

BURN OUT: THE ENDGAME FOR FOSSIL FUELS

PRESENTATION FOR POLICY EXCHANGE

27TH APRIL 2017



#BurnOut
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AGENDA

THE IMMEDIATE CHALLENGES

THE 3 BIG STRUCTURAL CHANGES IN GLOBAL ENERGY MARKETS

**IMPACTS ON THE COMPANIES AND THE DESIGN OF ENERGY
MARKETS**

REDESIGNING ENERGY AND CLIMATE POLICIES

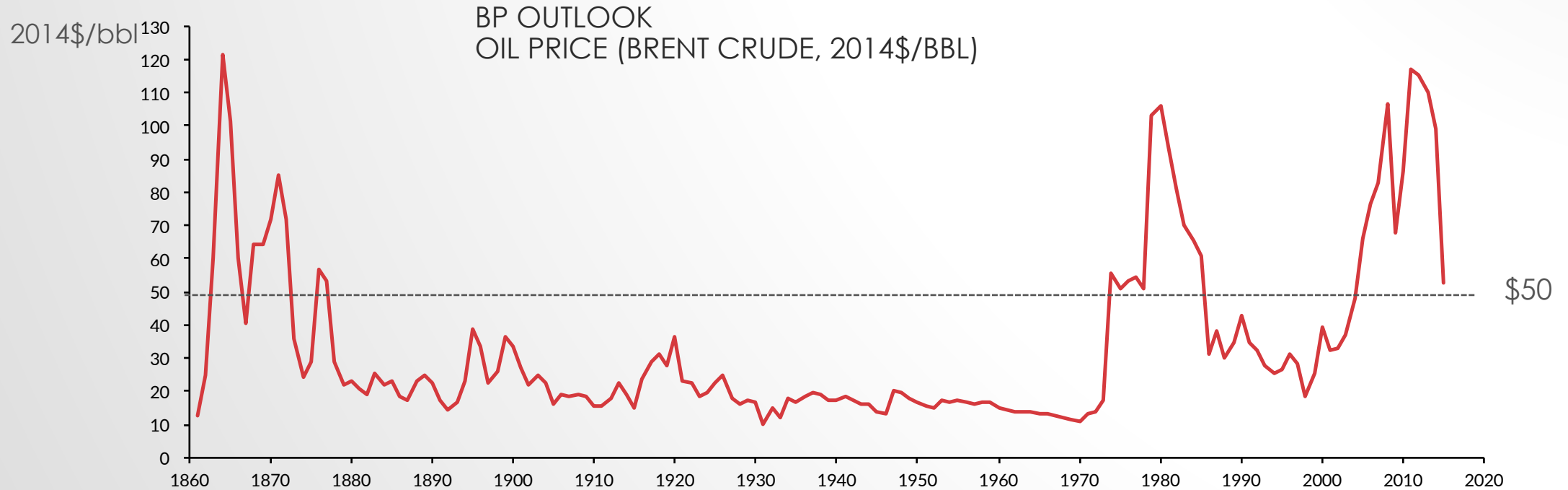
CONCLUSIONS

THE IMMEDIATE CHALLENGES



THE 3 BIG STRUCTURAL CHANGES

1: The long run oil price



Source: BP and Thomson Reuters

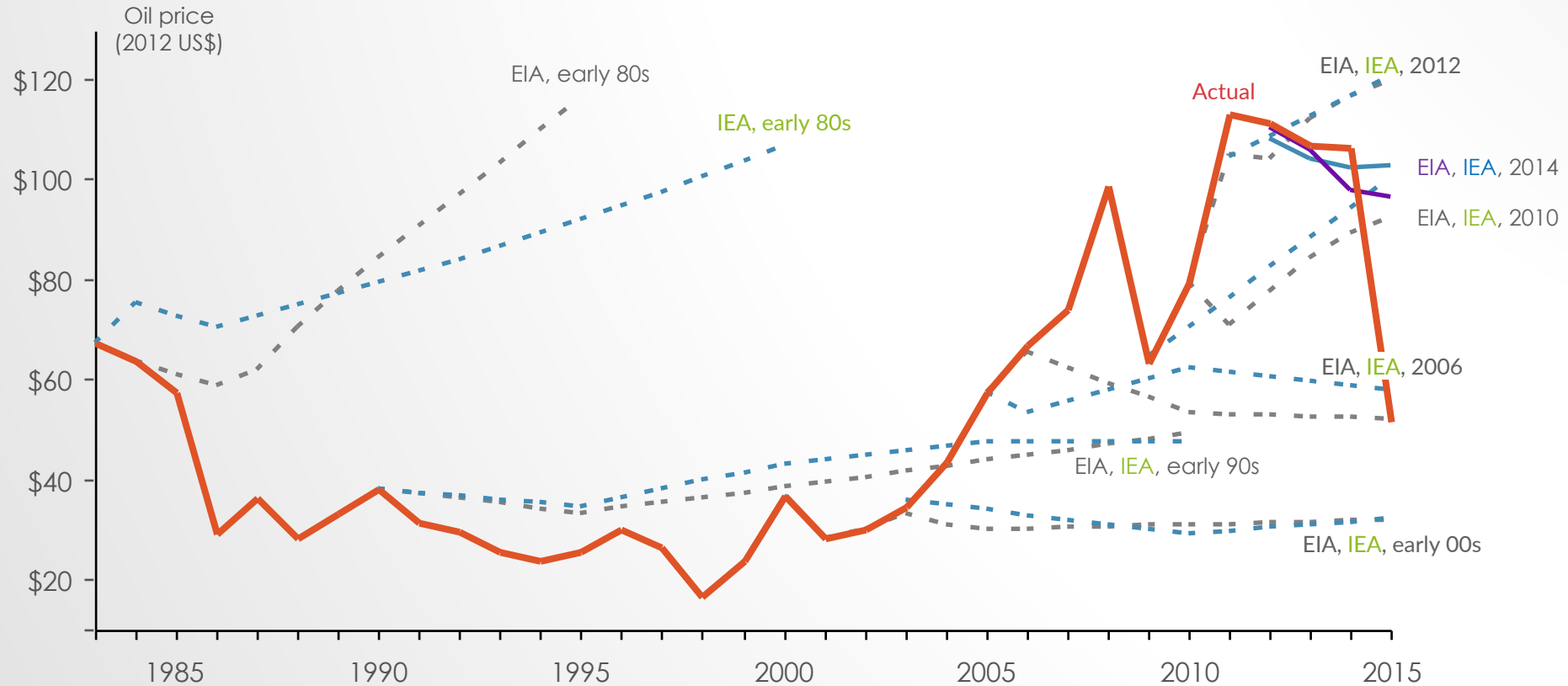
THE 3 BIG STRUCTURAL CHANGES

