Ecotricity's Energy Outlook

Ecotricity's Energy Outlook

I•SEE
Institute for Sustainable Energy and the Environment

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17th March 2015

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Contents for Today…

Contents for Today…

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  - Market Regulation

- **Ecotricity** **C**
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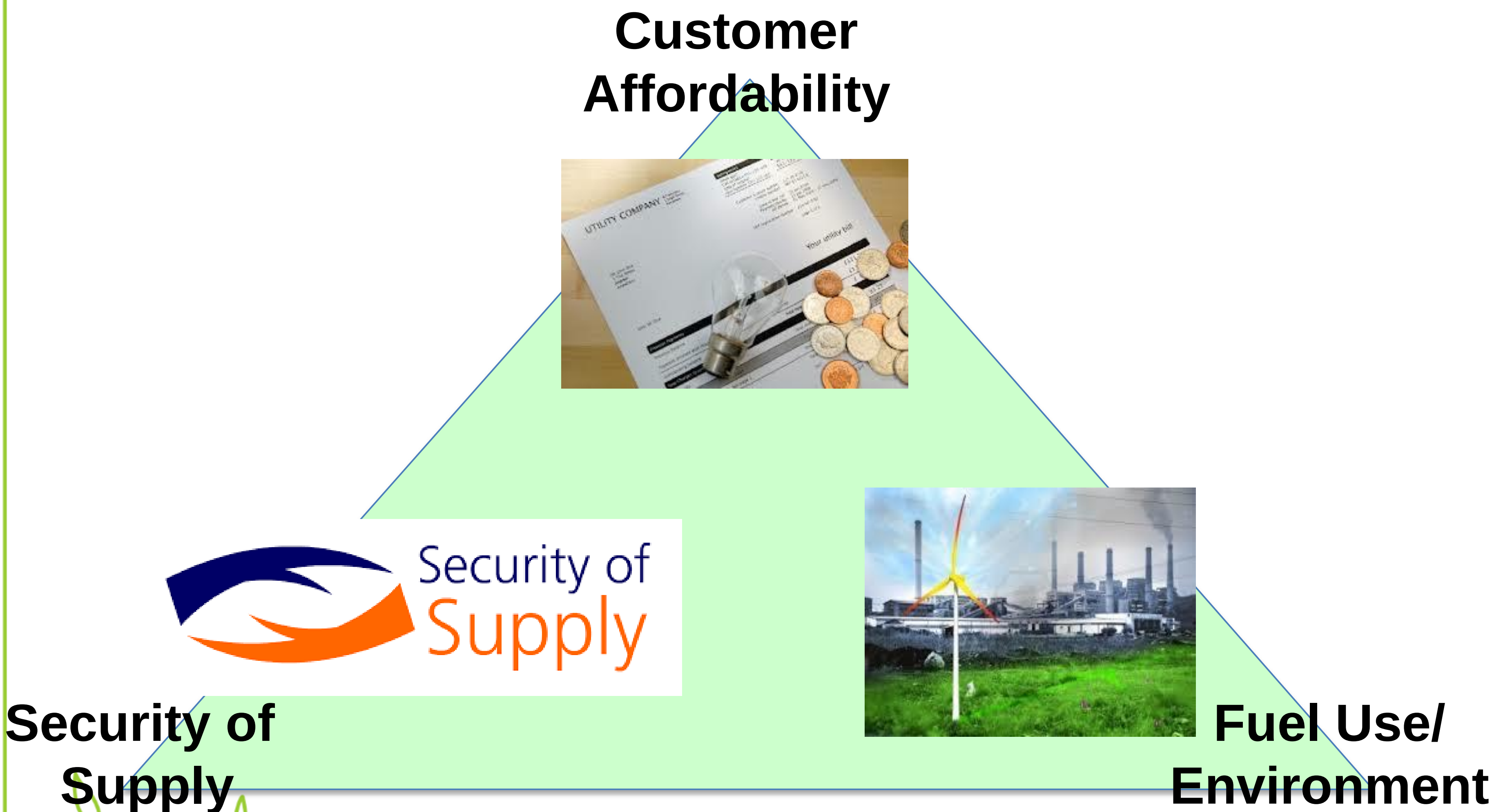
The Energy Trilemma

The Energy Trilemma

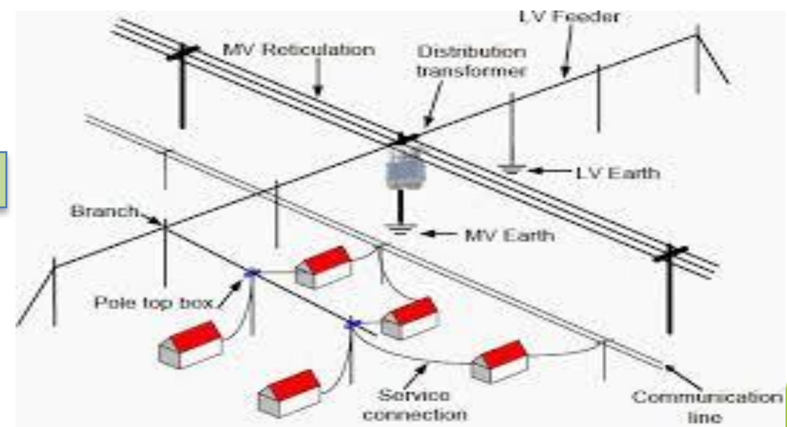


The Energy Chain

Generation

Transmission

Distribution



Supply

The Energy Industry: An Overview

A) The Energy Industry: An Overview

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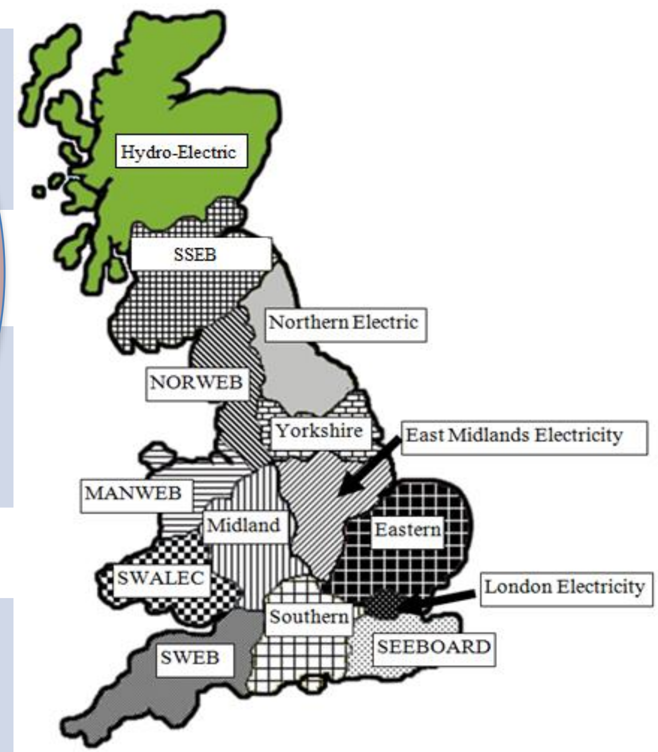
Pre-Privatisation

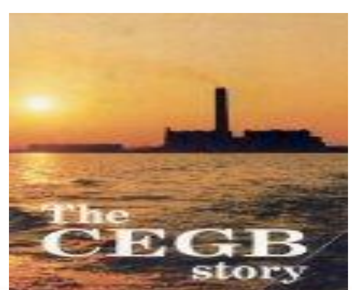
Pre-Privatisation

Pre-Privatisation - Structure

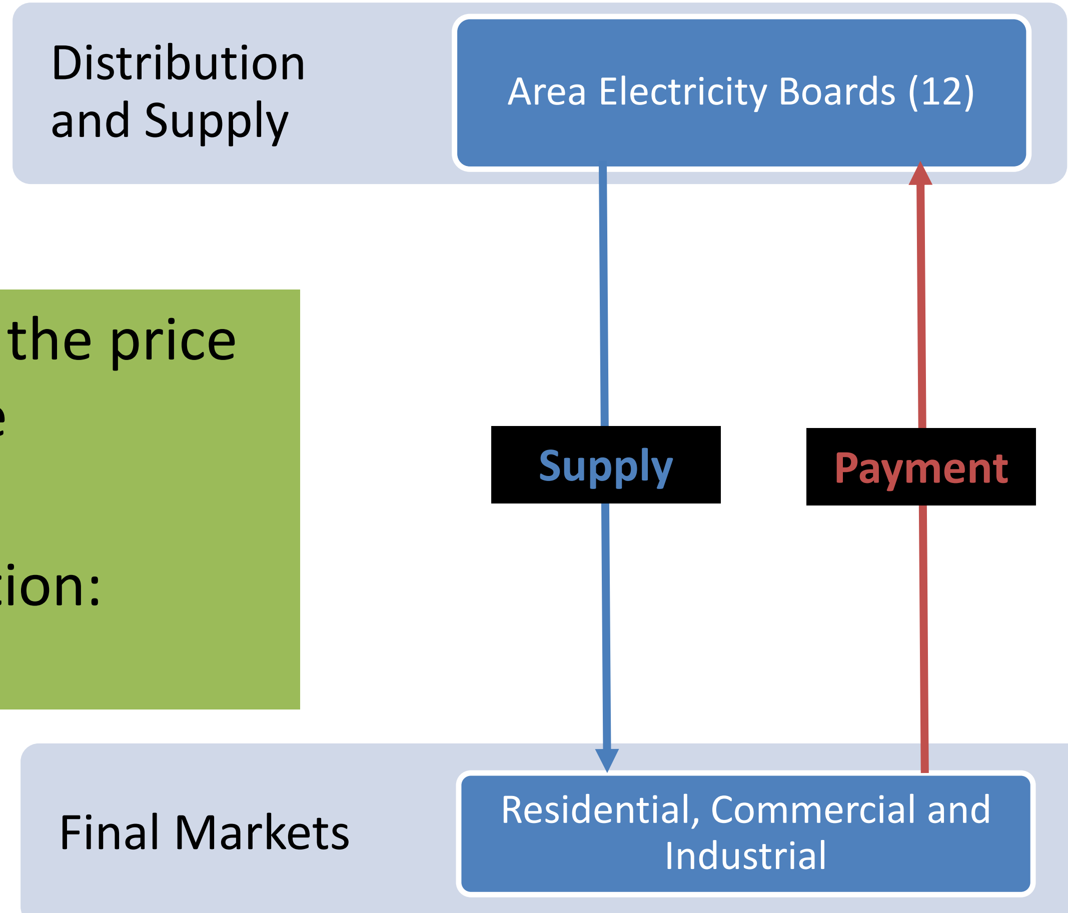
England and Wales

Generation and Transmission	Central Electricity Generating Board (CEGB)
Distribution and Supply	Area Electricity Boards (12)
Final Markets	Residential, Commercial and Industrial





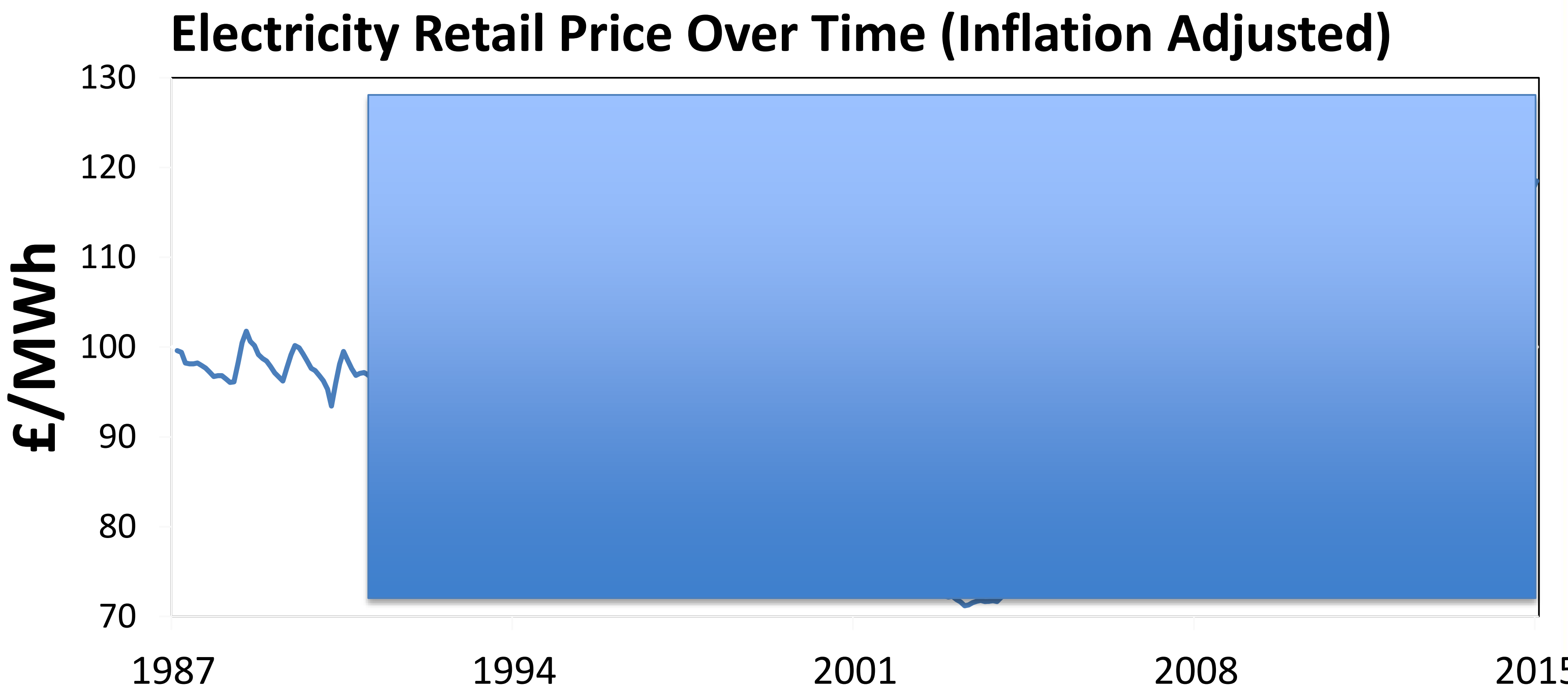
Pre-Privatisation – End User Price



Cost of Electricity

- With no competition, the price of electricity had to be regulated.
- Change linked to inflation:
  - **RPI – X formula**

Pre Privatisation – Retail Prices



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Privatisation

Privatisation

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Privatisation

Electricity Act 1989

- Laid foundation for privatisation
- Split up CEGB into 3 generating companies and 1 Transmission Company (National Grid)
- Replaced Area boards with Regional Electricity Companies

Privatisation Begins

- 12 RECs were floated on market on 11 December 1990.
- National Power and Powergen sold on 12 March 1991.

