



Advancing the Energy Transition

January 2019

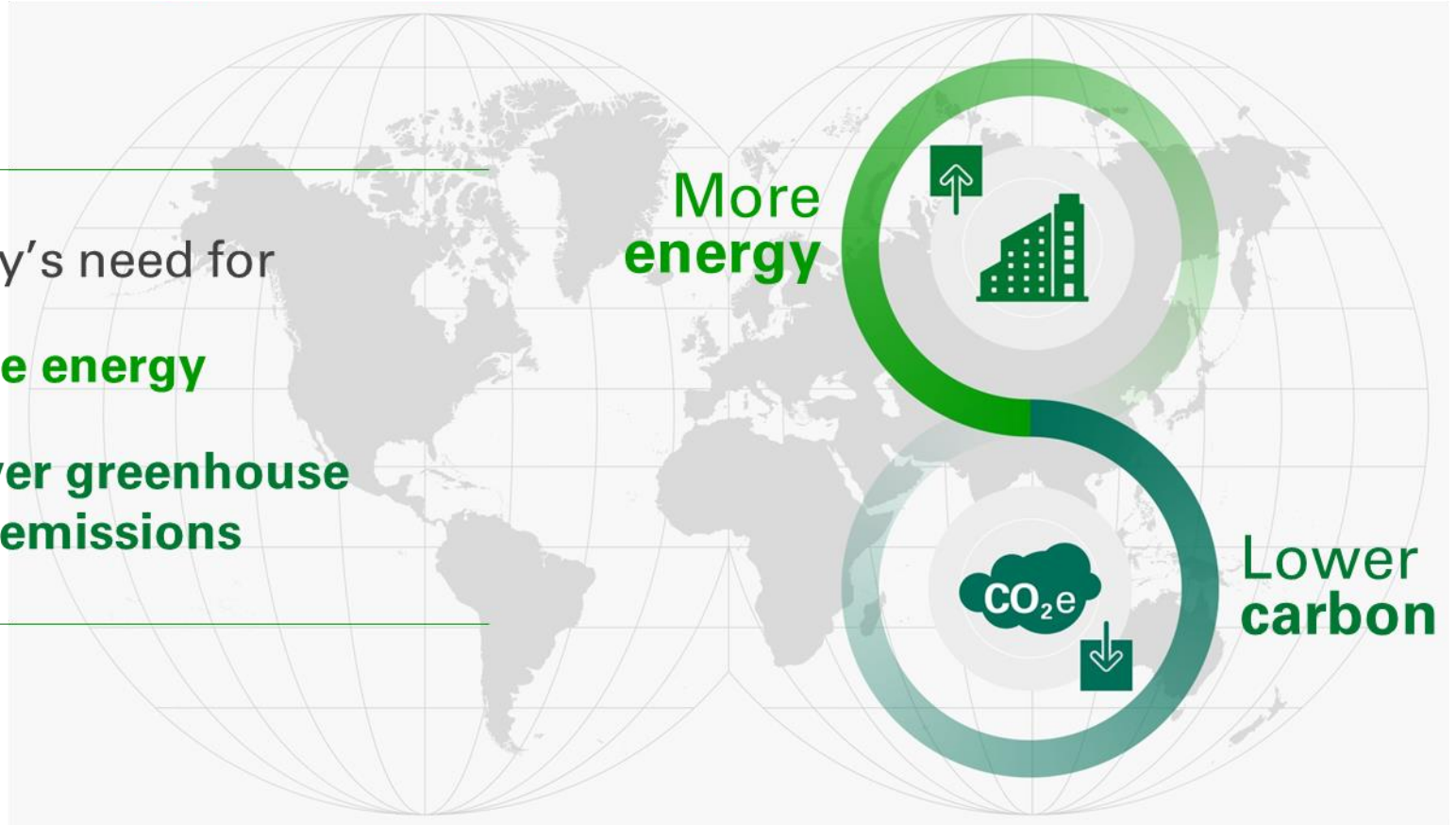
Dominic Emery – VP Strategic Planning

