

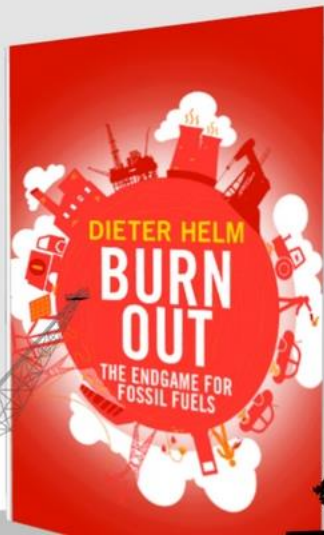
THE ENERGY TRANSITION & THE ROLE OF THE NORTH SEA

World Energy Council
Future of the North Sea Conference

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24th January 2017



AGENDA

THE 3 BIG STRUCTURAL CHANGES IN GLOBAL ENERGY MARKETS

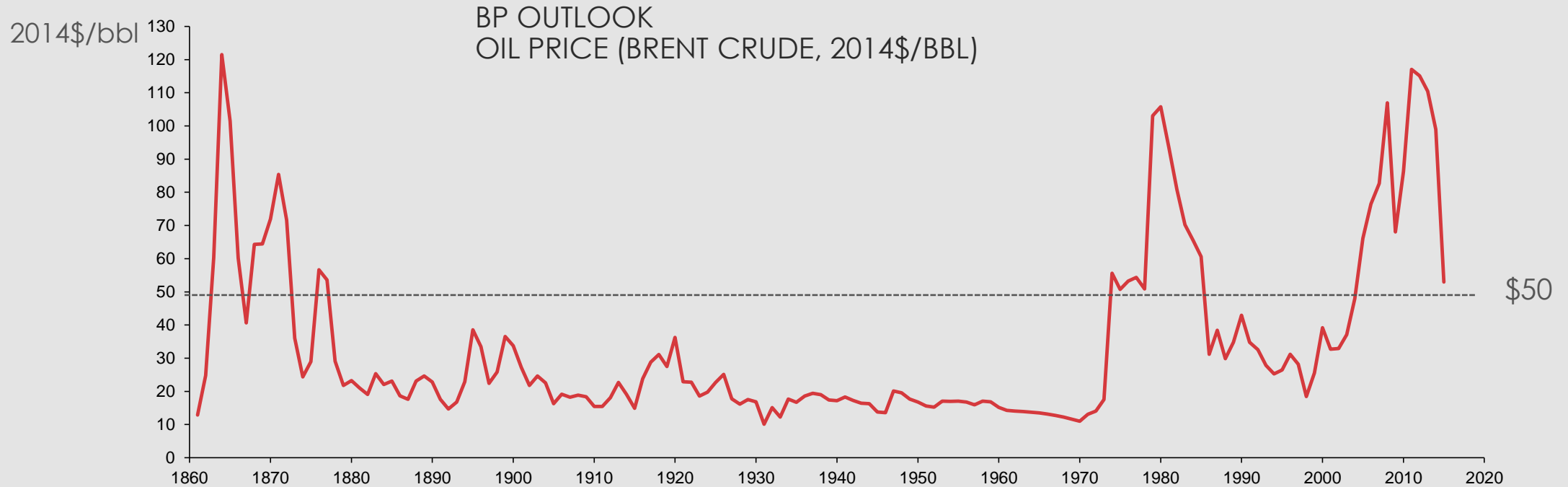