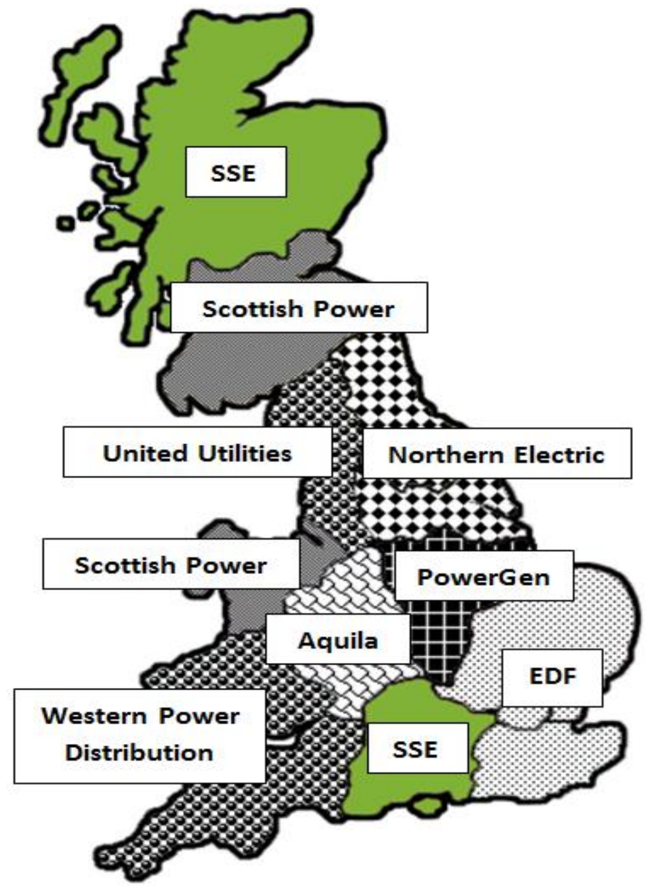
Post Privatisation – Structure Summary

Transmission Networks

- National Grid is the sole operator in England and Wales.

Distribution Networks

- 8 Separate Distribution Network Operators in Great Britain
- Privately owned monopolies
- Regulated due to absence of competition



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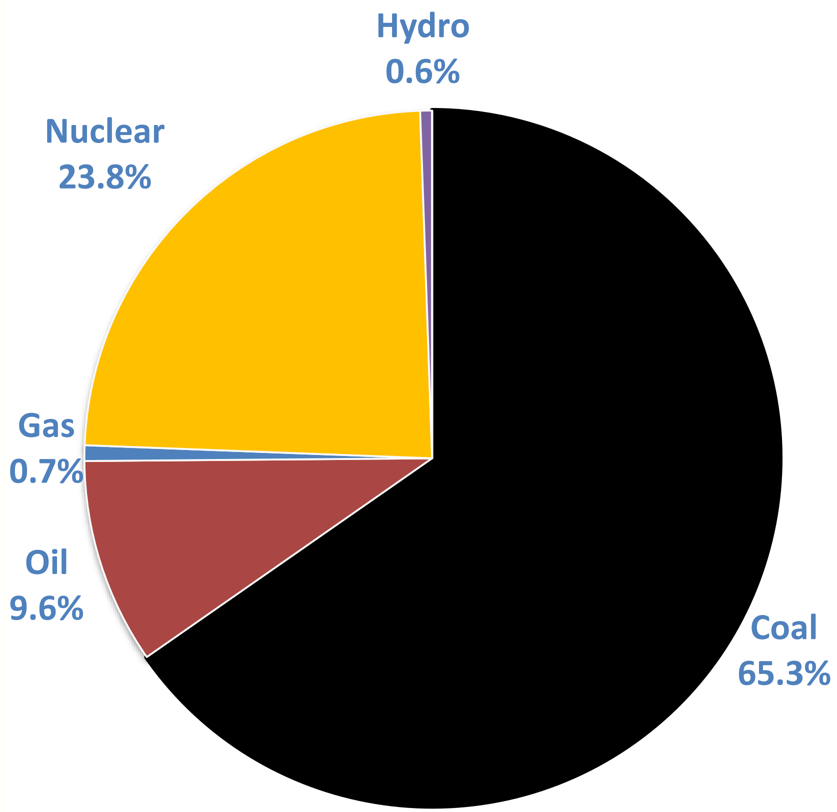
Privatisation: Fuel Mix

UK Fuel Mix 1989



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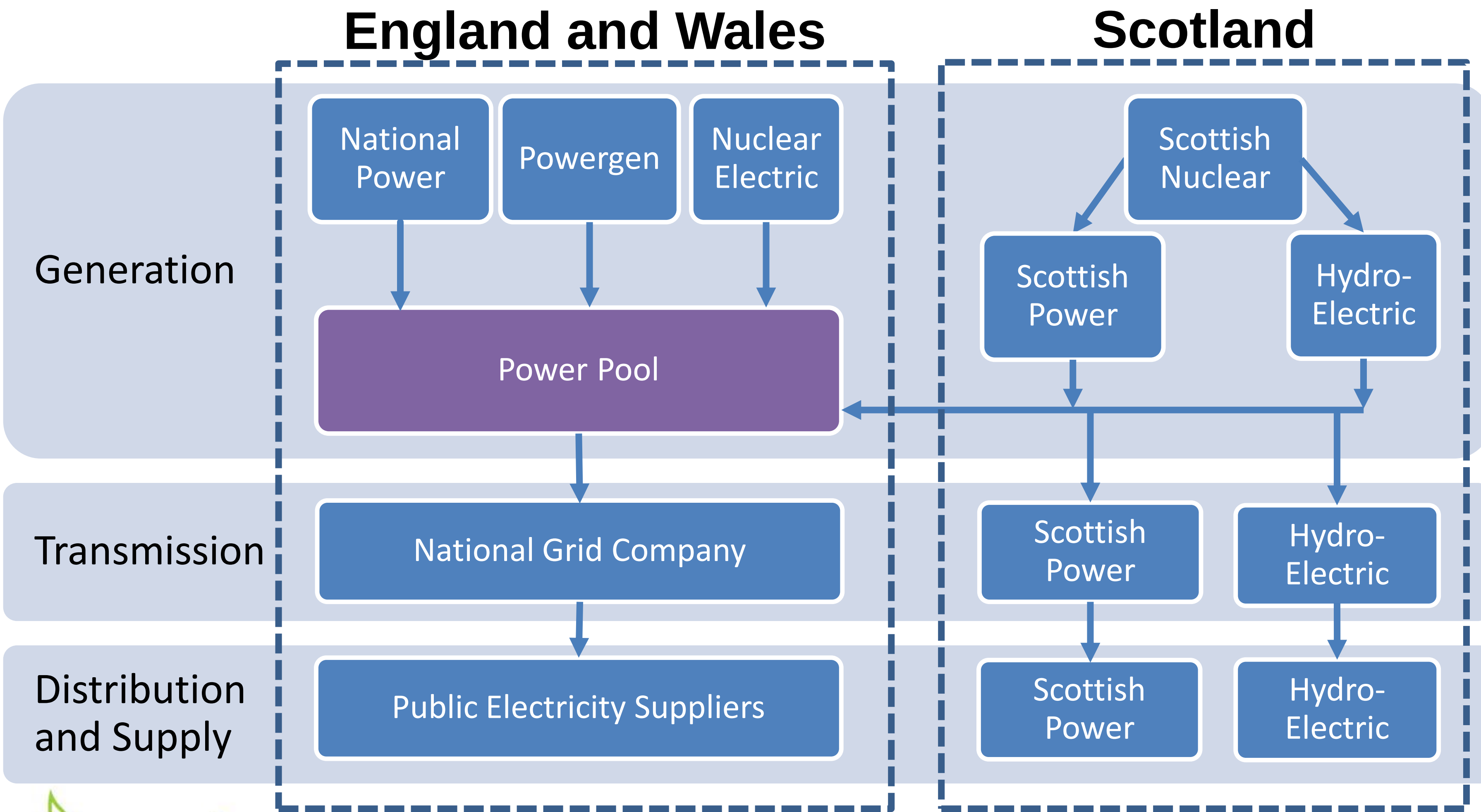
Post-Privatisation – Industry Structure



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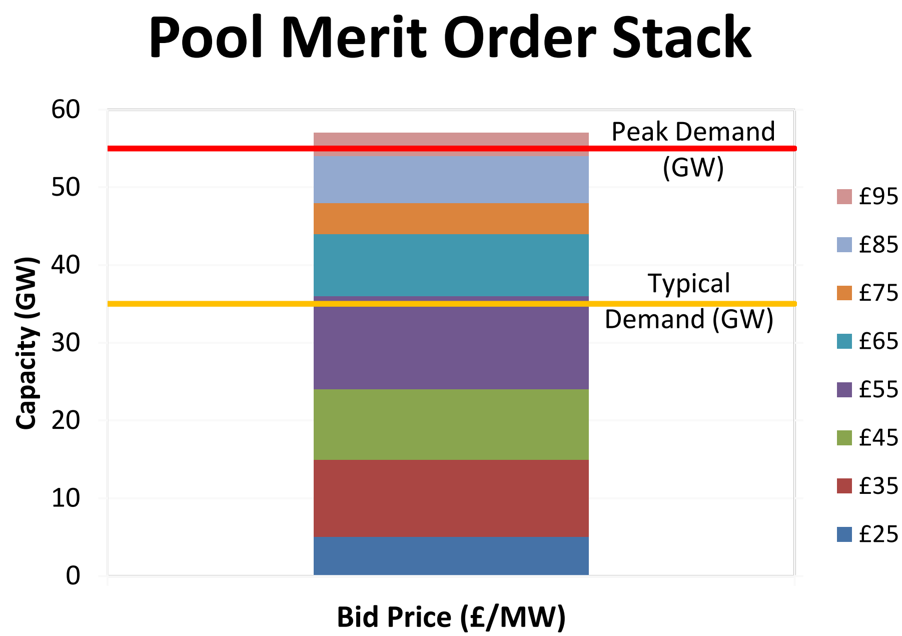
Wholesale Price Mechanism – The Pool

- Centralised market system
- Generators bid to generate power at a given price and are stacked in order of bid (merit order)
- Demand is determined by system operator
- The marginal price is set by the last generator needed to meet demand
- This becomes the Power Purchase Price (PPP) used to buy and sell all power for that half hour



- Provided route to market for generators
- Prices determined by generators, suppliers and customers not involved
- Pools tend to experience high price volatility as demand fluctuates

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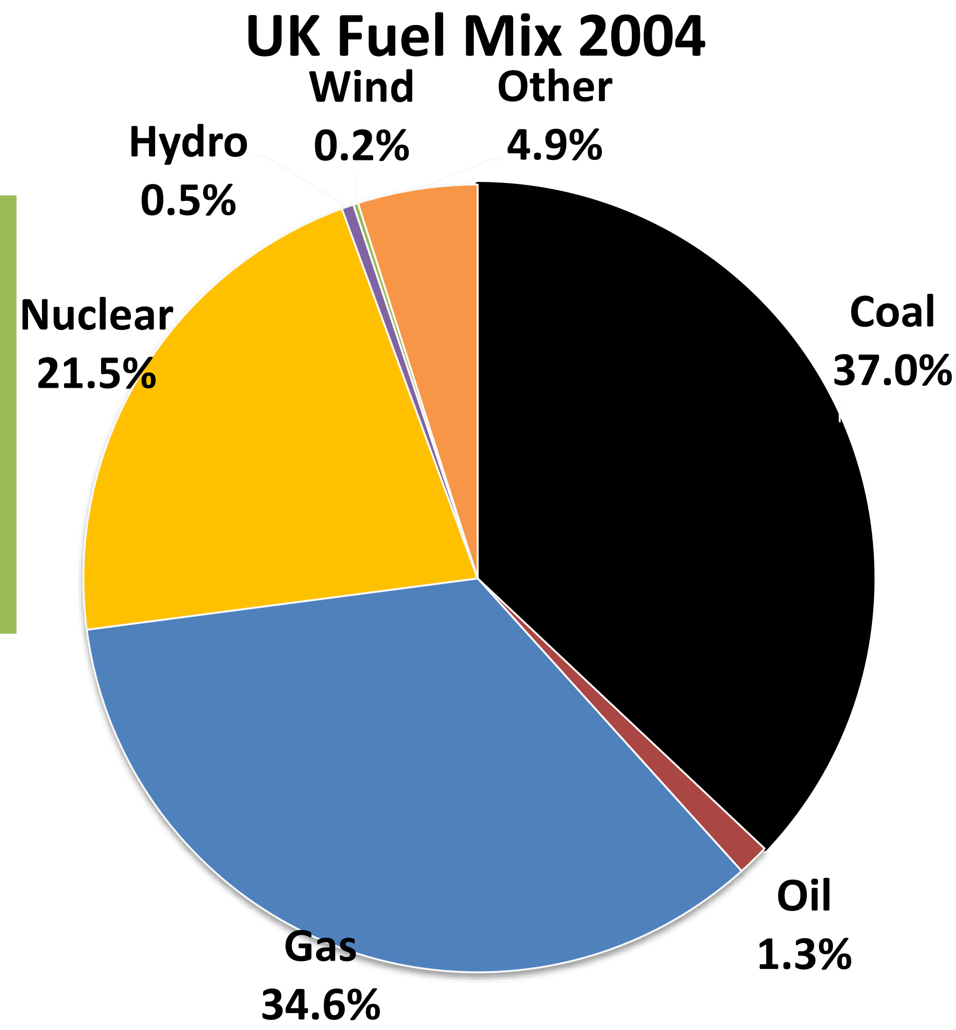
Liberalisation