The (permanent) end of the energy super cycle



Source: Thomson Reuters

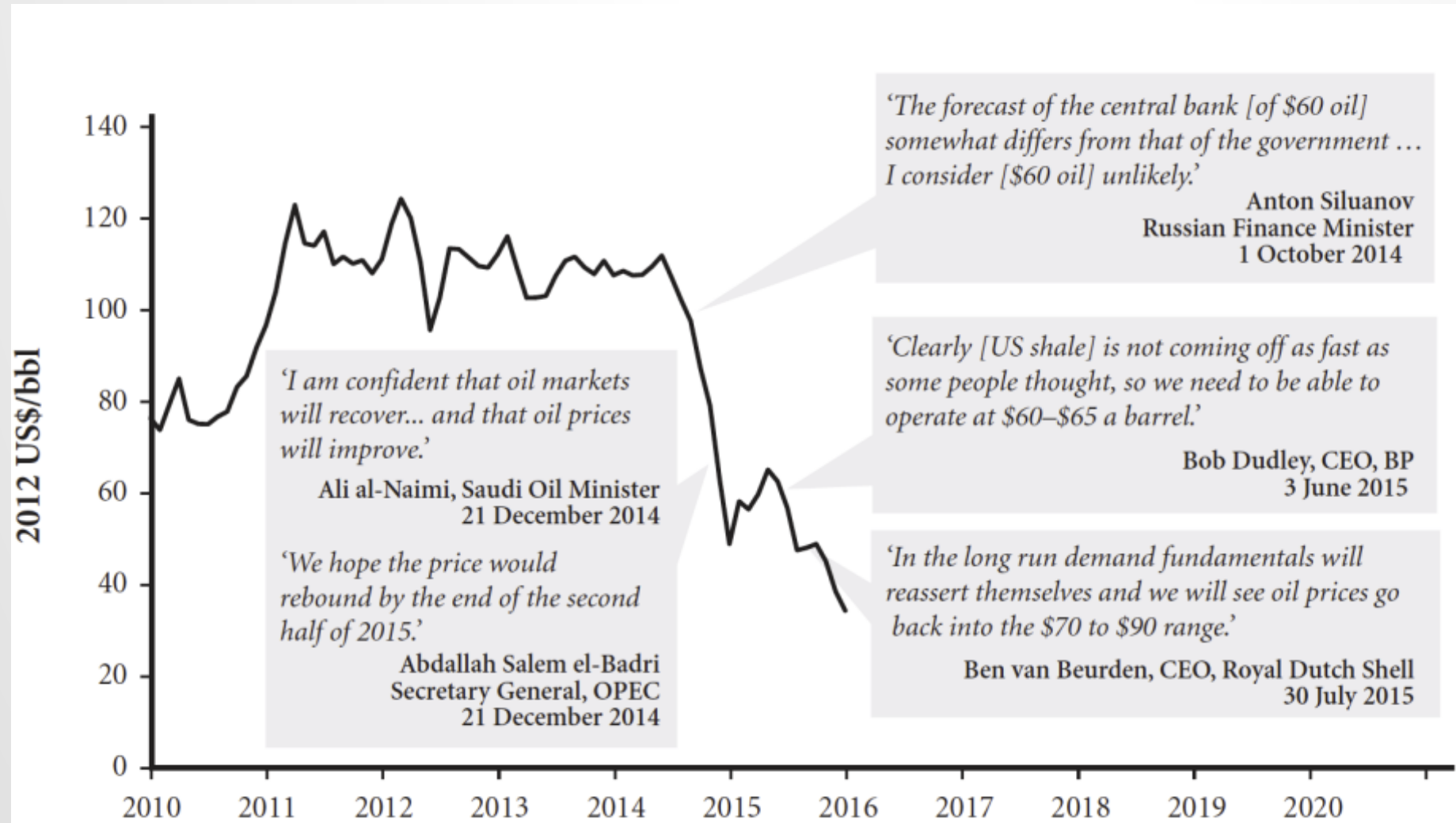
OIL PRICES – PREDICITIONS & REALITIES



Sources: IEA, *World Energy Outlook*, 1982, 1993, 2000, 2006, 2010, 2012, 2014 : EIA, *Annual Energy Outlook*, 1983, 1993, 2000, 2006, 2010, 2012, 2014

