

26th World Gas Conference

1 – 5 June 2015, Paris, France



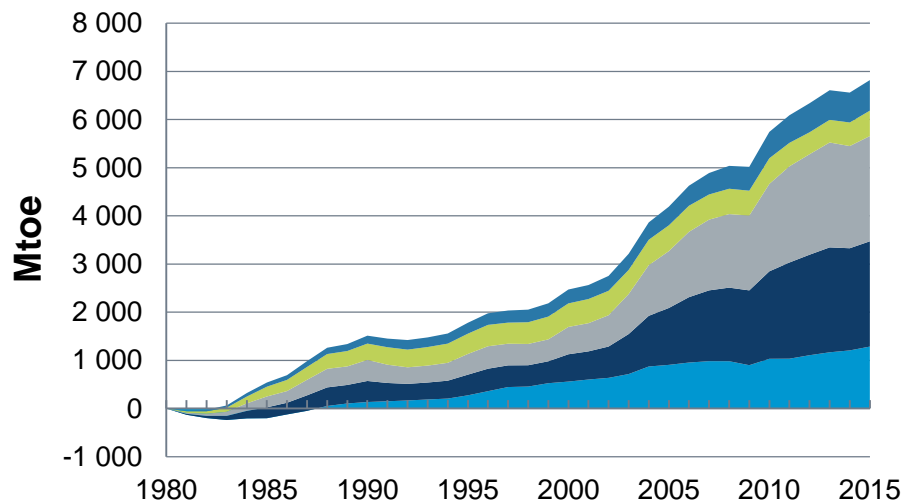
SP3—2050 Prospective Study

Michael Stoppard
Chief Strategist Global Gas, IHS Energy



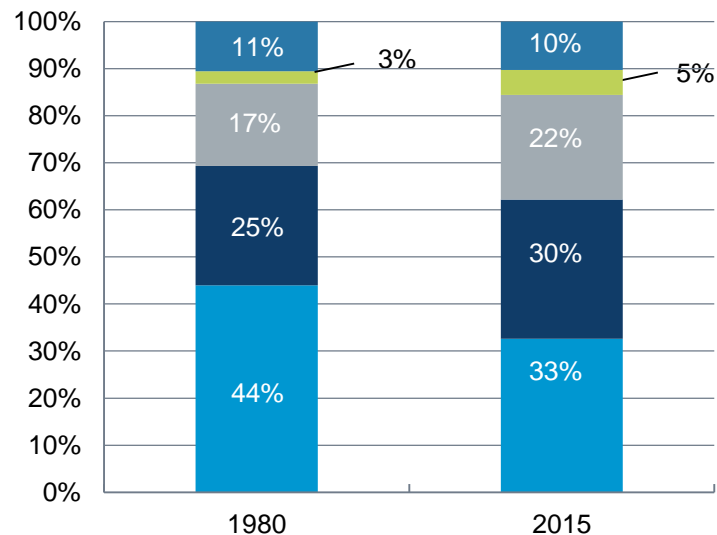
Looking Back 35 Years—Evolution of the Fuel Mix