Liberalisation

Supply Privatisation

- Supply was Privatised in different stages:

- April 1990 – Consumers >1MW
- April 1994 – Consumers >100KW
- May 1999 – All Consumers



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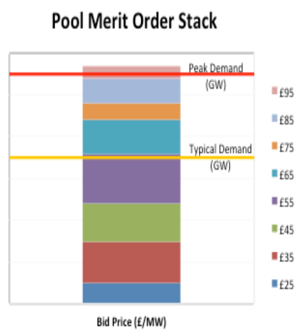
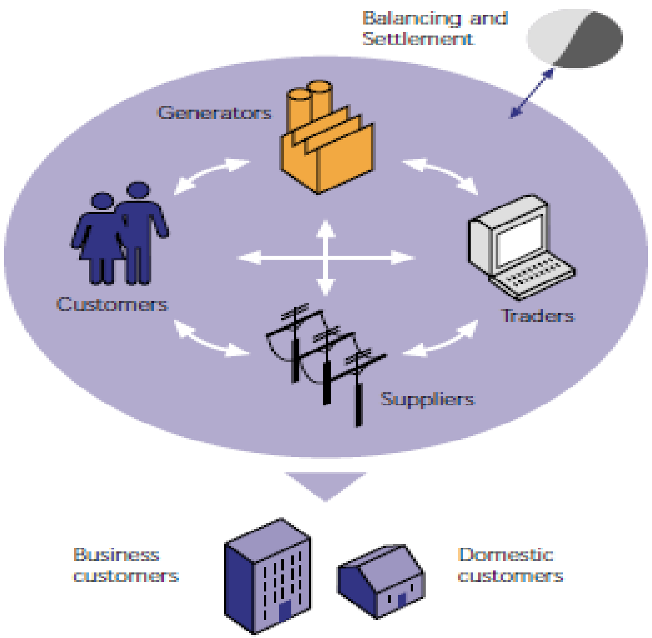
New Trading Arrangements

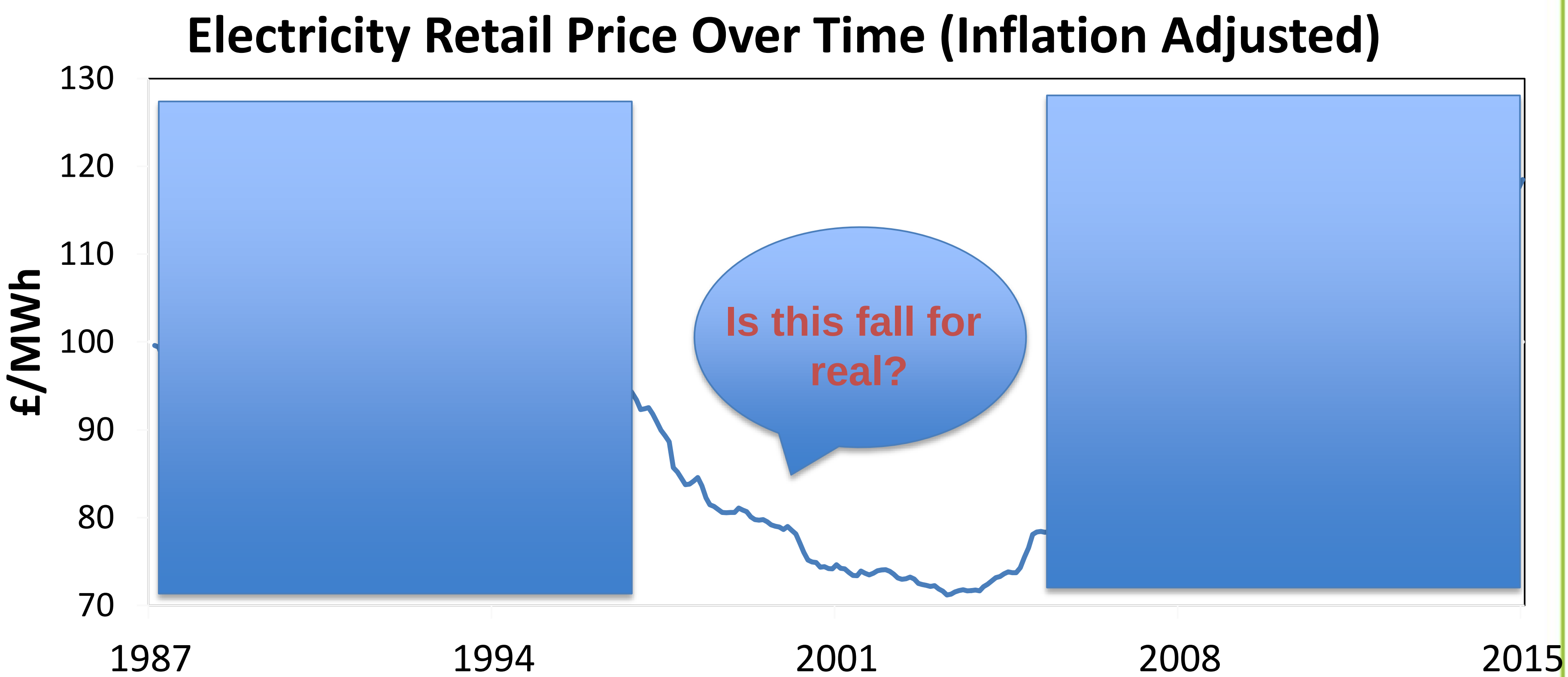
Move from Pool to Bilateral





- **Decentralised market system**
- **Introduced in 2001, still live now**
- **Generators and suppliers trade power directly**
- **Trading occurs up to delivery**
- **The System Operator must then balance supply with demand**
- **Imbalances receive System Buy Price (SBP) or System Sell Price (SSP)**

Post Liberalisation – Retail Prices



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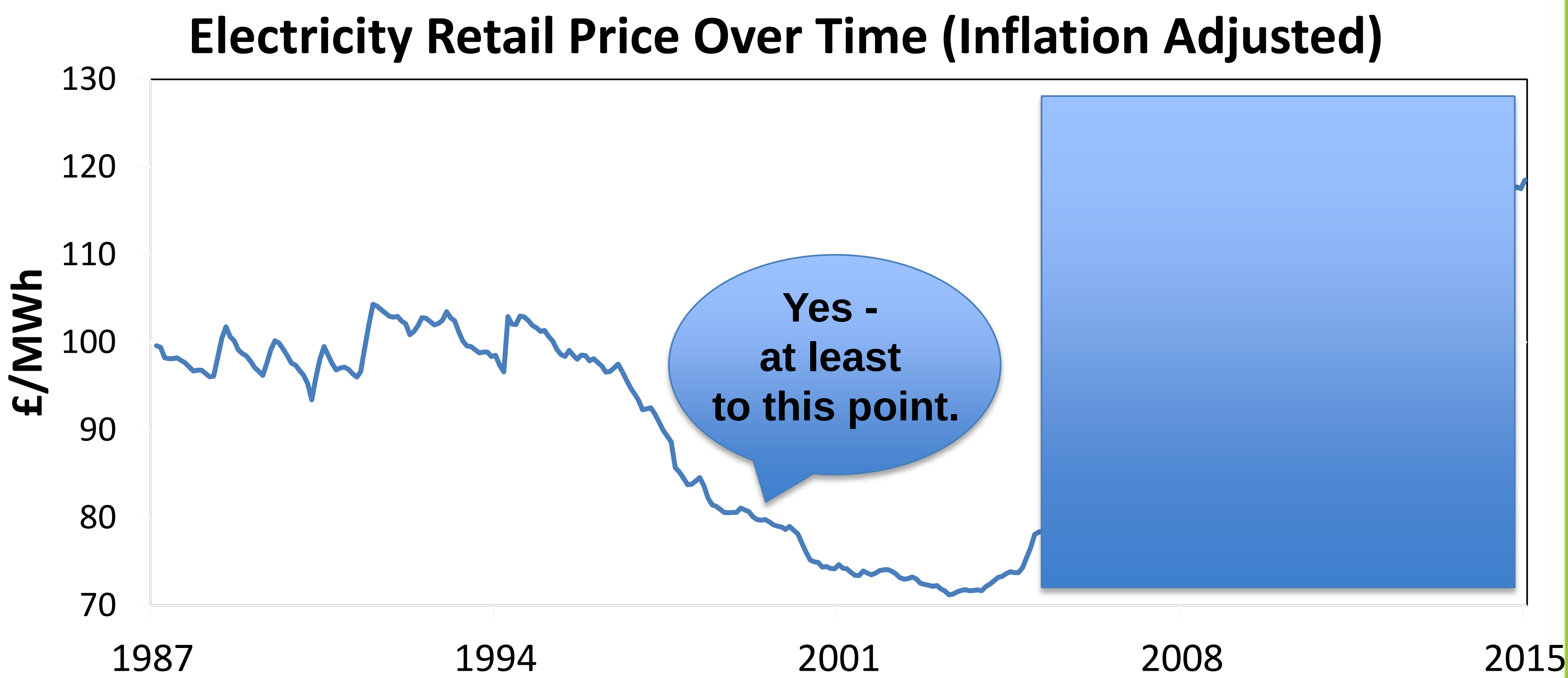
Post Liberalisation – Retail Prices



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Building a sustainable future: why energy efficiency is everybody's business

B) Sustainability and the Low Carbon Agenda

Britain must increase spending on green energy by ten times in next 15 years to help reduce global warming, says UN

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Climate Change

Climate Change

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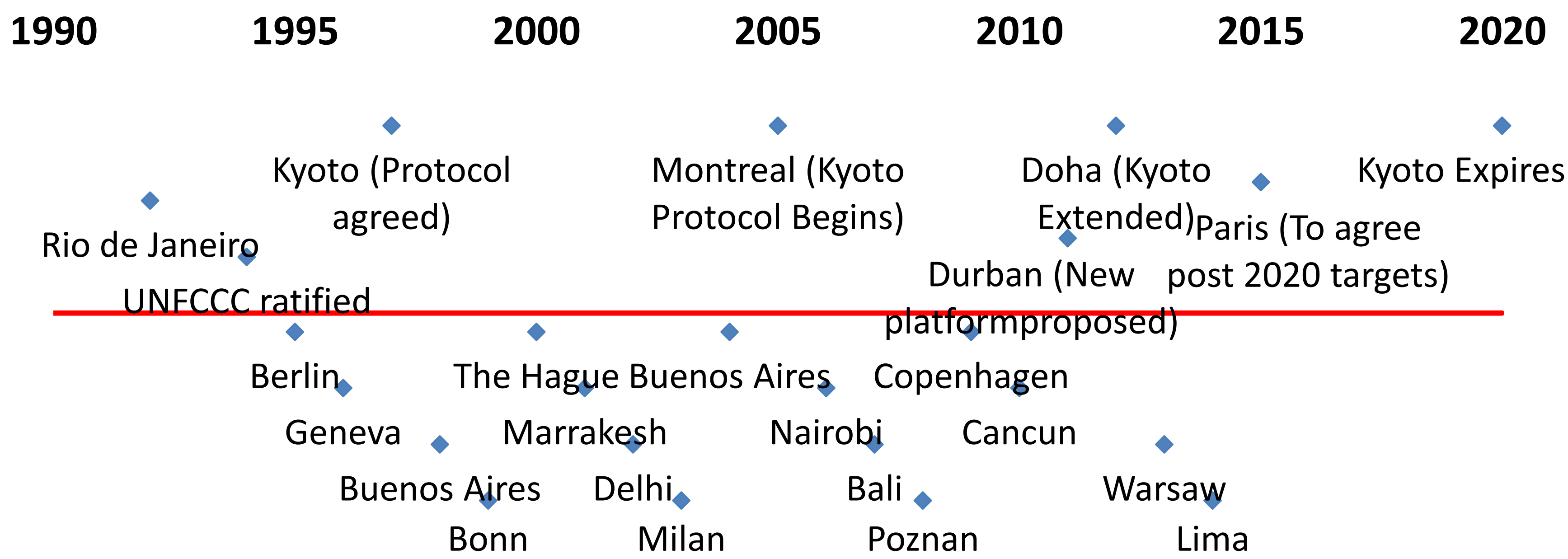
The Low Carbon Agenda (UN)



- **UN meet in 1992 in Rio to agree action on carbon emissions**
- **1997, Kyoto Protocol is agreed to take effect 2005 until 2012**

- **Despite multiple summits, no new binding agreement post 2012**
- **Kyoto is extended until 2020**
- **A new agreement to take effect in 2020**