The dual energy challenge



Society's need for

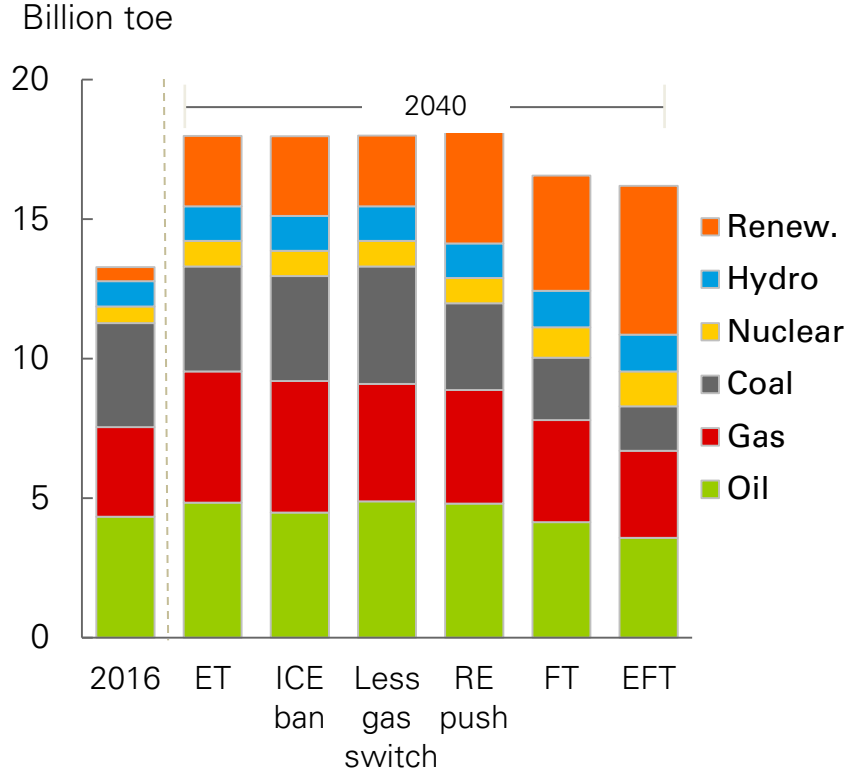
- **More energy**
- **Lower greenhouse gas emissions**