THE IMPACTS ON THE NORTH SEA

THE IMPACTS ON THE COMPANIES

CONCLUSIONS

THE 3 BIG STRUCTURAL CHANGES

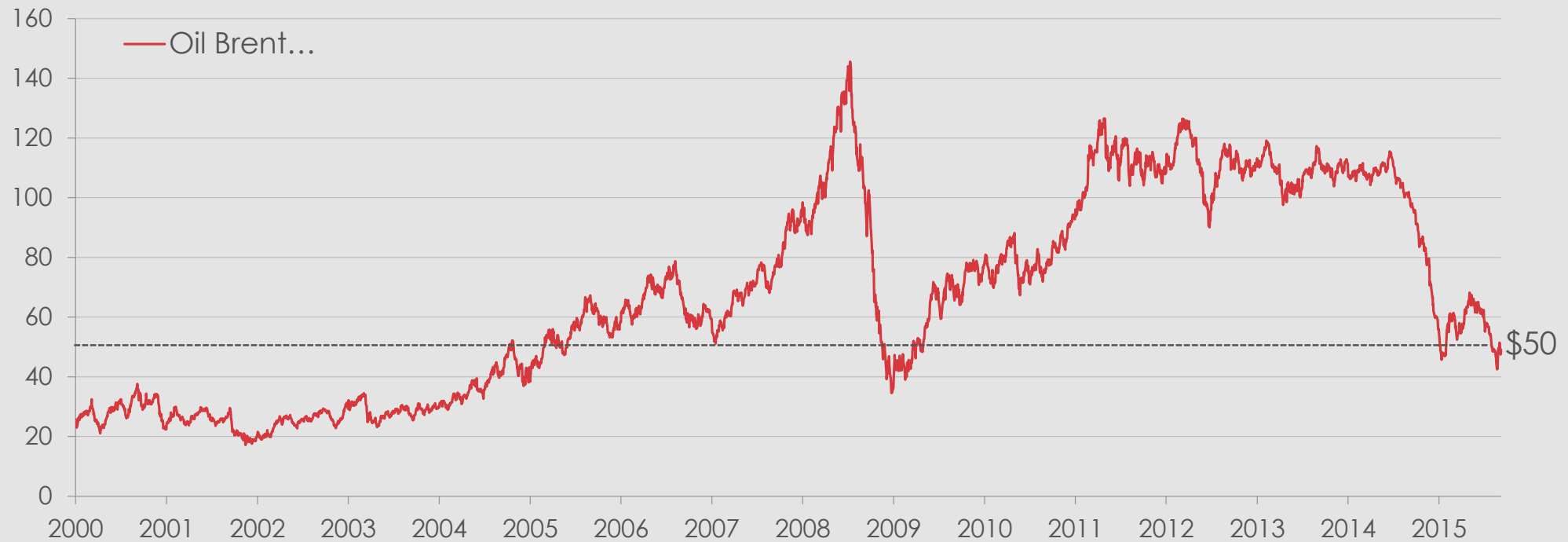
1: The (permanent) end of the energy super cycle



Source: BP and Thomson Reuters

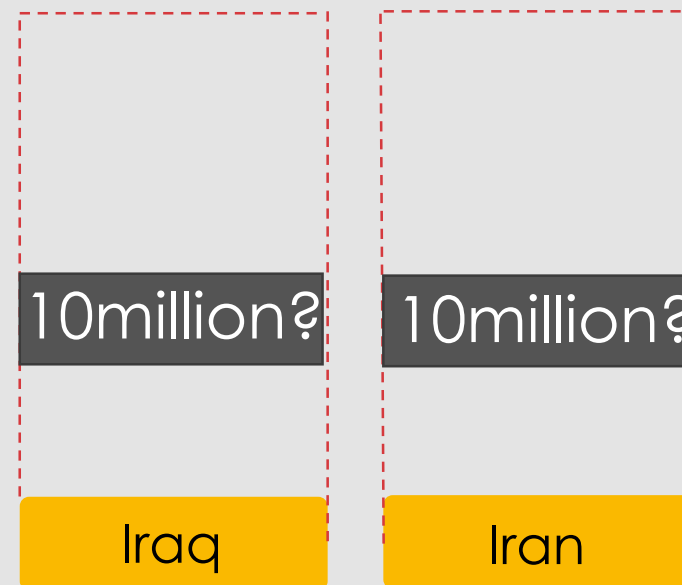
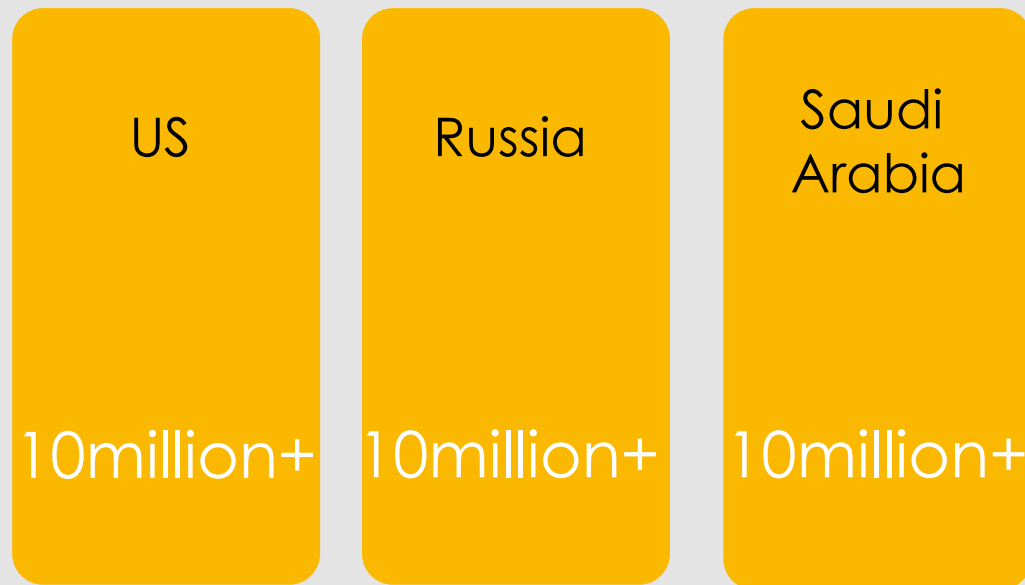
THE 3 BIG STRUCTURAL CHANGES