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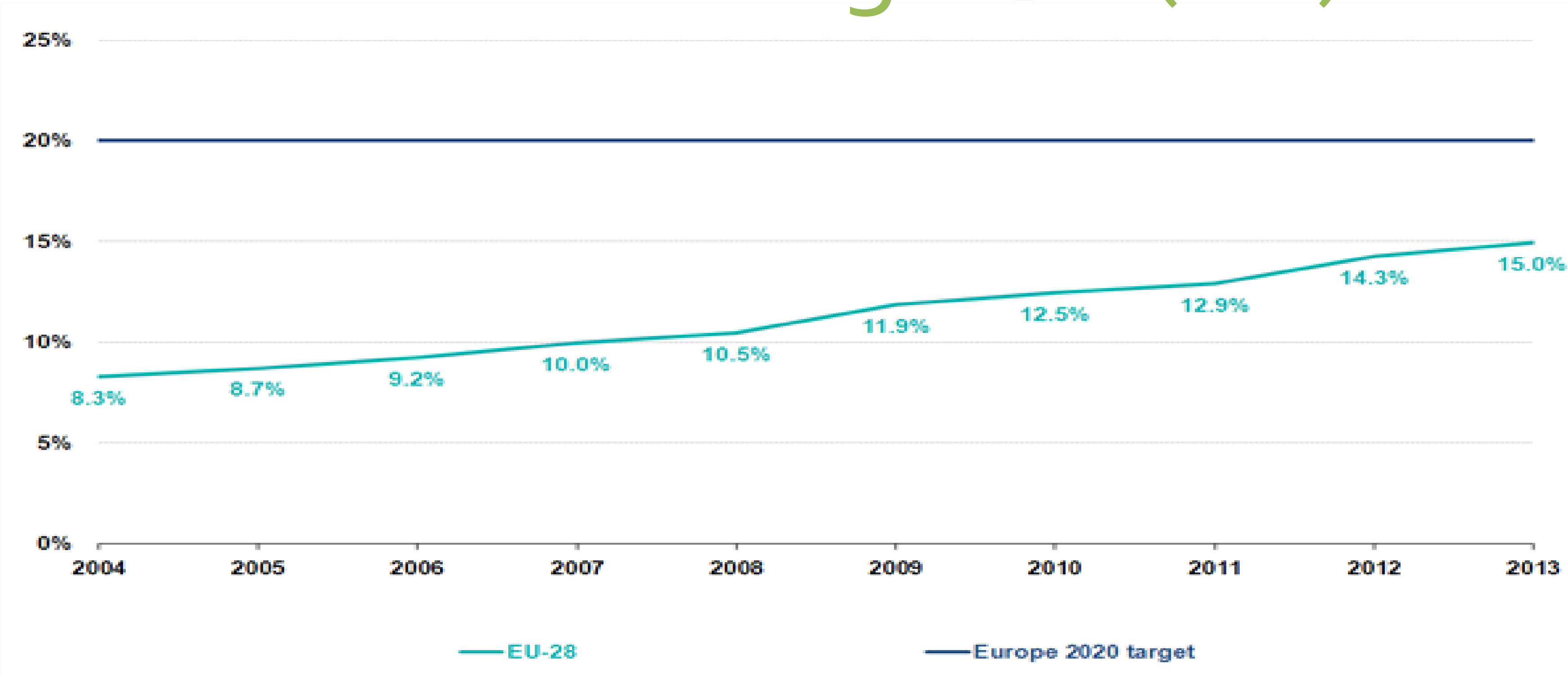
The Low Carbon Agenda (EU)



- **The EU is on target to meet Kyoto targets and it's own for 2020**
- **The share of renewable energy has passed 15%**

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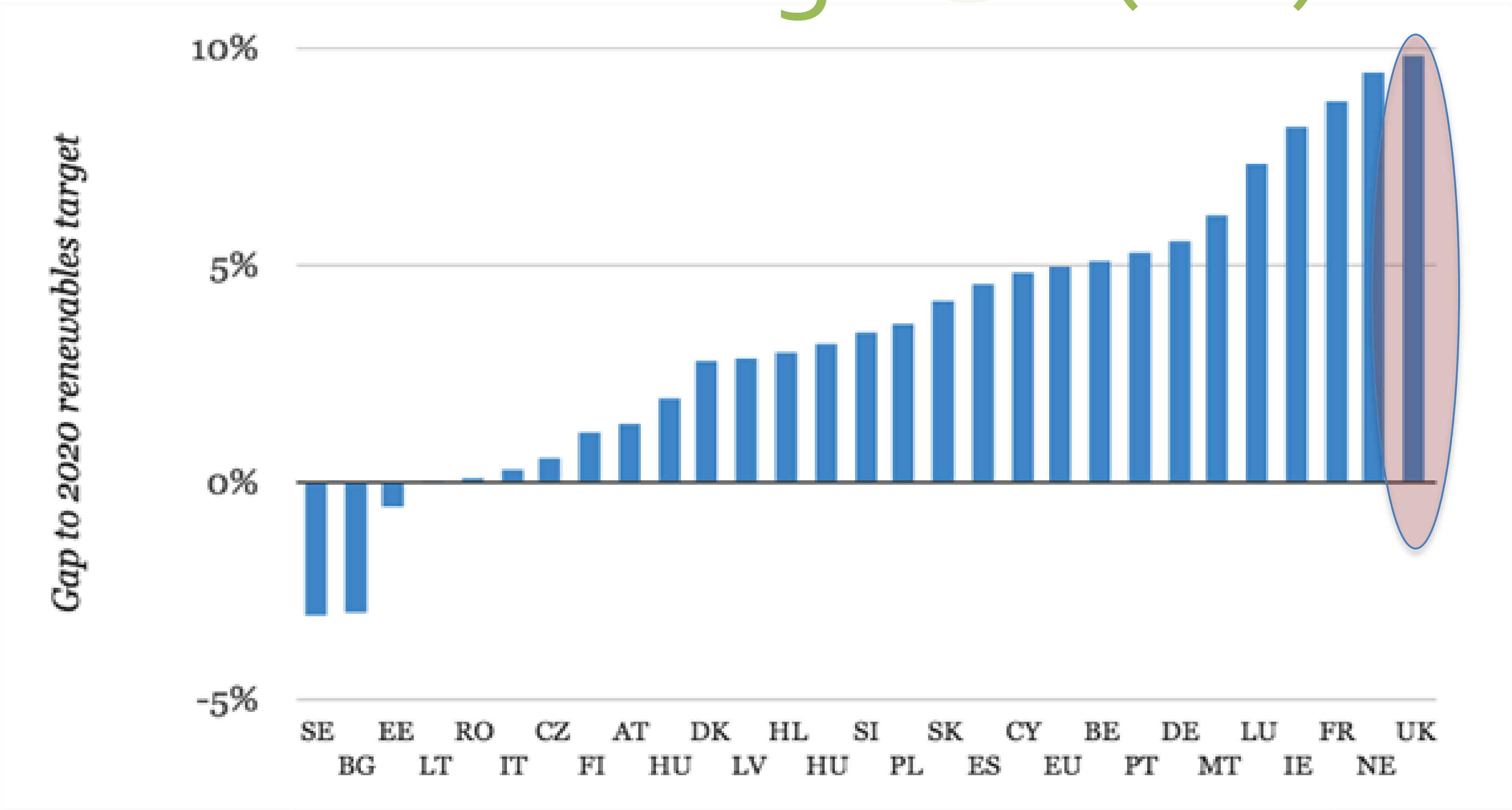
The Low Carbon Agenda (EU)



- **Some countries have exceeded their individual targets**
- **The UK is furthest behind with another 10% needed**

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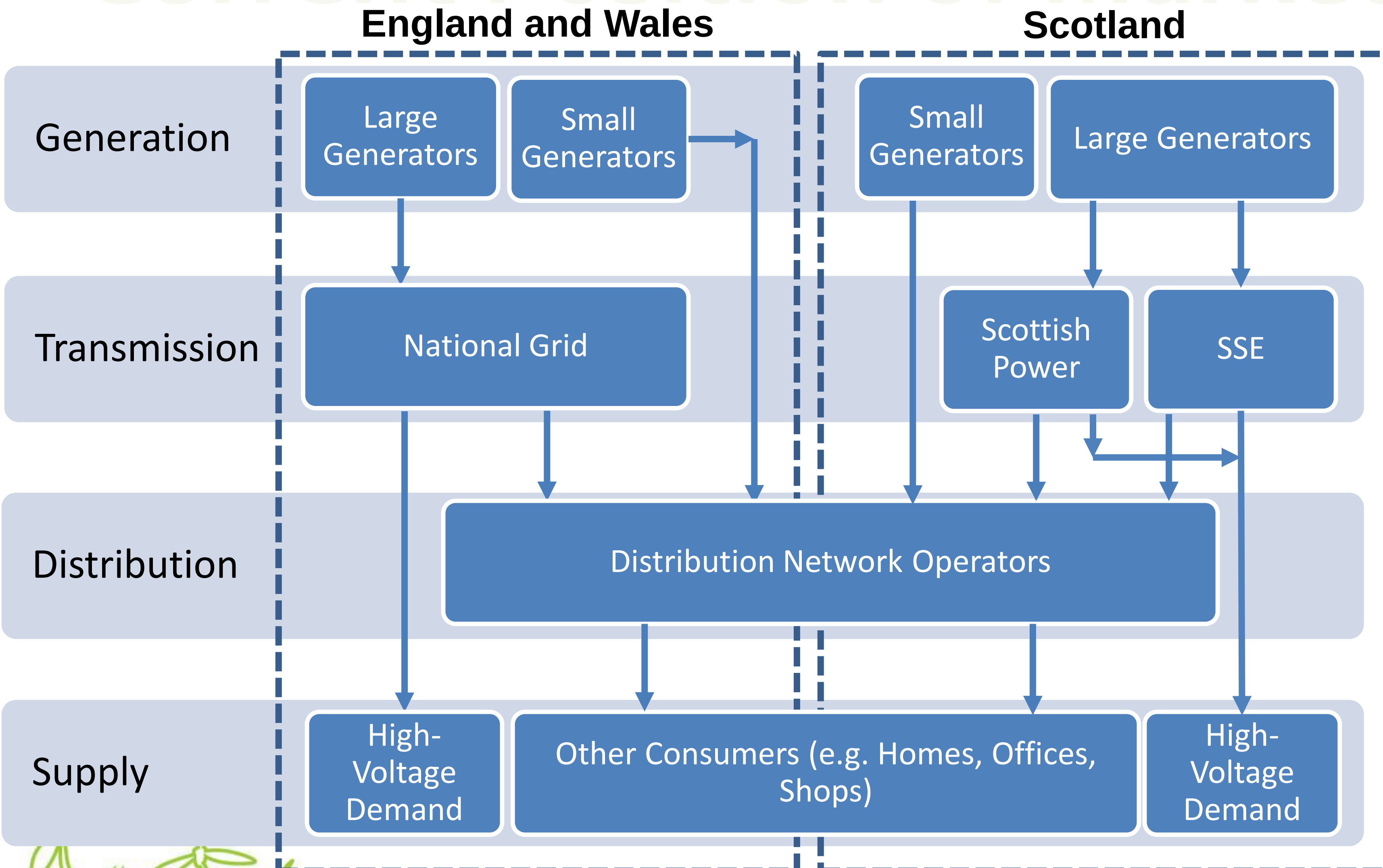
Current Market Status

Current Market Status

Current Market - Structure



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Current Market – Transmission & Distribution

Transmission Network Operators

Distribution Network Operators

Current Market – The Big 6

Current Suppliers Situation

- **'Big 6' currently supply 92% of the domestic market**
- **Other 8% is made up of smaller independent Suppliers**
- **Increasing number of customers moving to smaller suppliers**

Current Market: Small Suppliers

The co-operative energy

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green energy uk
cleaner | greener | electricity

isupply energy

ovo energy

LO C2 energy

first:utility

THE UTILITY WAREHOUSE

GreenSTAR energy

Good Energy

OPUS energy

spark™
an energy company

utilita
pre-pay the smart way

extraenergy
for home

flow ENERGY

GnERGY

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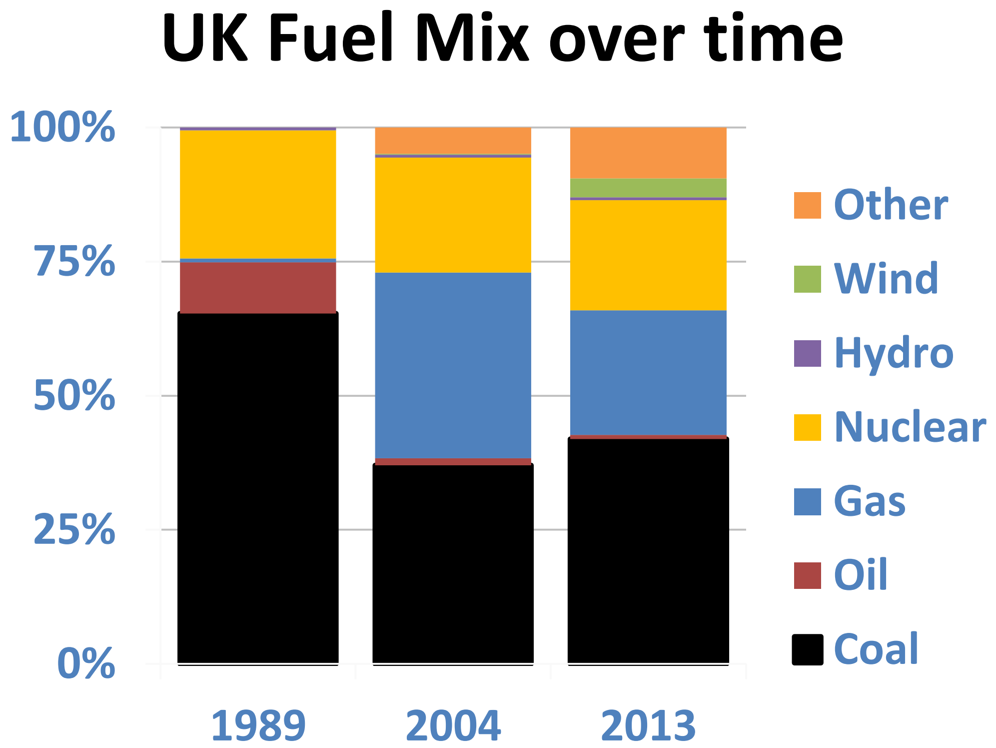
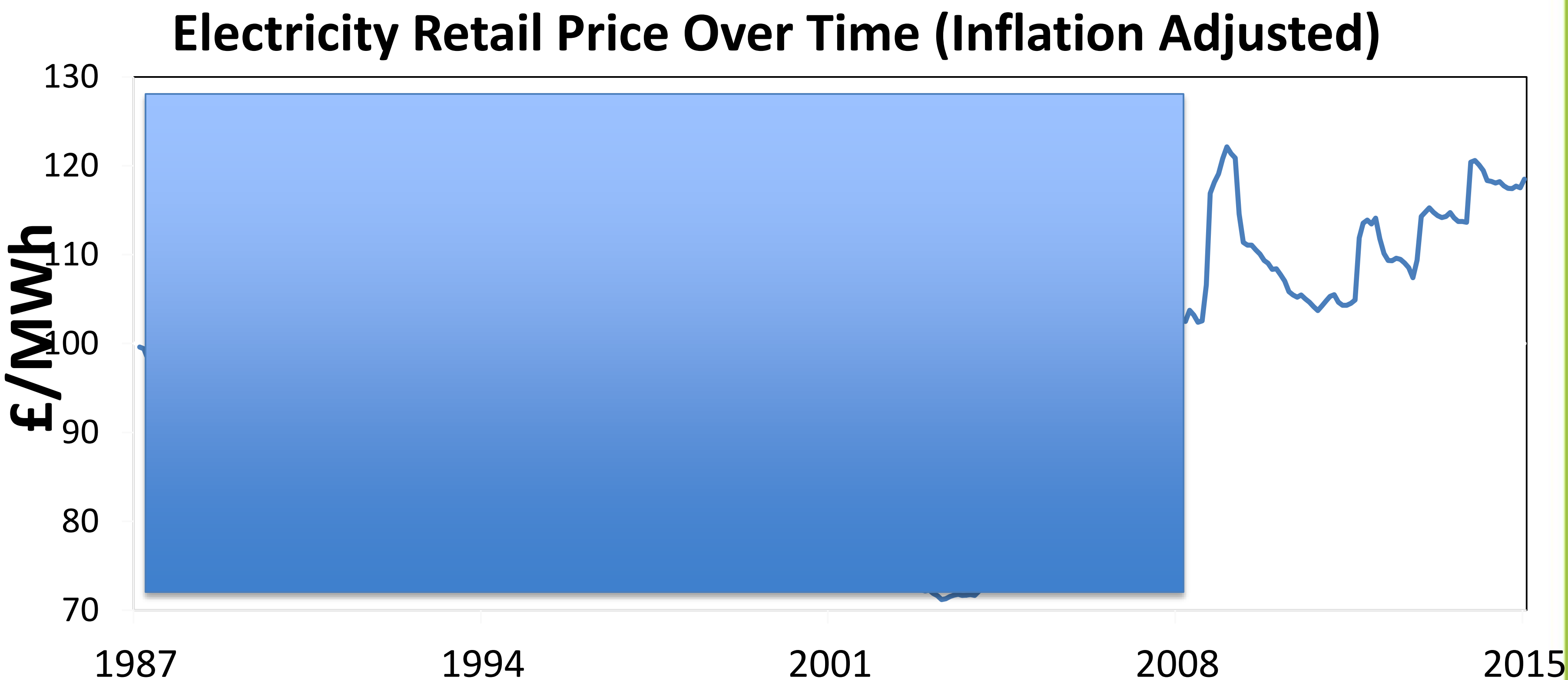
Current Market: UK Fuel Mix