Primary energy supply, incremental change since 1980



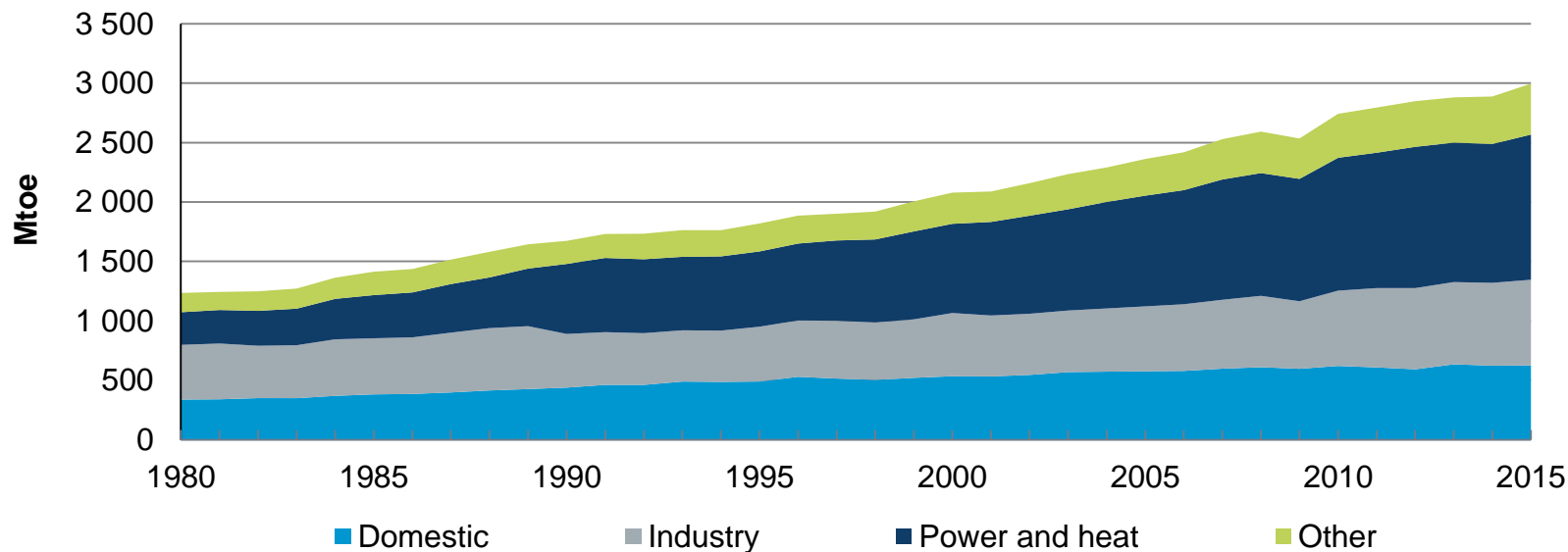
- Oil
- Natural Gas
- Biomass and Waste

Supply mix



- Coal
- Nuclear, Hydro, Renewables

Looking Back 35 Years—Global Gas Consumption



CAGR	Domestic	Industry	Power*	Other
1980-1999	2.3%	0.3%	5.4%	2.4%
2000-2015	1.1%	2.0%	3.3%	3.3%
1980-2015	1.8%	1.3%	4.4%	2.8%

Notes: *Power includes CHP and district heating. Industry includes feedstocks, Other includes energy own uses and transport.
Source: IHS, IEA

Energy Asset Lives Set the Pace of Change?

Long-life Assets

- Power Plants
- Refineries, Industrial Plant
- LNG Infrastructure
- Pipelines/Reticulation
- Building Stock
- Ships, Ports, Roads and Rail