1: The (permanent) end of the energy super cycle



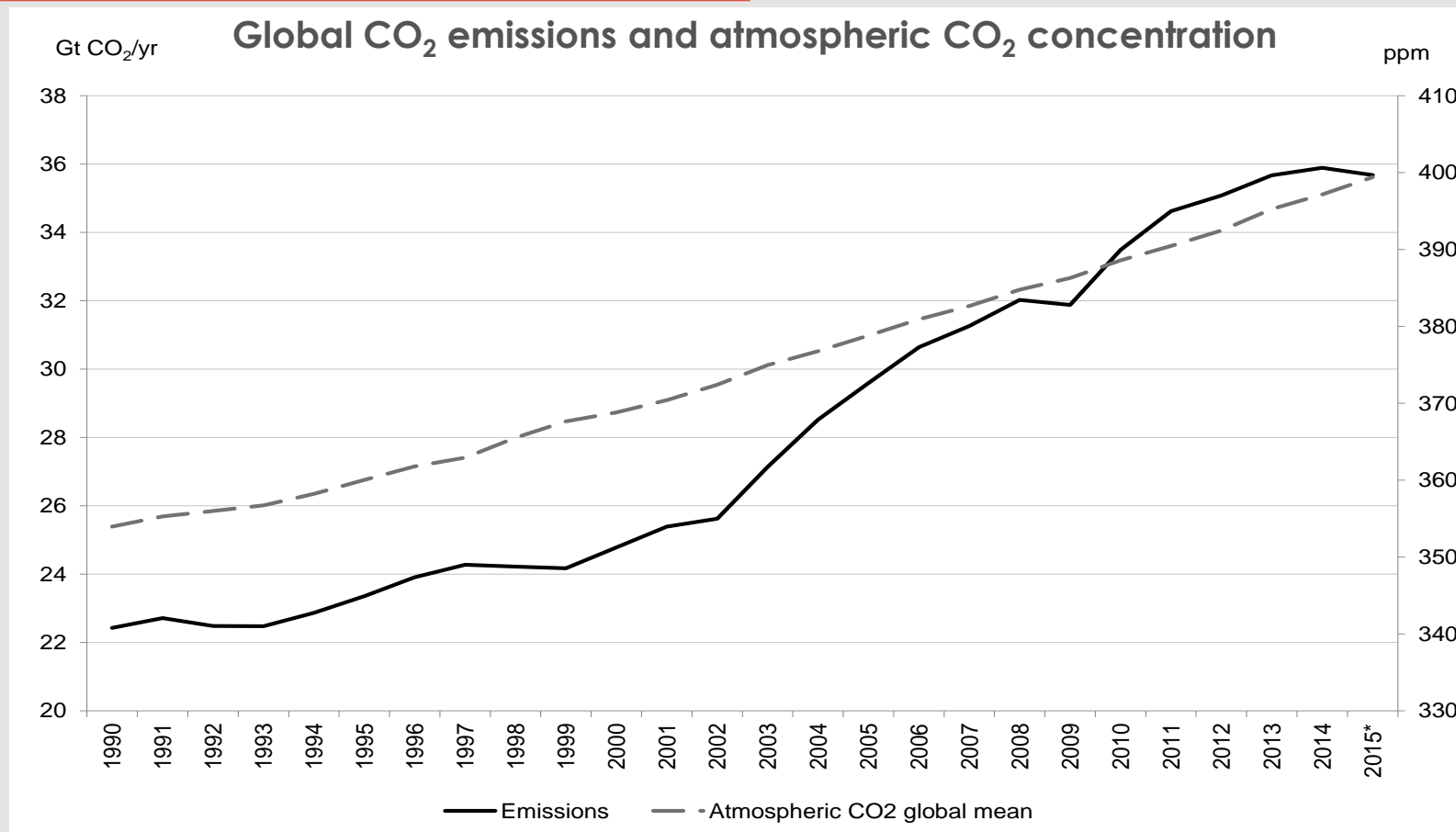
Source: Thomson Reuters

MUCH MORE OIL TO COME



THE 3 BIG STRUCTURAL CHANGES

2: Decarbonisation – so far little progress



Notes: Emissions from fossil fuels and industry; Gt, gigatonne; ppm, parts per million; * 2015 represents forecast emissions.

Sources: CDIAC/GCP, 7 December 2015, <http://www.globalcarbonproject.org/carbonbudget/15/presentation.htm>; Ed Dlugokencky and Pieter Tans, NOAA/ESRL, 2016,

www.esrl.noaa.gov/gmd/ccgg/trends/

THE 3 BIG STRUCTURAL CHANGES

2: KYOTO, PARIS NOT THE MAIN GAME

KYOTO

- Production not consumption
- European not US, China & India
- No global impact

PARIS

- Voluntary not compulsory target
- $\neq 2^{\circ}\text{C}$
- Keeps UN in business with reviews
- 1.5°C target given 2°C can't be met
- Trump & the future of the US participation

THE BIG STRUCTURAL CHANGES

3: Technology

- Shale oil and gas
 - 8 years to transform global markets
- Electric generation & solar
- Electric storage and batteries
- Electric distributed grids and smart networks
- Electric households

ROBOTS

AI

3D PRINTING

**DIGITLISATION OF EVERYTHING
ELECTRIFICATION OF EVERYTHING**

IMPACTS ON THE NORTH SEA

1: FALLING PRICES

- \$50 and falling – how much will be economic?