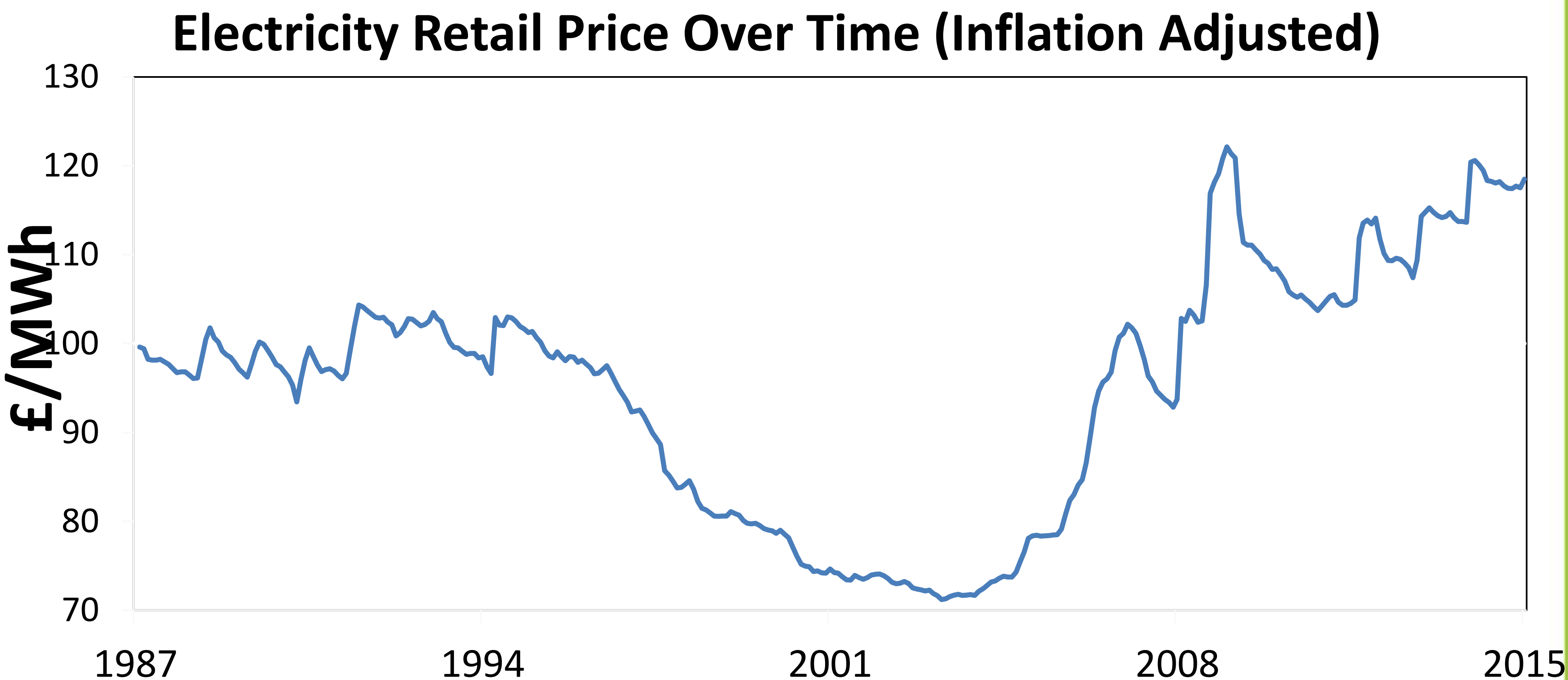
Supply Chain

- Coal high due to legislation for closure
- Gas has been reducing due to high prices

Current Market: Retail Prices



Current Market: Retail Prices



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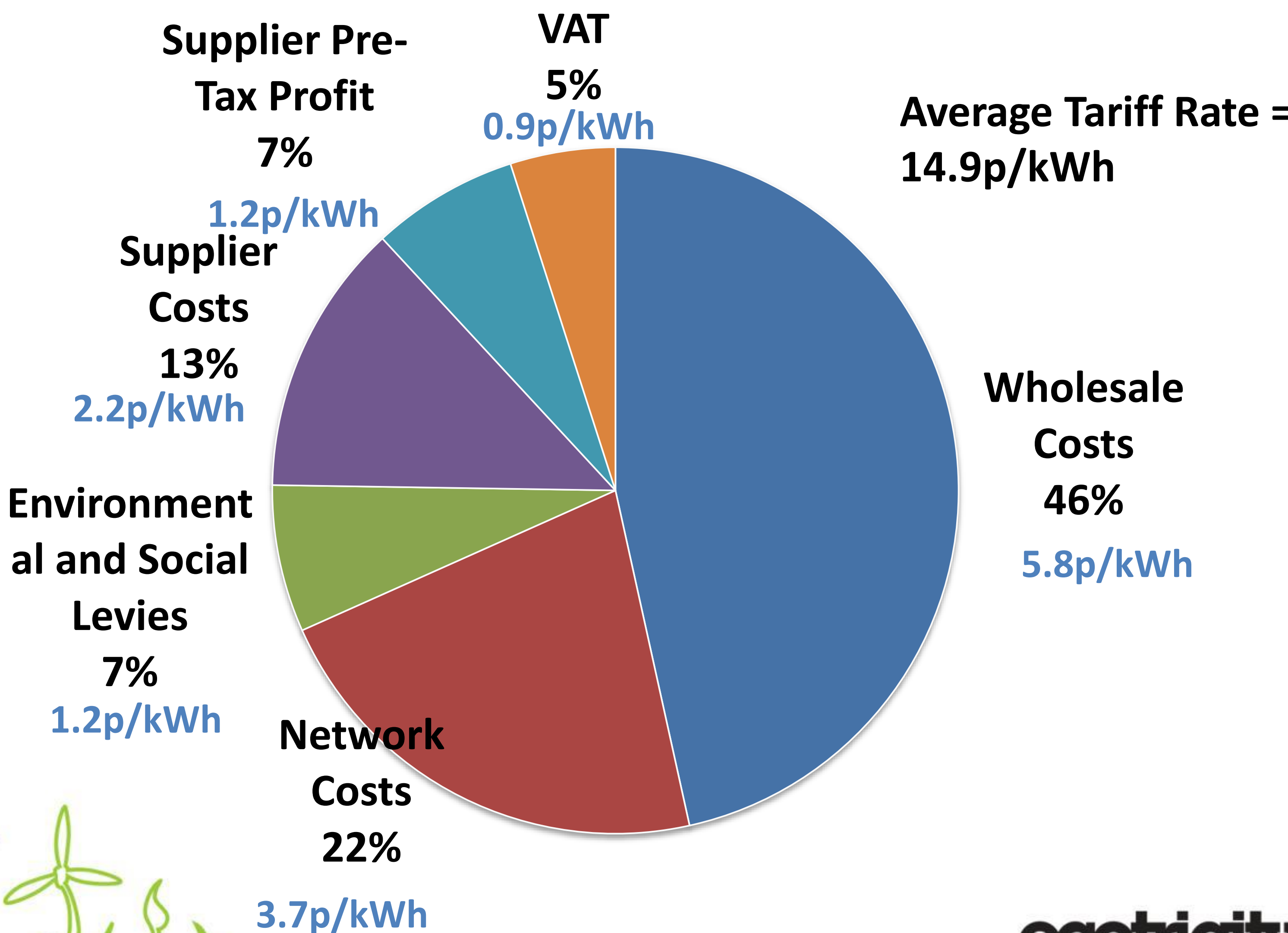
Current Market – End User Bill



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Global Market Impacts

B) Global Market Impacts:

It all starts with Oil

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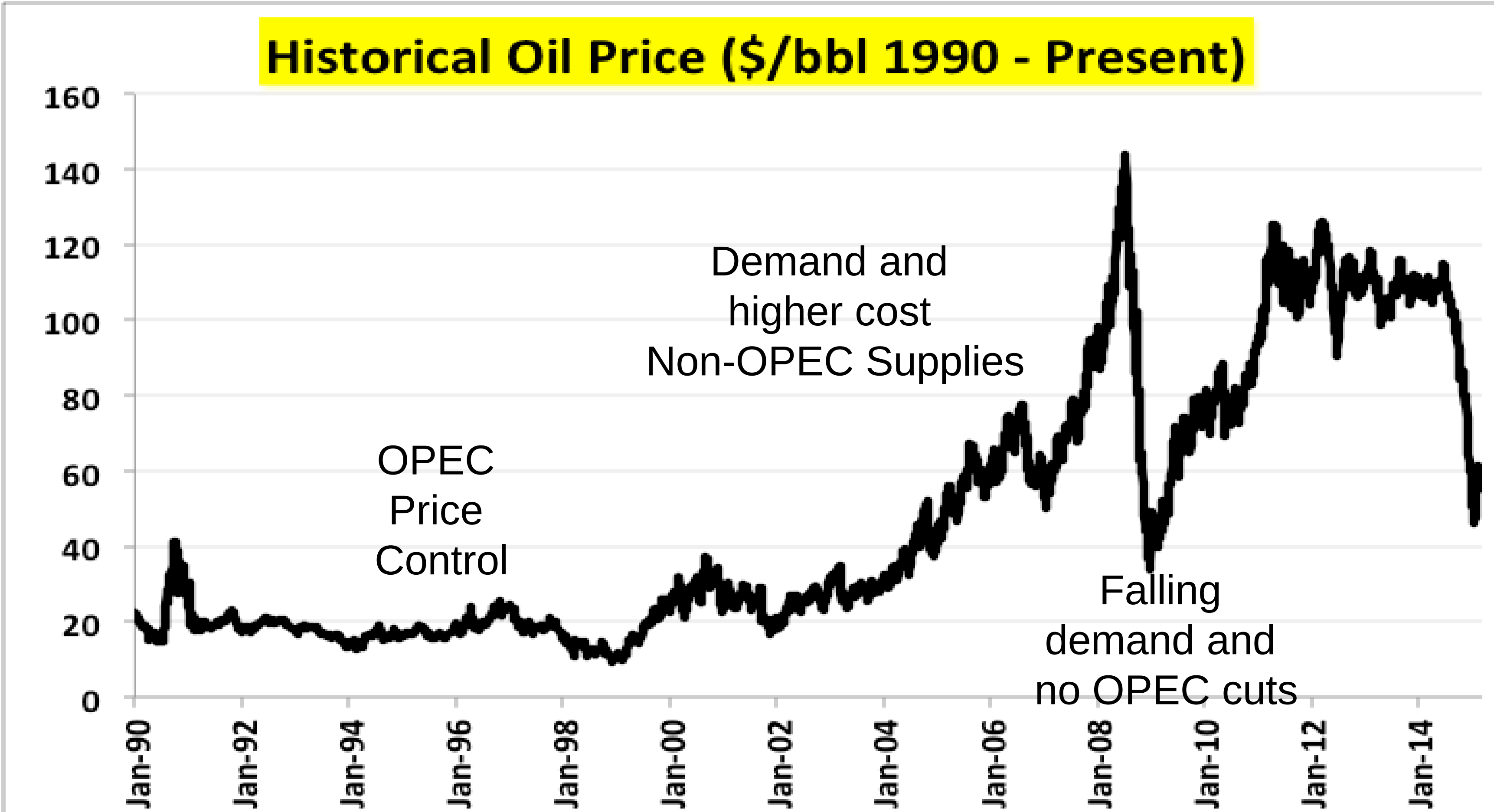
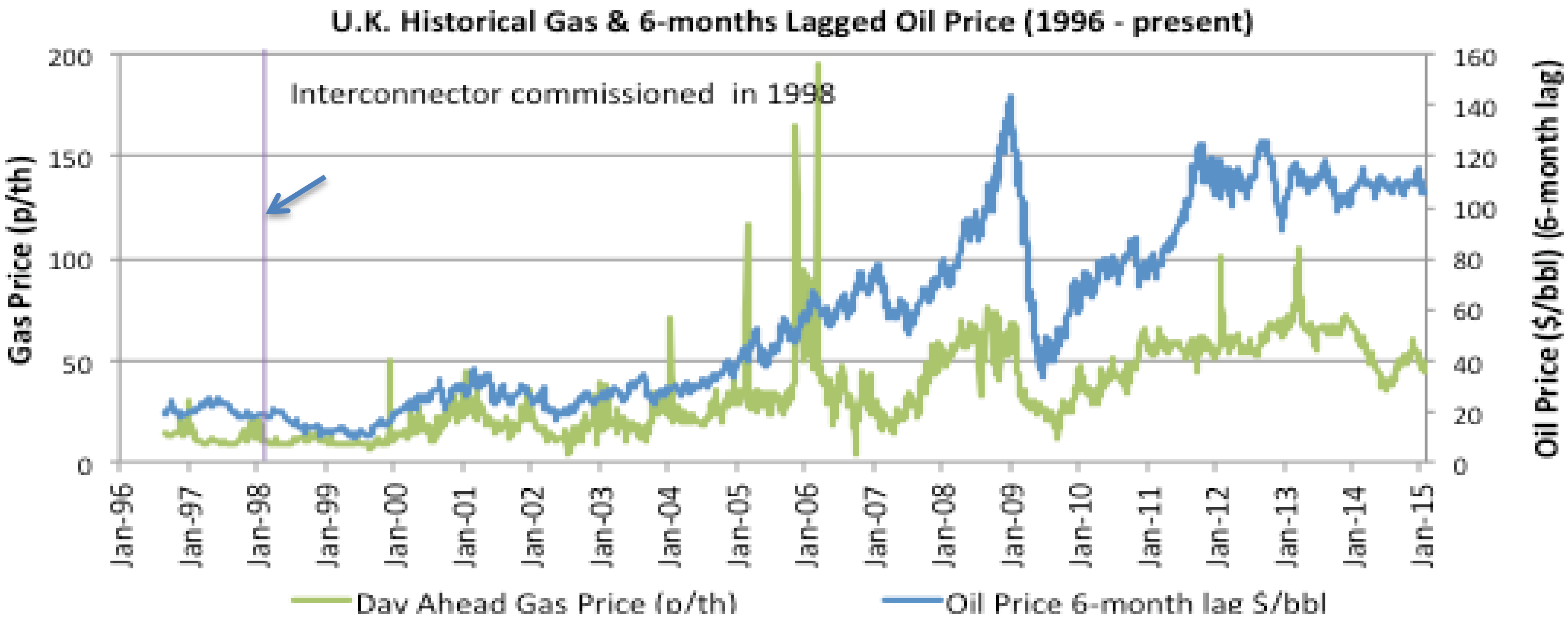
Historic Oil Prices