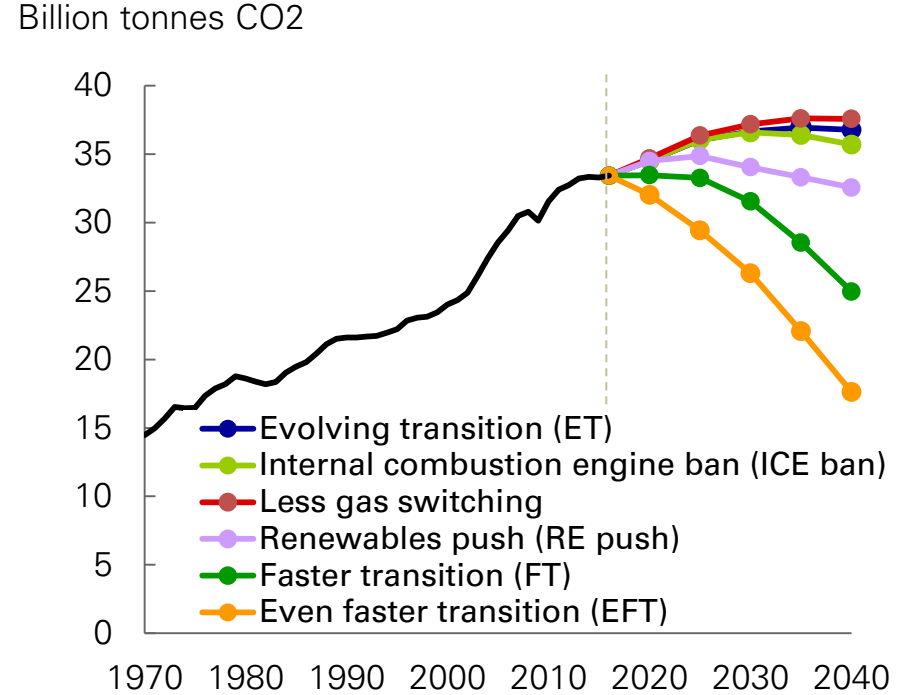
Alternative scenarios



Primary energy consumption by fuel



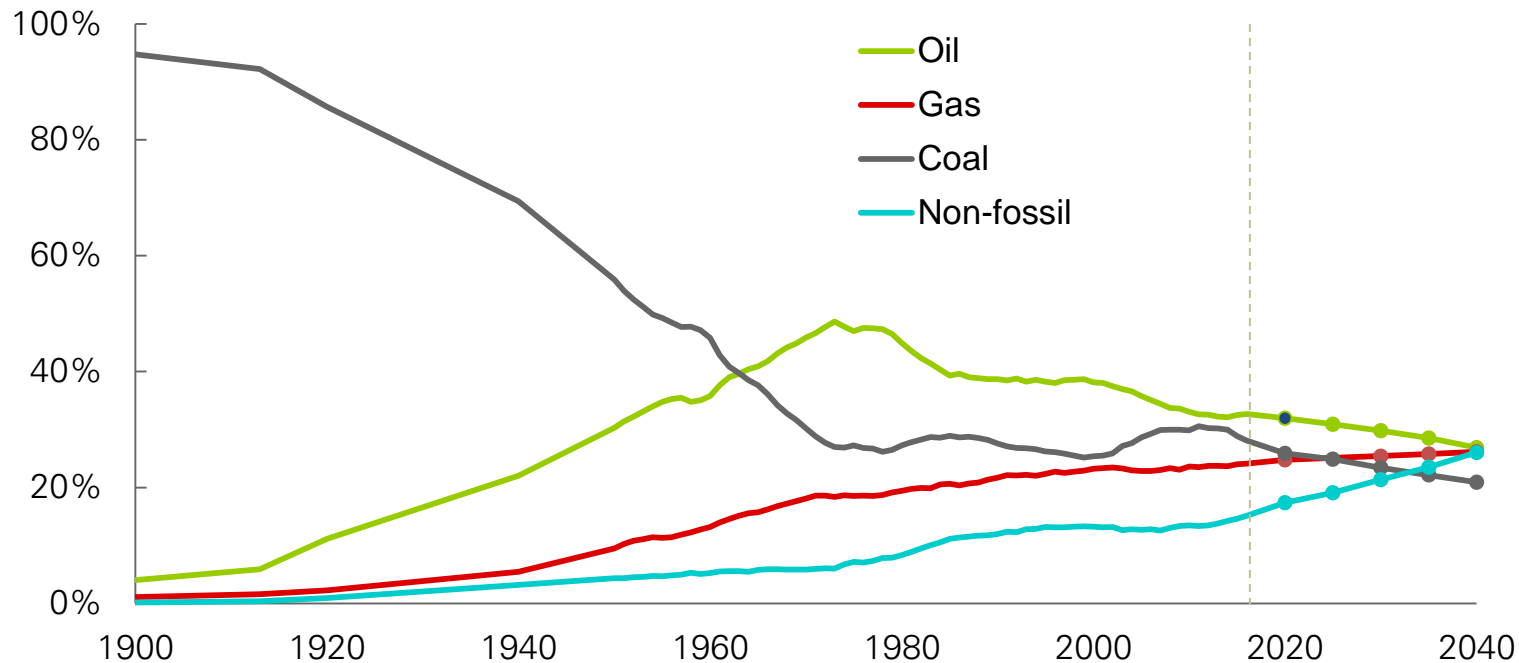
Carbon emissions



Diversified fuel mix



Shares of primary energy



BP Technology Outlook – what's changed



What's changed?

- Energy storage – lower battery costs
- Renewables – lower solar and wind costs
- Higher performance of unconventional reservoirs