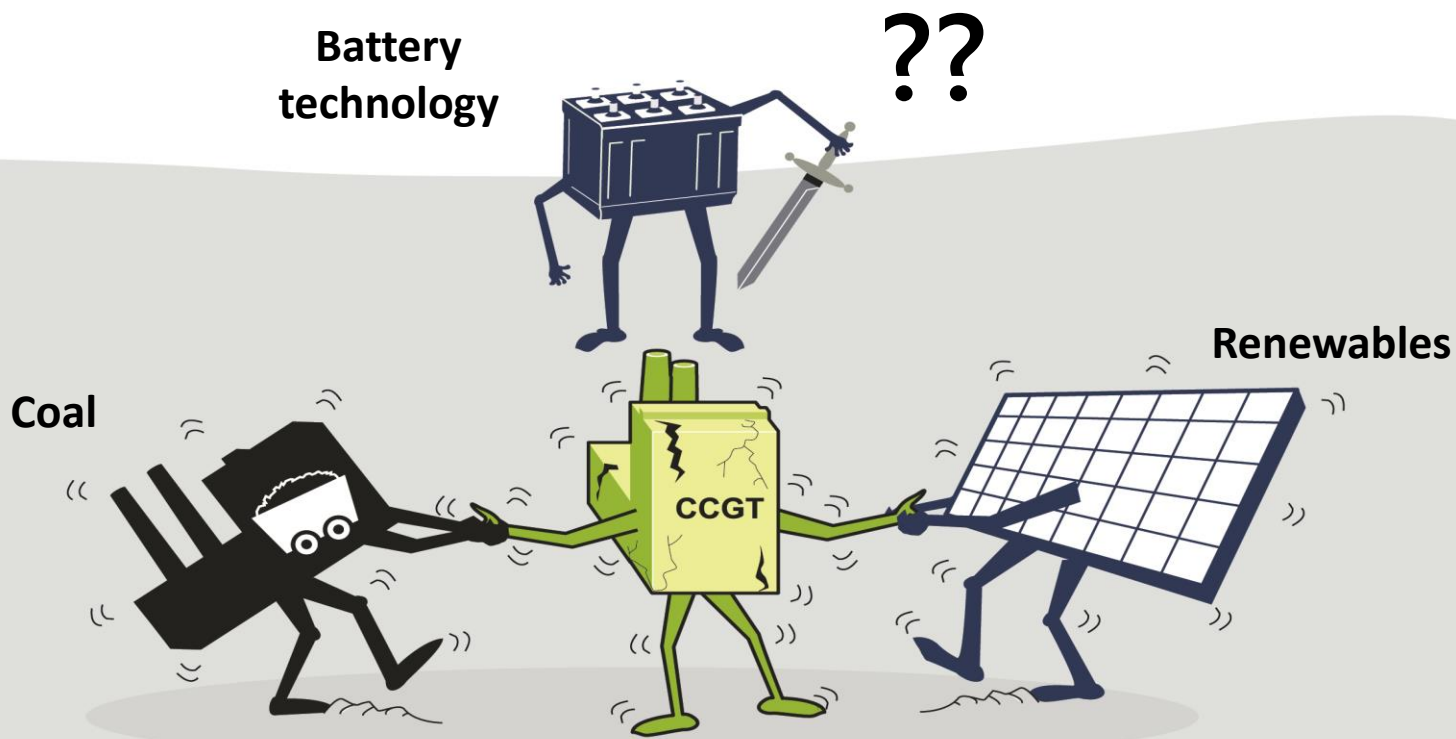
Revamping & Retrofits

Relatively Short-life Assets

- Oil & Gas Fields/Wells
 - Long-life but decline profiles
- Boilers
- Vehicles
- Equipment (compressors, etc.)

- Most 'short-life' assets will be replaced by 2030
- Many of today's 'long-life' assets will exist in 2030 except....
- ...big difference between OECD and non-OECD capital stock

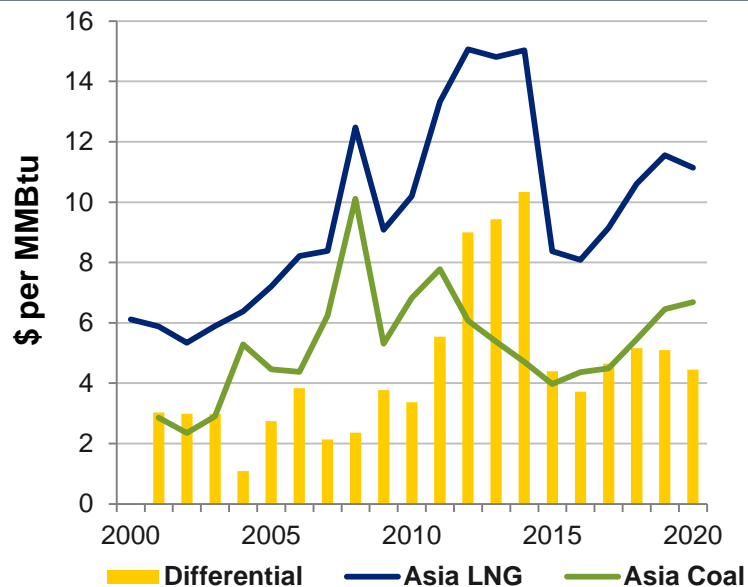
Competition in the Power Market will be Fierce