Historic Brent Oil Price and UK Gas Price Linkage



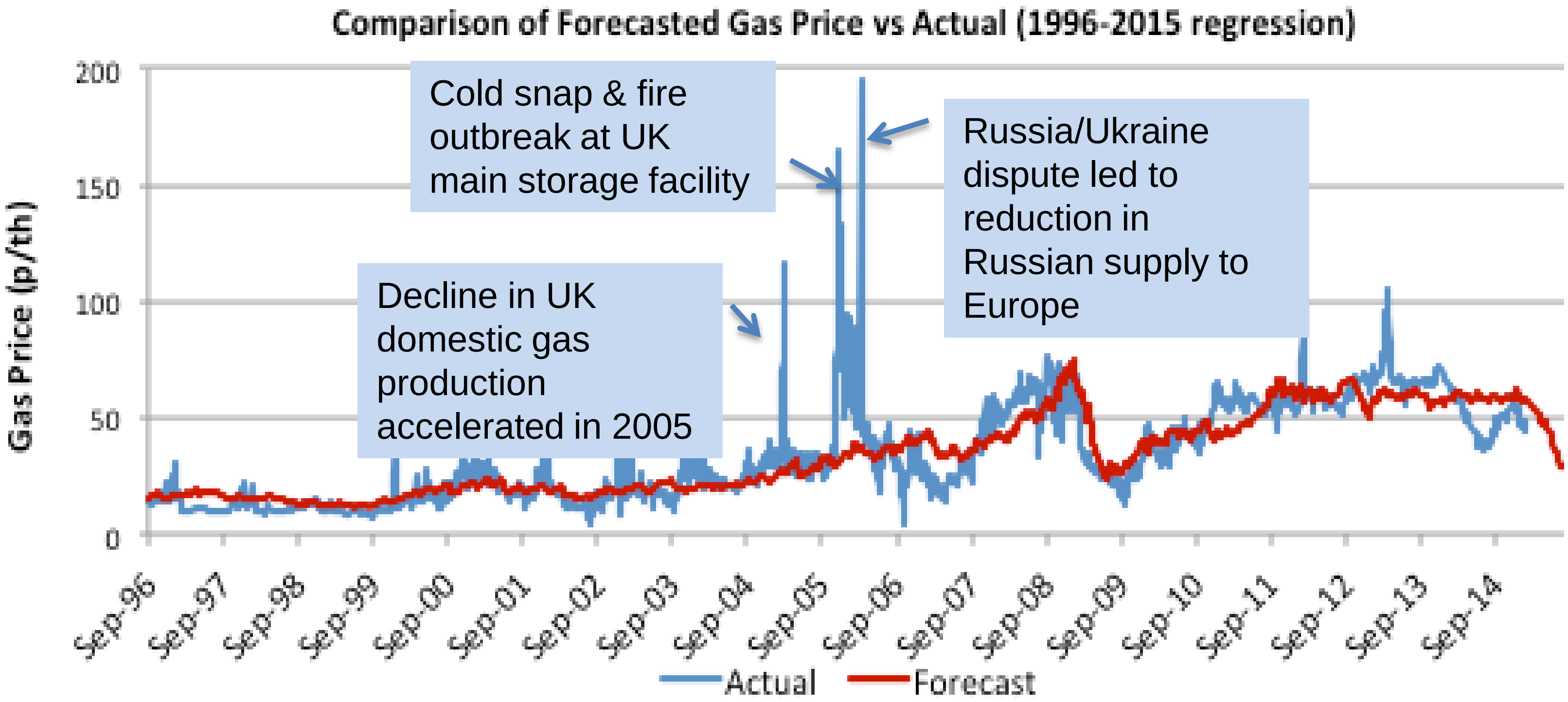
Pre-1998 Interconnection with Europe

- Low oil and gas price world
- UK wholesale gas price levels based on supply/demand fundamentals

Post-1998 Interconnection with Europe

- Interconnection led to import and export of gas to and from Europe
- European gas price contracts directly indexed to lagged oil prices
- Result = UK gas prices being directly linked to oil prices

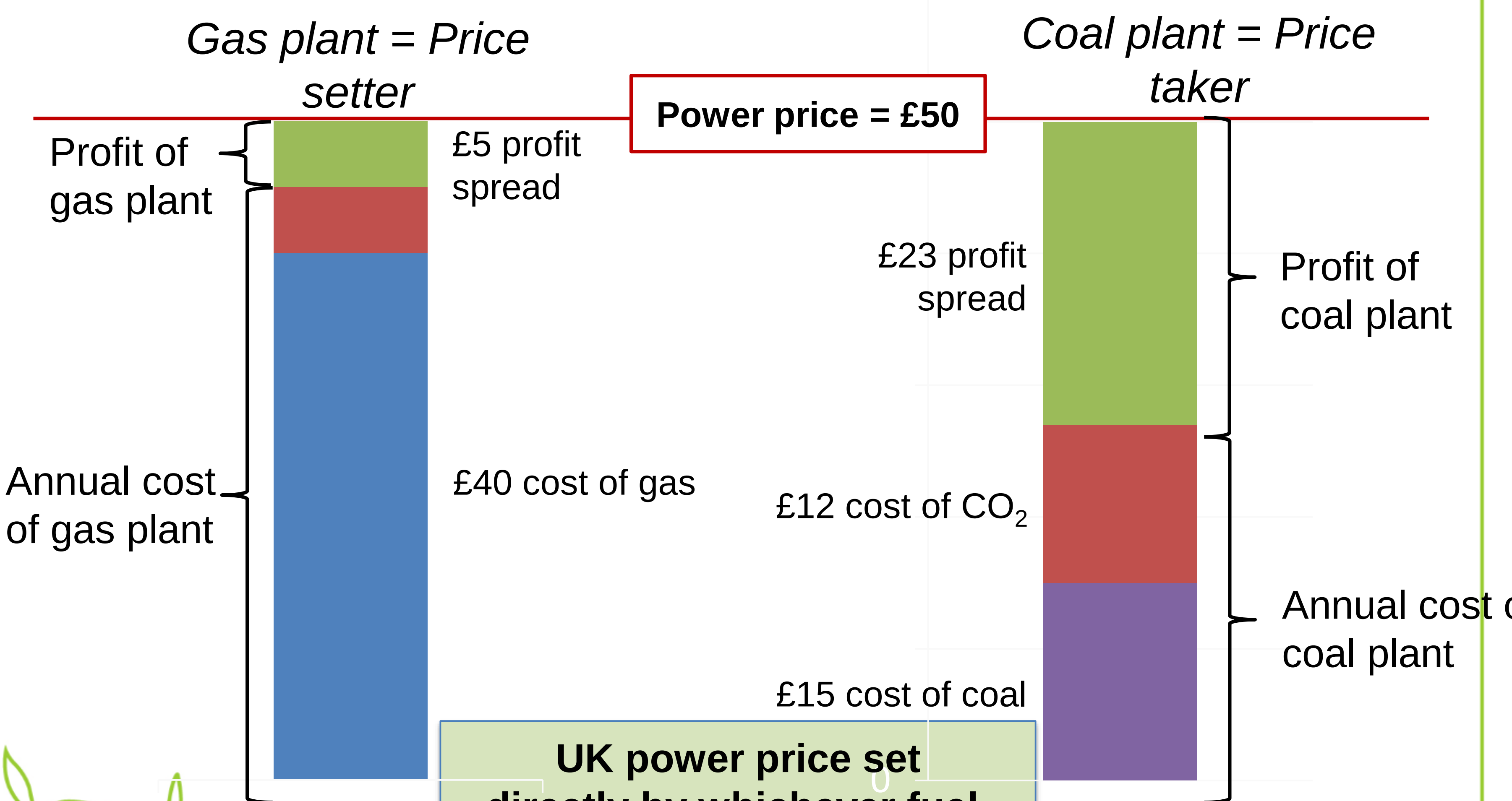
Brent Oil vs. UK Gas: Statistical Correlation



- Regression statistical analysis performed on every pricing day since 1998

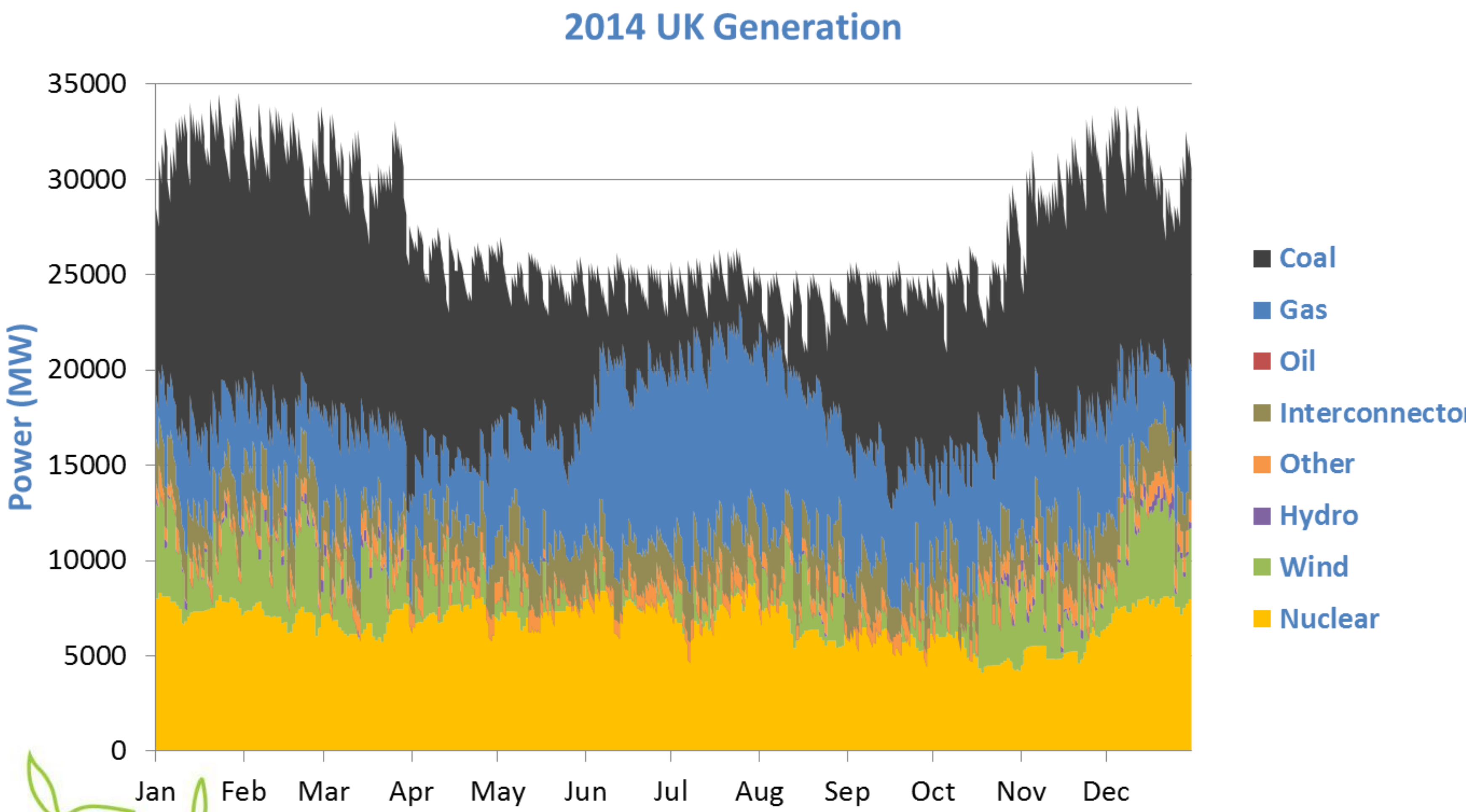
- 80% correlation between UK gas prices and 6 month lagged Brent oil prices

UK Power Price: How is it Set?