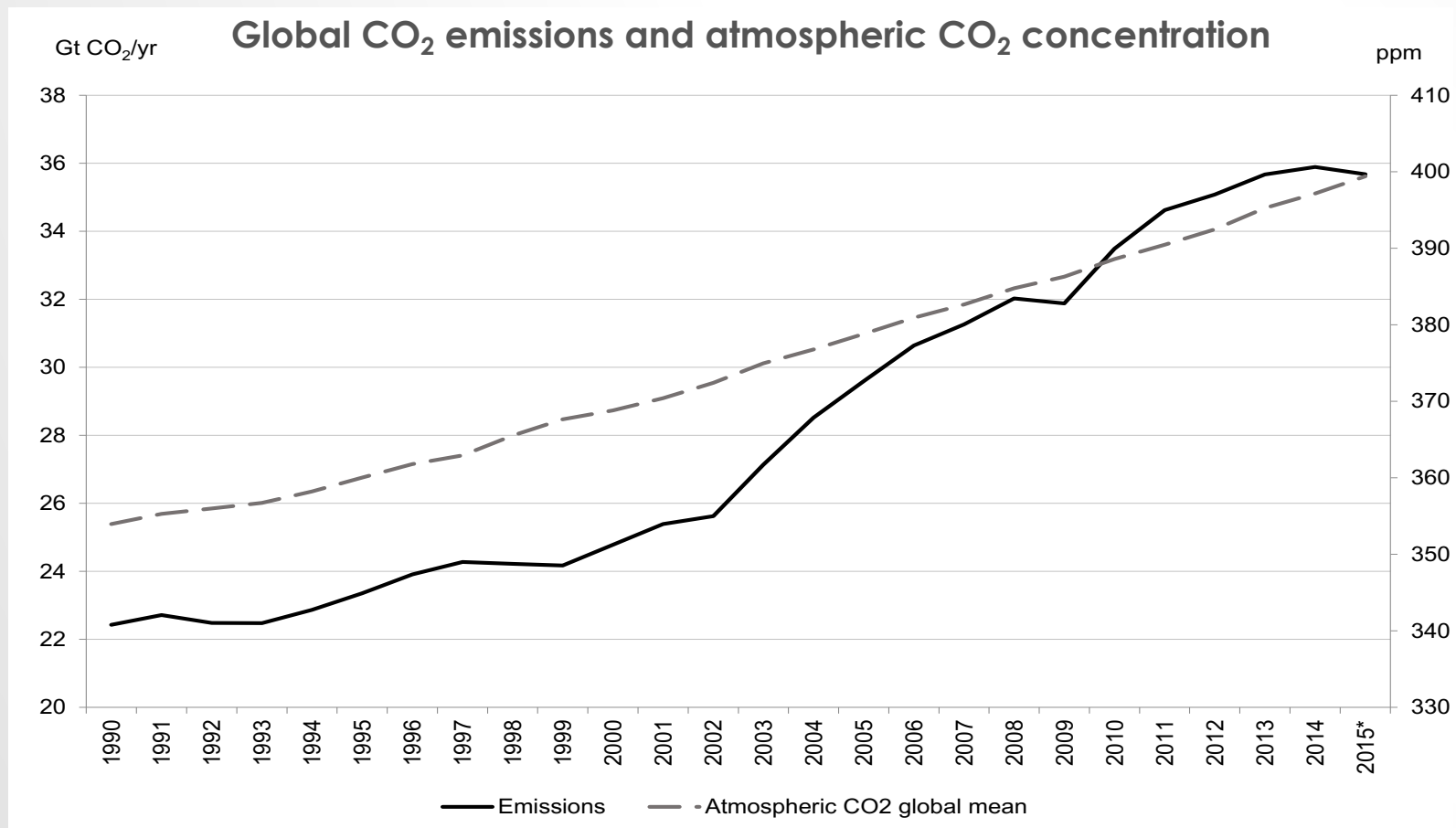
Notes: IEA and EIA imported crude oil price forecasts, selected years, baseline scenarios. All figures are in constant 2012 US\$/bbl.

OIL PRICES – PREDICTION AND REALITIES



THE 3 BIG STRUCTURAL CHANGES

2: Decarbonisation



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 BIG STRUCTURAL CHANGES

3: Technology

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

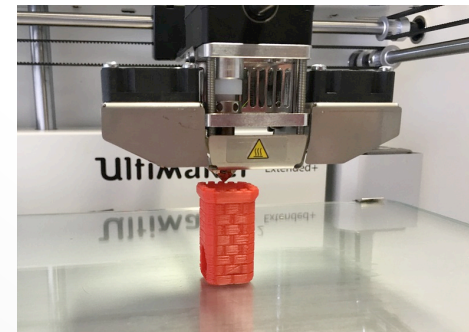
DIGITALISATION OF EVERYTHING
ELECTRIFICATION OF EVERYTHING

ROBOTS

AI

3D PRINTING

ELECTRIC CARS



THE IMPACTS ON THE OIL COMPANIES

1: Oil and gas

- Peak demand & the contracting markets
- Reduced scope for IOCs at expensive margins
- No obvious renewables skills

HARVEST-AT-EXIT

HIGH DIVIDENDS

MINIMISE CAPEX

THE IMPACTS ON THE ELECTRICITY COMPANIES

2: Electric utilities

- Decline of wholesale market/role
- Fixed priced contracts → utility model
- End of vertical integration rationale

