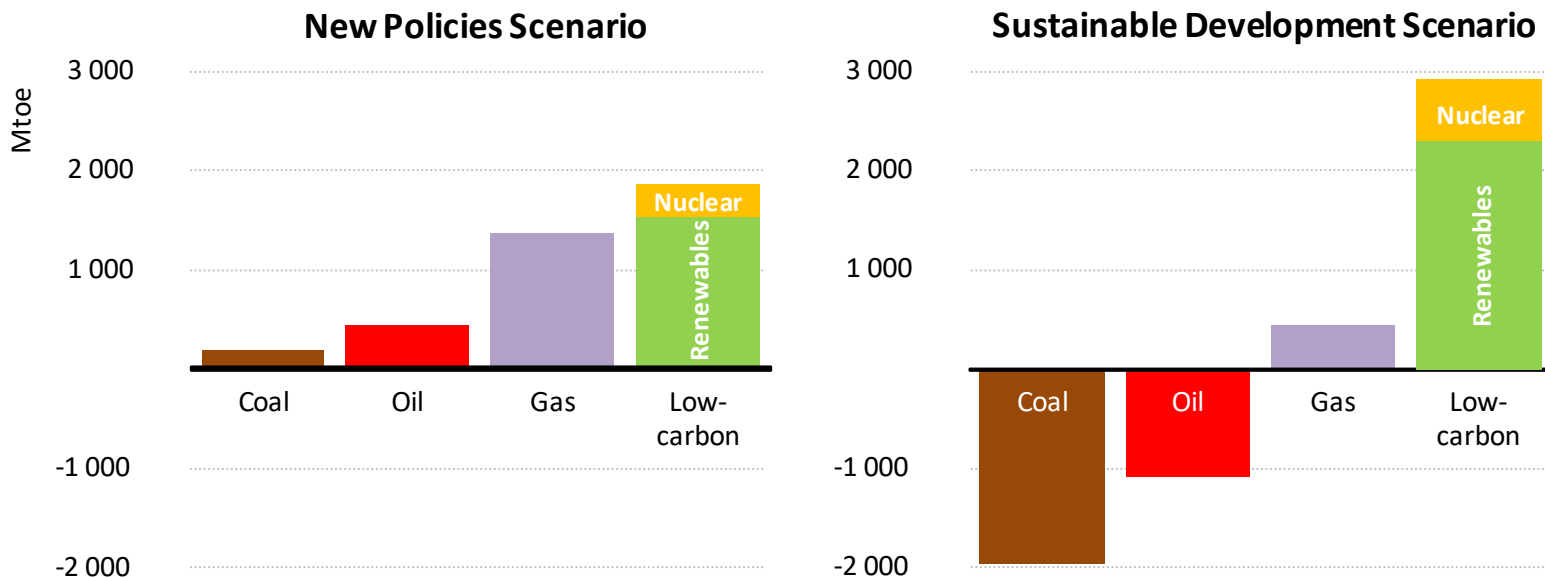
Greenhouse-gas emission intensity of natural gas compared with coal



The global average emission intensity of gas is low enough to result in fewer GHG emissions than coal regardless of the timeframe considered, but is beating the most carbon-intensive fuel enough?

Gas is resilient in a changing energy world

Change in global primary energy demand by scenario 2016-2040



Gas is the only fossil fuel that ends up higher in 2040 than today in the Sustainable Development Scenario, although its contribution varies widely across regions, between sectors and over time

- Natural gas demand bounced back in 2017, spurred by China & ample availability: the composition of demand growth is shifting away from power generation
- The versatility of gas means that it is well placed to grow in different scenarios, but competition is strong & affordability is key for prospects in emerging markets
- The contours of a new, more globalised gas market are becoming visible, with LNG – US LNG in particular – acting as the catalyst for change
- Development of Argentina’s rich shale gas potential can be a game-changer for gas across South America
- The long-term role of gas will be shaped not only by the pace of energy transitions, but also by the success of efforts to minimise the environmental footprint of gas use



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