UK power price set directly by whichever fuel sourced power station is the marginal generator

Current Market – Generation Curve



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Current Market – Recent Price Forecasts

Gas Price Forecasts vs Actuals: Last 6 Months

pence per therm

Month	Forecasts	Actuals	Difference
Sep-14	49.3	48.3	2%
Oct-14	49.5	50.3	-2%
Nov-14	50.1	54.5	-9%
Dec-14	51.3	53.7	-5%
Jan-15	49.4	46.2	-6%
Feb-15	47.2	48.3	-2%

Comparison of forecasts using statistical methodology shows a high degree of accuracy in the last 6 months forecasts

PowerPrice Forecasts vs Actuals: Last 6 Months

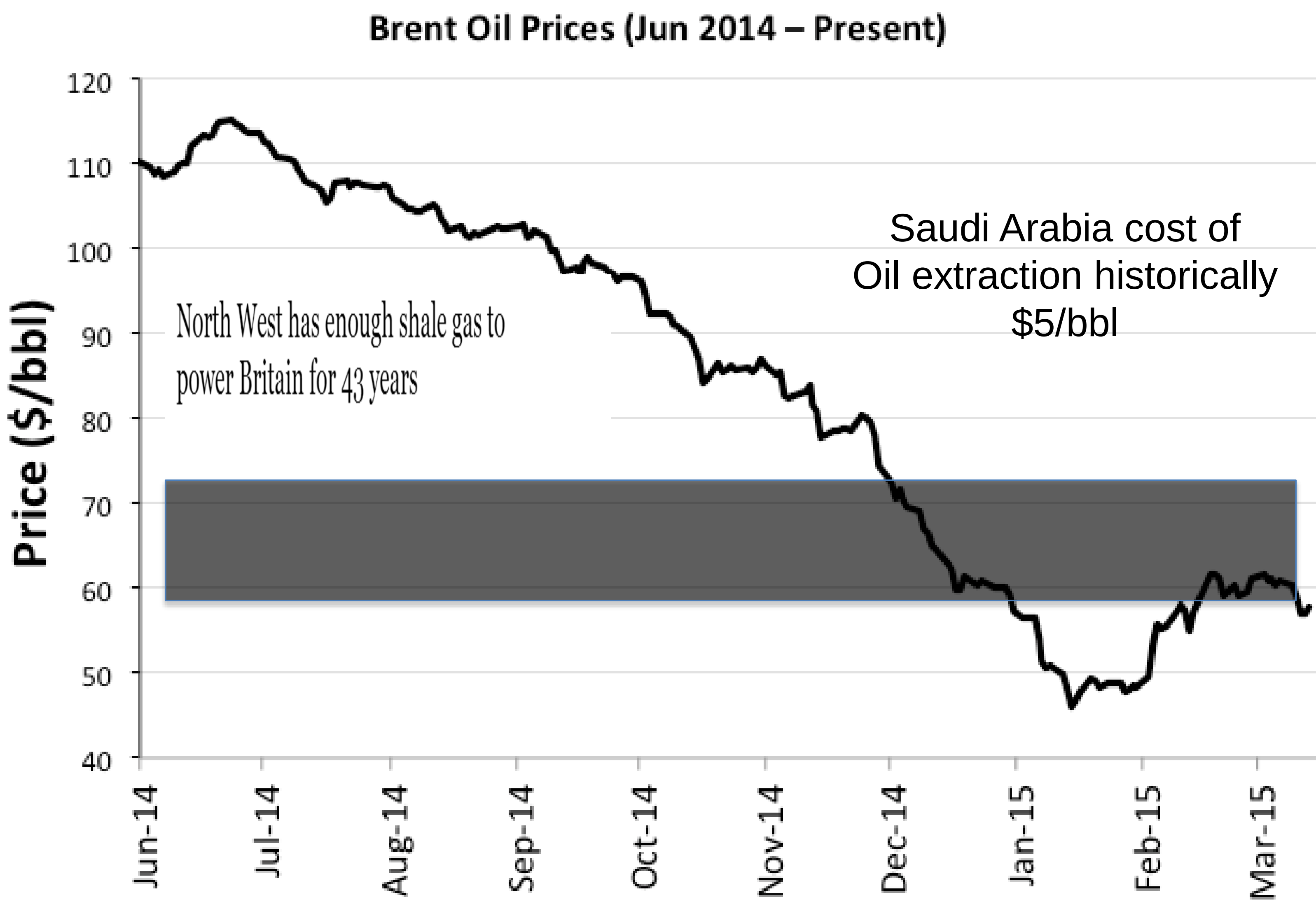
£/MWh

Month	Forecasts	Actuals	Difference
Sep-14	41.9	43.4	-3%
Oct-14	41.9	44.4	-6%
Nov-14	42.0	47.0	-12%
Dec-14	42.4	43.0	-1%
Jan-15	42.1	38.7	8%
Feb-15	41.8	43.8	-4%

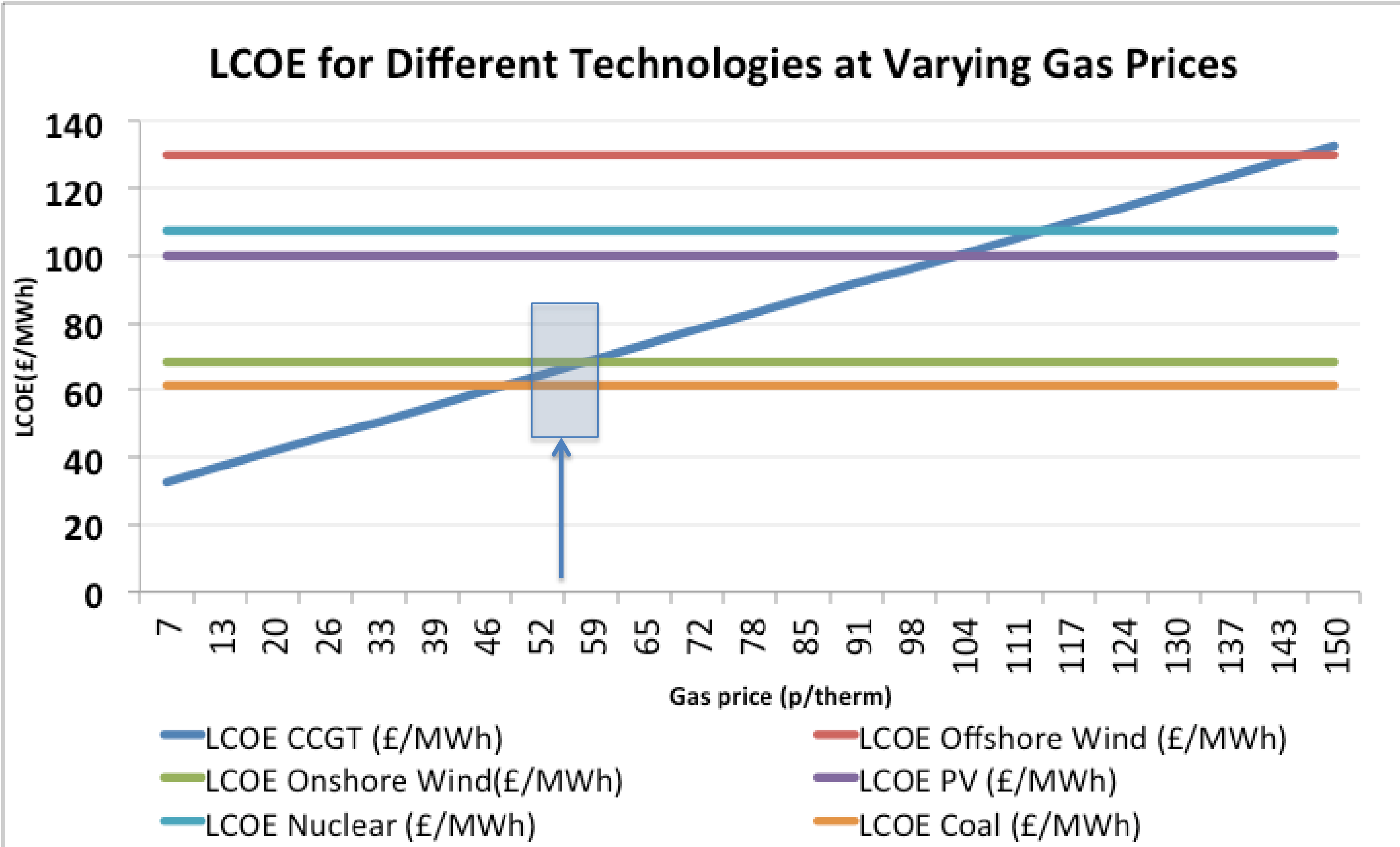
- Methodology has produced accurate power price forecasts

- Gives clear indication of impact of Oil prices on UK Power prices

Recent Oil Price Fall



Levelised Cost of Energy



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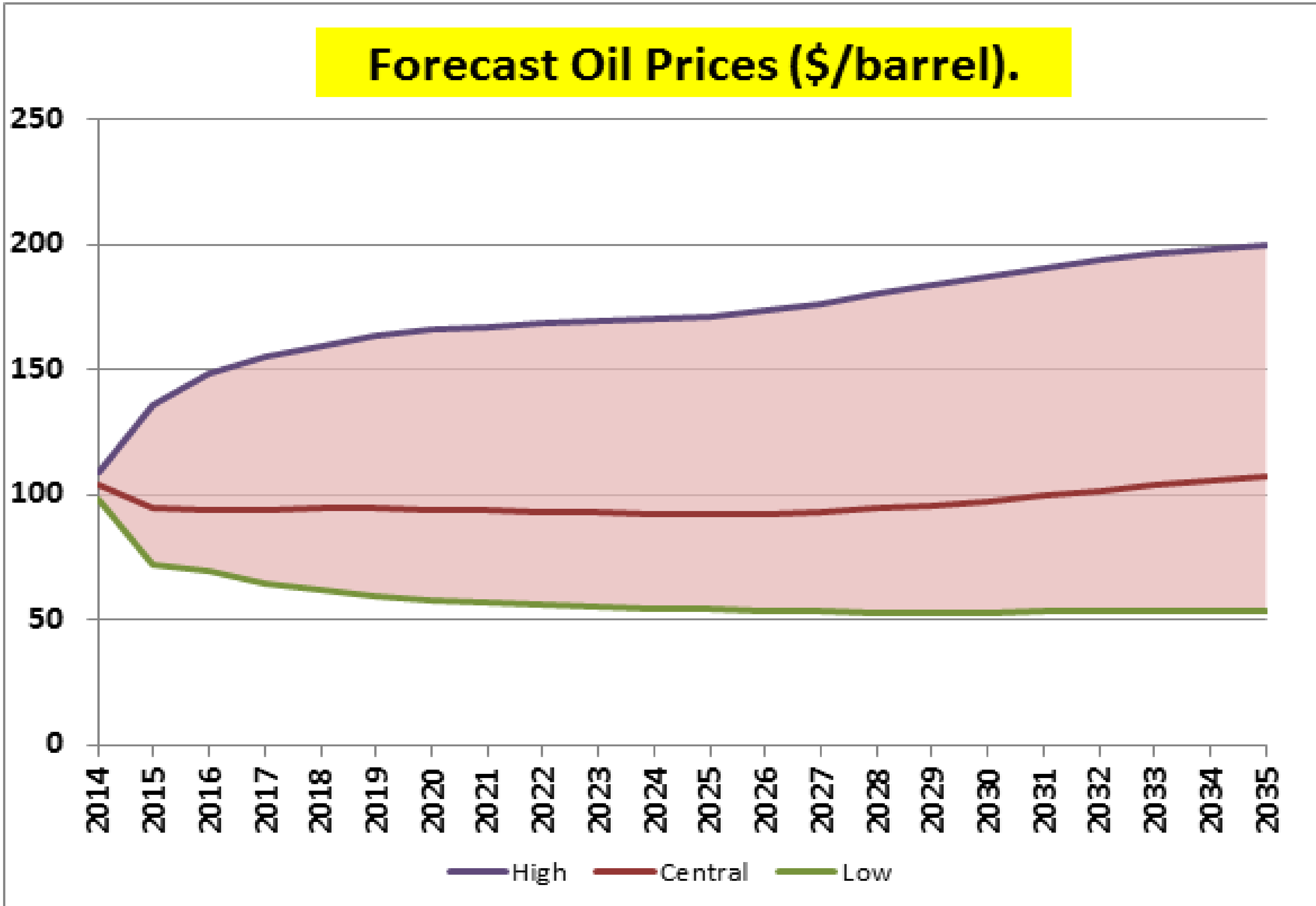
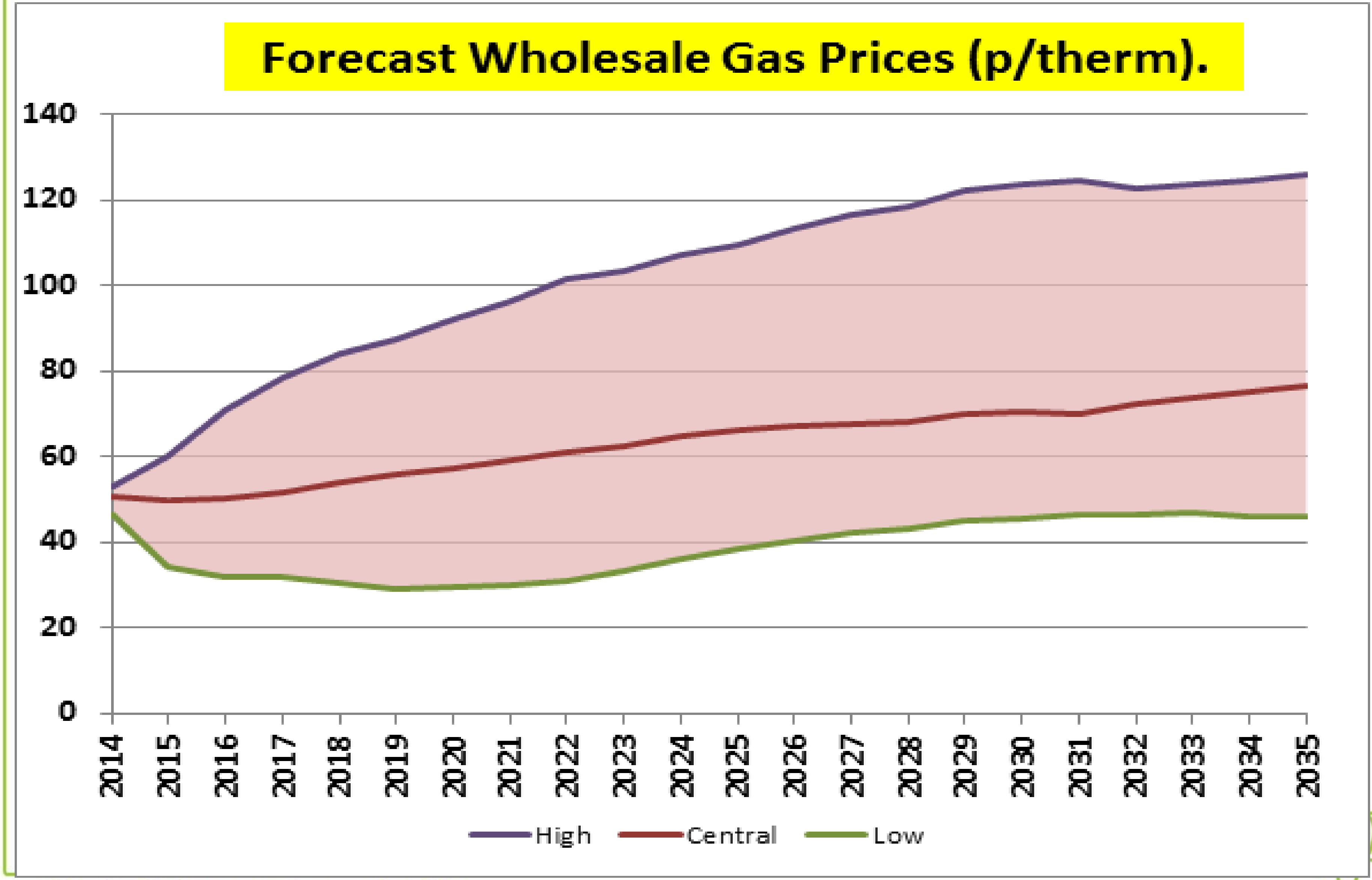
Forecast Prices