BREAK-UP

DIVESTMENT

NEW ENTRANTS & BUSINESS MODELS

MARKET DESIGN

1: The fundamentals

- Zero marginal costs
- For wholesale → fixed priced capacity/contracts

ECONOMICS OF INTERNET & BROADBAND

- End to Internal Energy Market focus on wholesale markets
- EU's late attempts to regulate capacity markets
- Bundled household broadband hub services

THE IMPACTS ON MARKET DESIGN

2: Business implications

- **NEW COMPANIES IN SUPPLY** (Amazon et al)
- **NEW DATA-FOCUSSED BUSINESSES** (Google, Apple, Facebook)
- **NEW ENTRANTS FOR TRANSPORT** (BMW, Toyota, Nissan, Ford)
- **NEW INFRASTRUCTURE DECENTRALISED BUSINESSES** (Pension funds)

REDESIGNING ENERGY AND CLIMATE POLICIES

SUPPLY MODEL –
COST PASS THROUGH

BROADBAND HUBS &
SMART METERS -
DISTRIBUTION

BREAKDOWN OF
SUPPLY/GENERATION/DISTRIB
UTION SEPARATIONS

FIRM PRICED MARGINAL FIT
& CAPACITY AUCTIONS

SORT OUT POST BREXIT
CARBON PRICING

UPGRADE
SO FUNCTIONS

MOVE AWAY FROM
FIXED PRICED PERIODIC
REVIEWS

PROVIDE FOR ELECTRIC
TRANSPORT NETWORKS

INTEGRATED CITY ENERGY
& WASTE SYSTEMS

MOVE AWAY FROM
RENEWABLE TARGETS TO
LOW CARBON

UPGRADE CAPACITY
MARGINS

INTEGRATE SMART DATA
AND SOS

REMOVE BARRIERS TO
REGIONAL SYSTEM
OPERATORS

PROVIDE FOR TRANSITION
& GAS

RETHINK THE CARBON
TRANSITION & ADD SERIOUS
R&D

CONCLUSIONS

2014 WAS A STRUCTURAL BREAK WITH THE PAST. THE FUTURE WILL BE DIFFERENT

DECARBONISATION IS UNSTOPPABLE

TECHNOLOGY, NOT PARIS WILL EVENTUALLY SOLVE THE PROBLEM

ZERO MARGINAL COST IS TRANSFORMING ENERGY MARKETS

21ST CENTURY COMPANIES WILL REPLACE THE 20TH CENTURY VERTICALLY INTEGRATED MODELS BASED ON WHOLESALE MARKETS

THE FUTURE IS DIGITAL, AND THEREFORE ELECTRIC

FUNDAMENTAL RETHINK OF ENERGY & CLIMATE POLICIES REQUIRED

FOR INFORMATION – DIETERHELM.CO.UK



Energy Futures Network Paper 24.

Why intervention on electricity prices is needed and how to do it without undermining competition

Dieter Helm
Sep 16



Energy Futures Network Paper 23.

Not so smart – what has gone wrong with the smart meter programme and how to fix it

Dieter Helm
March 2017



Energy Futures Network Paper 22.

Are the electricity price increases justified?

Dieter Helm
Feb16



Energy Futures Network Paper 21.

Energy and Climate Policy after BREXIT

Dieter Helm
Oct 16

- Greg Clark's energy agenda, Paper 20, Sep 16
- Flawed in almost all its parts – the final CMA report on electricity markets, Paper 19, Jul 16
- After Hinkley – how to contract for the rest of the nuclear programme, Paper 18, Apr 16
- The CMA Energy Market investigation: Companies 5-0 CMA? Paper 17, Mar 16
- The new normal – oil prices after the crash, Paper 16, Feb 16
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- The first 100 days of Conservative energy policy, Paper 13, Aug 15
- Penalty tariffs, open ended regulation and embedding overcharging. Paper 12, Jul 15
- British energy policy- what happens next? Paper 11, Jun 15
- Energy Policy and the Coalition, Paper 10, March 15
- What should oil companies do about climate change? Paper 9, Feb 15
- Competition in the British electricity sector: a set or practical measures, Paper 8, Feb 15

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