- What is the point of E & P?
- Does the Arctic have a future?
- What will have to happen to costs?
- How much will tax go down?
- How will decommissioning be paid for?

IMPACTS ON THE NORTH SEA

2: Decarbonisation

- If decarbonisation works, the North Sea closes
- Pressure on developed countries to do more
- Renewable strategies
- CCS
- Switch to gas

IMPACTS ON THE NORTH SEA

3: Digitilisation

- Electric market is what matters
- Gas has a key role to play
- North Sea supplies are secure
- Electricity market is capacity, not wholesale
- Full implications of zero marginal costs

IMPACTS ON THE COMPANIES

- Harvest and exit long term strategies
- Oil and gas companies unlikely to be renewable leaders
- Cost structures will need to follow prices down
- Zero marginal costs change the structure of energy markets and challenge the conventional IOC models

CONCLUSIONS

2014 IS A STRUCTURAL BREAK WITH THE PAST

DECARBONISATION IS UNSTOPPABLE

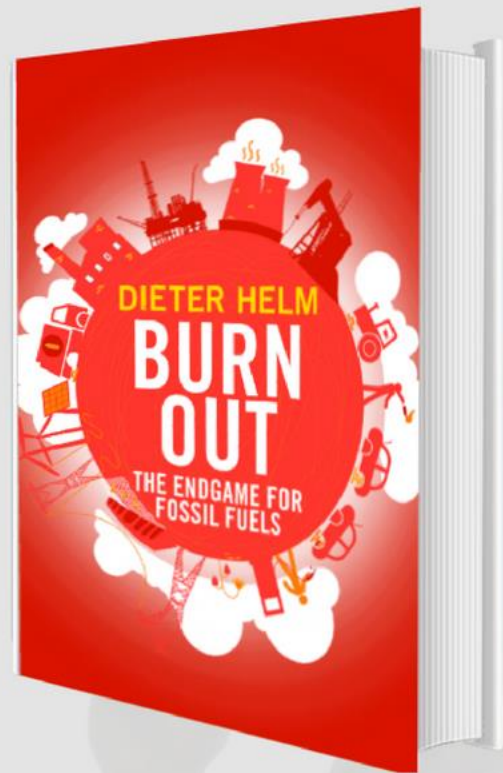
TECHNOLOGY, NOT PARIS WILL EVENTUALLY SOLVE THE CARBON PROBLEM

ZERO MARGINAL COST IS TRANSFORMING ENERGY MARKETS

THE FUTURE IS DIGITAL, AND THEREFORE ELECTRIC

THE NORTH SEA WILL ADJUST TO ITS NEXT PHASE

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