Competition in the Power Sector on Two Fronts

Coal-LNG differential will be higher than in the past

Coal (gas equivalent) Vs. Gas Prices

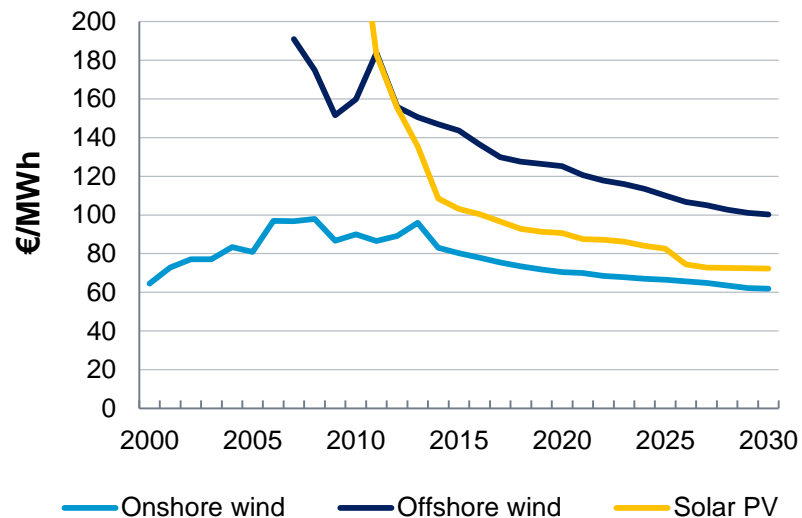


Source: IHS

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Renewable cost will go down further

LCOE - European Union



Notes: An LCOE cost comparison overstates the economic competitiveness of renewables because it does not take into account intermittency and back-up costs

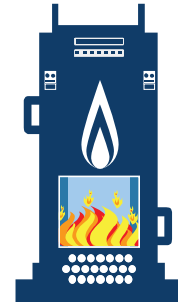
Source: IHS

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Alternative Markets with Potential Extra Value