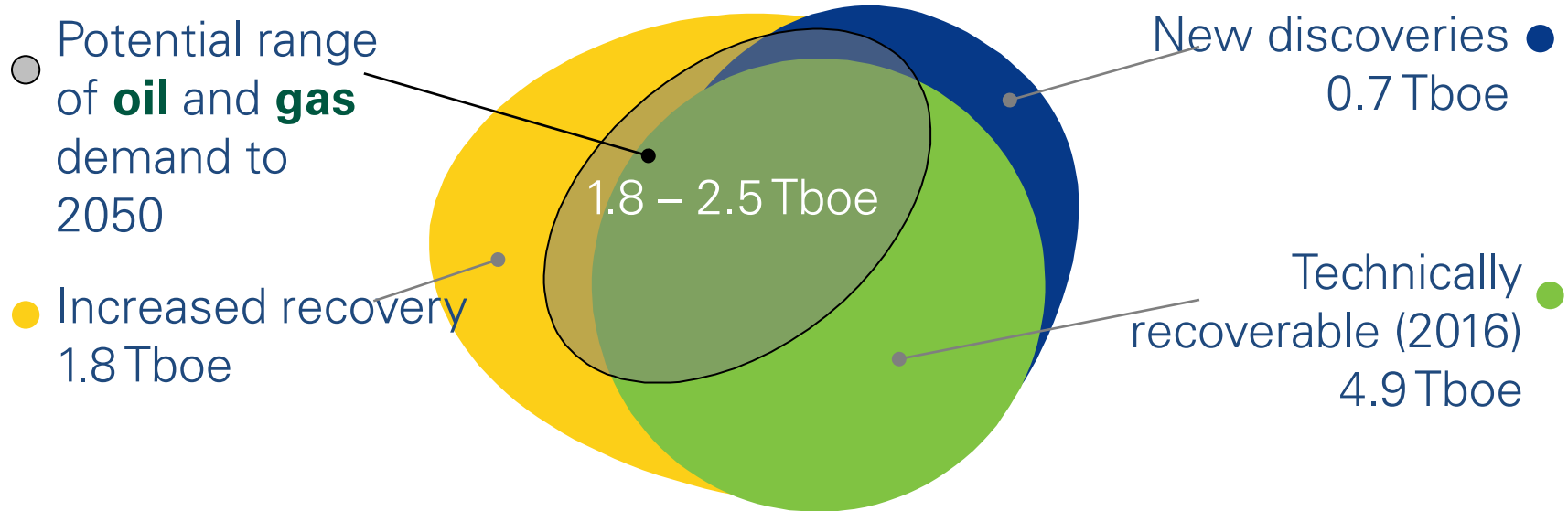
What's not changed?

- Abundance of energy resources
- Comparative ease of Power sector decarbonisation
- Rapid evolution of digital technology

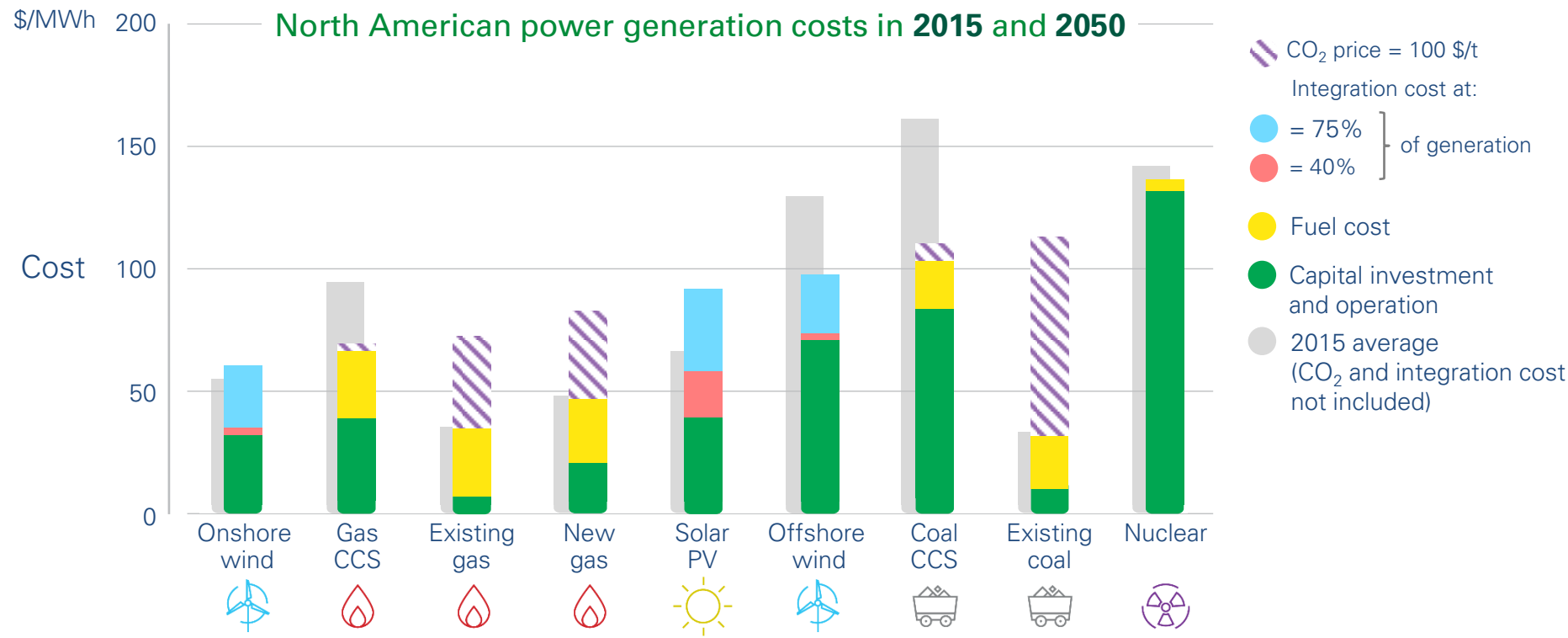
What's new?

- Deep dive on intermittency
- Study of power storage options
- Analysis of the heat sector
- Focus on air quality
- Energy efficiency
- Modelling of low-carbon future and alternatives
- A focus on the energy systems of China, Europe, North America

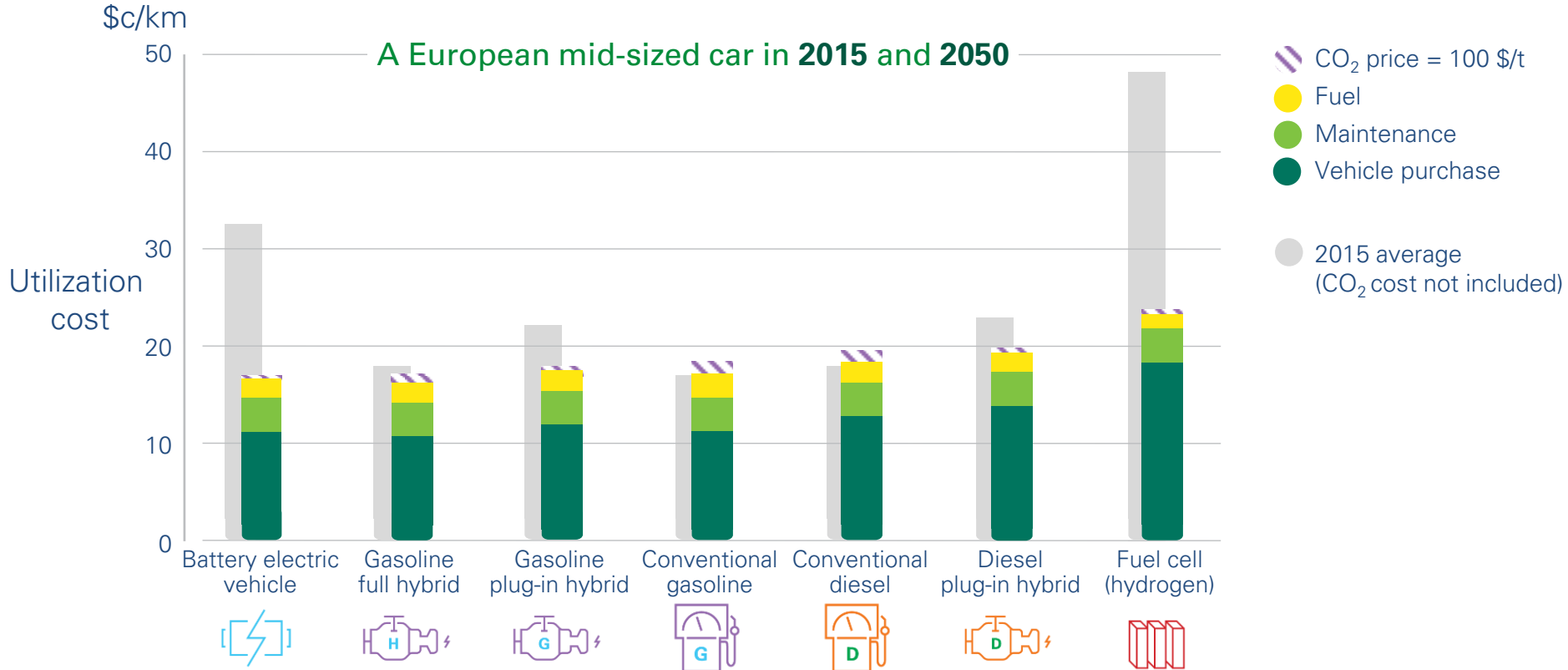
Resources: Potential oil and gas resources are abundant