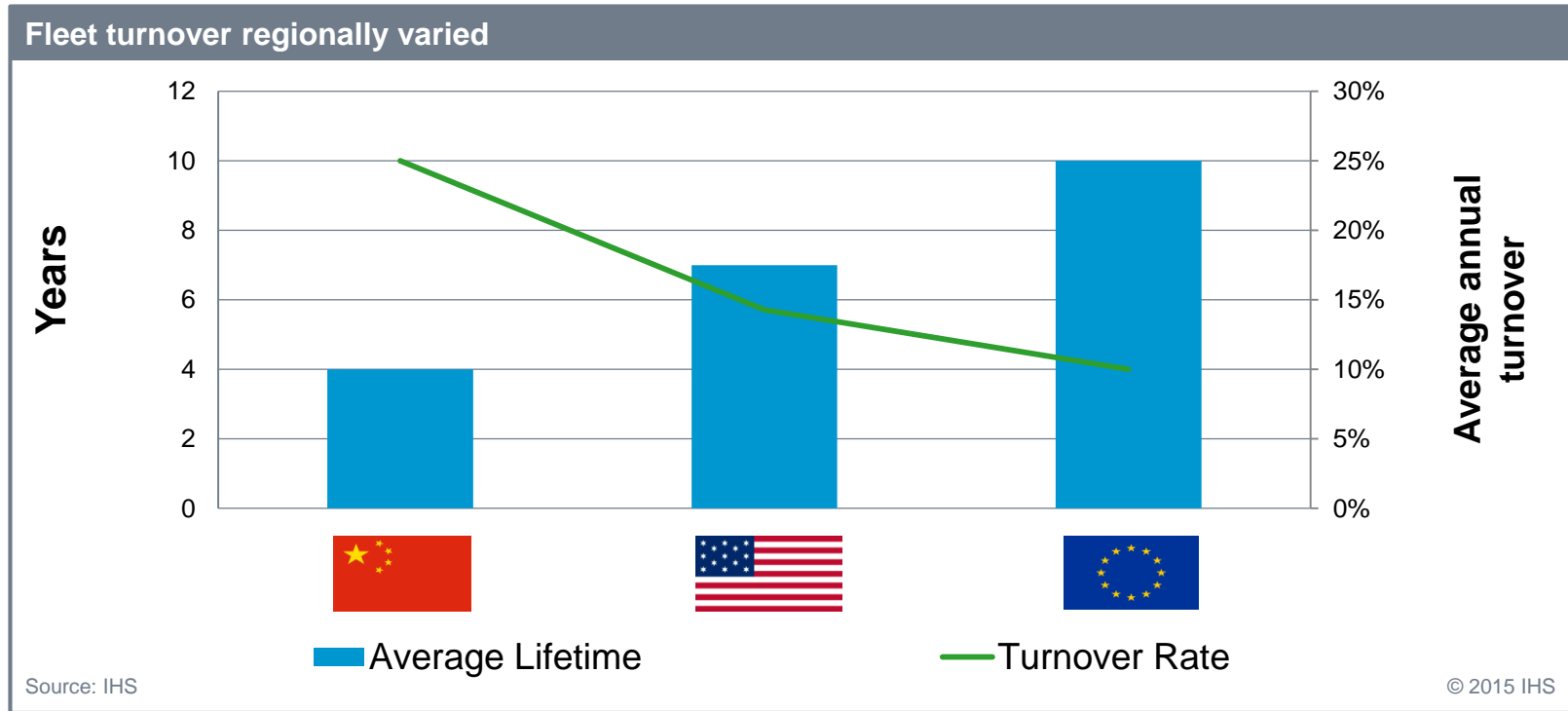


Transportation



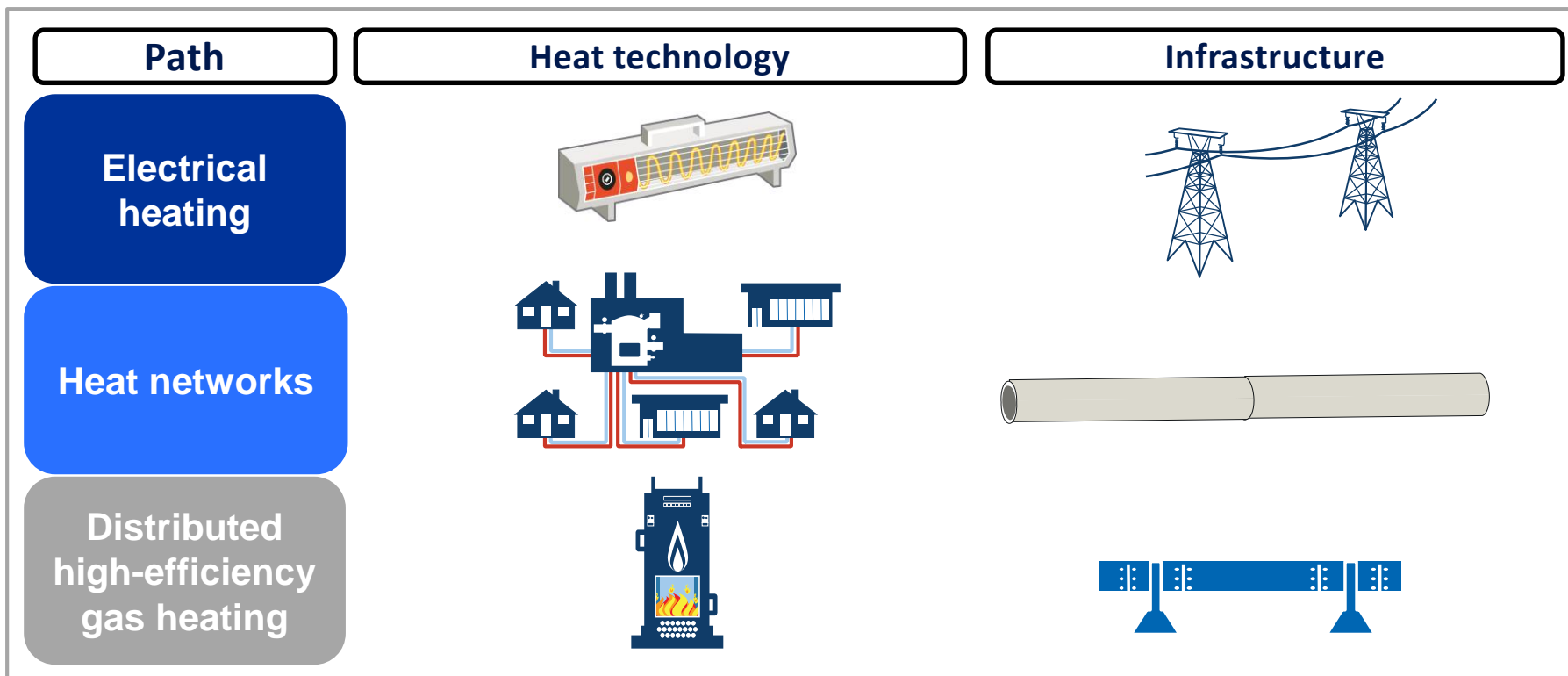
Heating

Truck Fleet has a Rapid Turnover



- Most of the world's trucks for use post-2025 have not yet been built or ordered

Three Paths to a New Heat Sector



Gas to 2050

- **Power.** The main driver for future global gas demand, but value under pressure
- **Transportation.** Transport may provide more value, and see quicker change
- **Heat.** The long-term future of heat will be critical for natural gas