Power: The big switch, new onshore wind is increasingly competitive – with gas next in line



Transport: Light-duty sector costs are converging



BP's Strategic Priorities



Growing gas and advantaged oil in the Upstream



Market led growth in the Downstream



Venturing and low carbon across multiple fronts



Modernising the whole Group



New Low Carbon Businesses



Advanced mobility

Electric, connected and autonomous vehicles



Bio and low carbon

New fuels, gas, lubricants and plastics



Carbon management

Lowering carbon footprint for customers and BP



Power and storage

Low carbon power, storage and trading



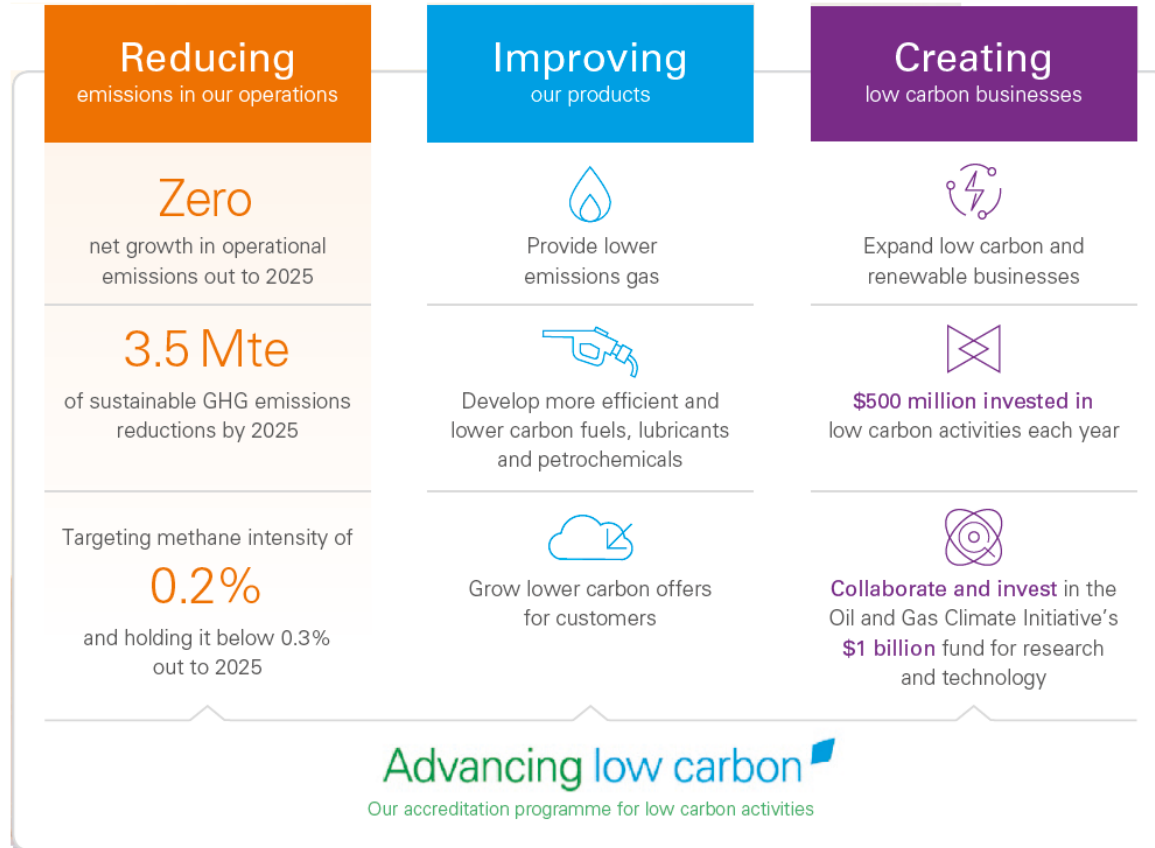
Digital

Transforming productivity and customer experience





Reduce, Improve, Create framework



Advancing the Energy Transition



A clear approach

1. Reduce
2. Improve
3. Create



Creating low carbon and digital businesses

5 focus areas



~\$500m
annual spend
within a strict
investment framework