Forecast Prices

Forecast Oil Prices



Forecast Gas Prices



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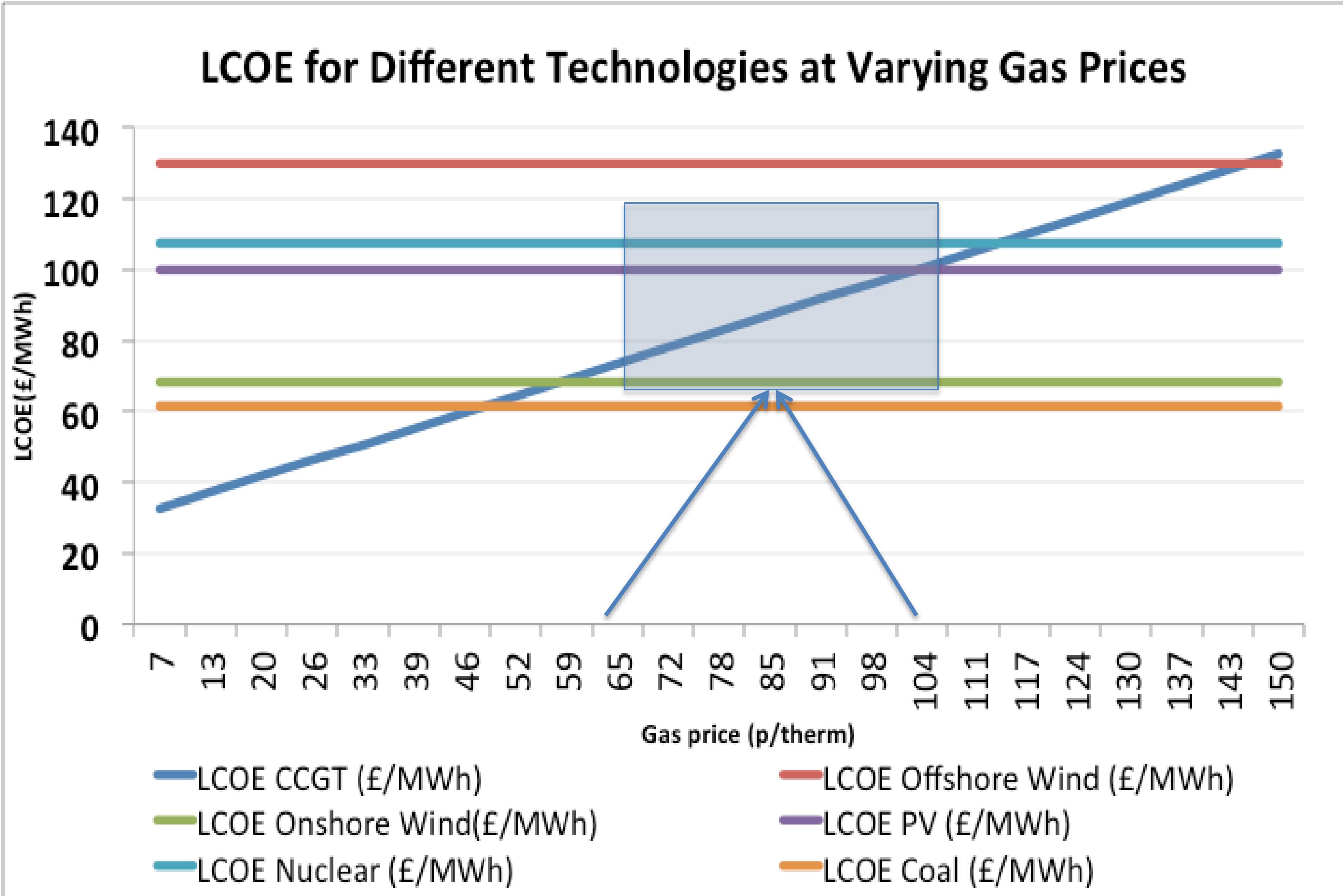

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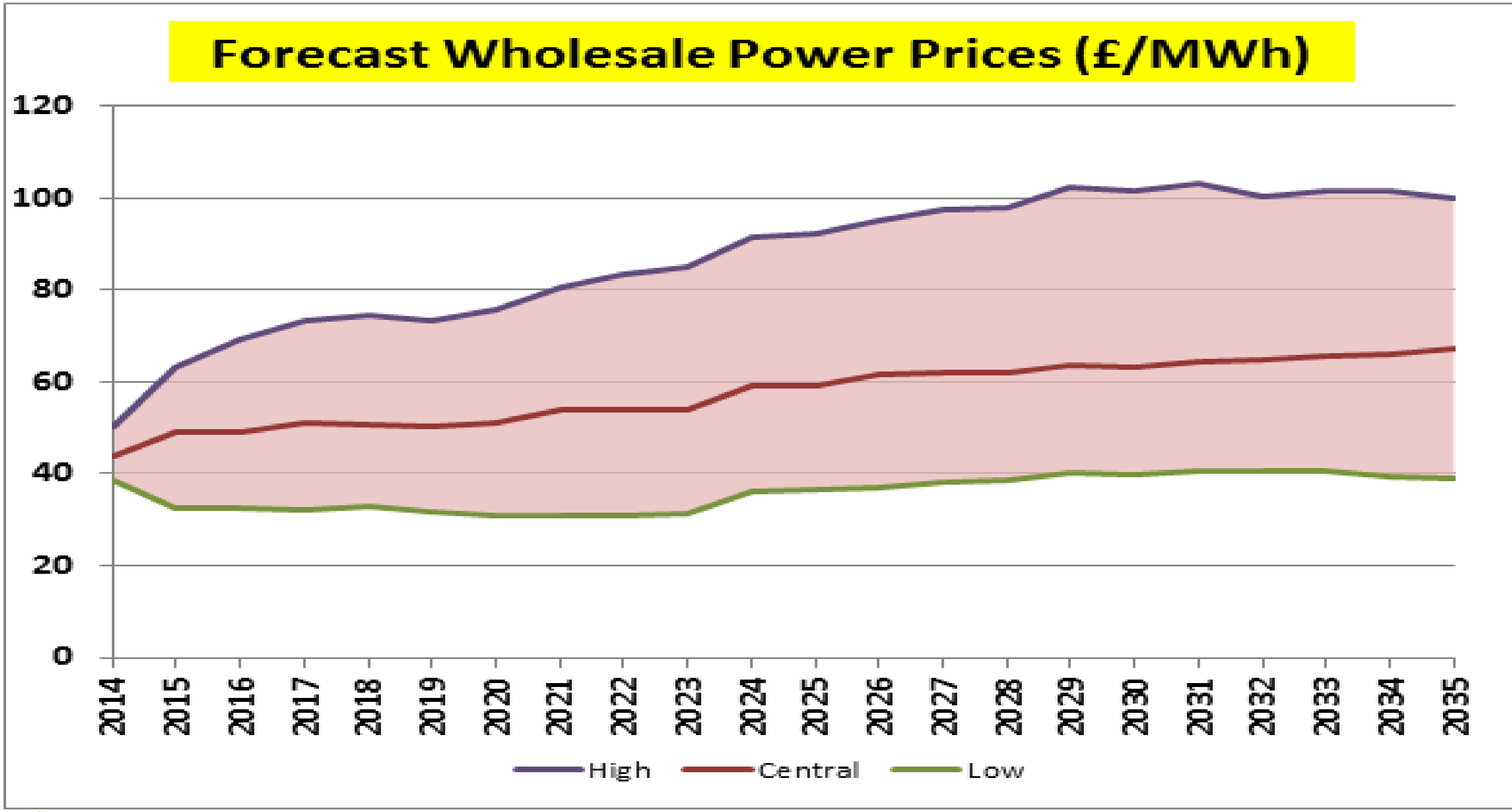
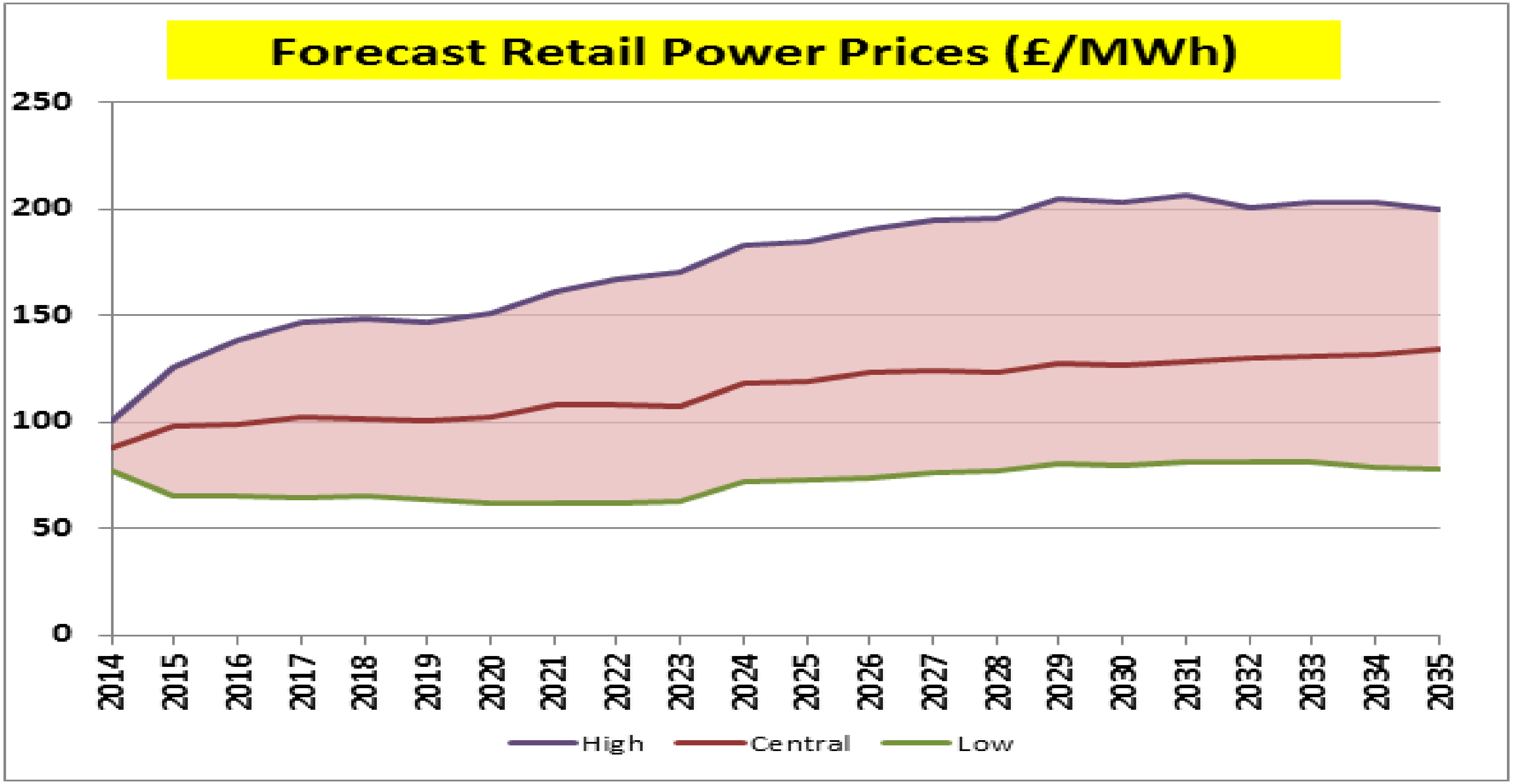


Forecast Retail Power Prices



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Market Regulation

ofgem

FSA®

DEPARTMENT OF ENERGY & CLIMATE CHANGE

CMA
Competition & Markets Authority

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Market Regulation

Market Regulation

Privatisation:

- Two Regulators
- Public Electricity Suppliers
- British Gas

Creation of Ofgem and new licensing regime.

Legal separation of distribution from generation & supply.

Offer

Electricity Act 1989

Ofgas

Gas Act 1986

Ofgem

Utilities Act 2000

Standard Licence Conditions			
Generation	Transmission	Distribution	Supply

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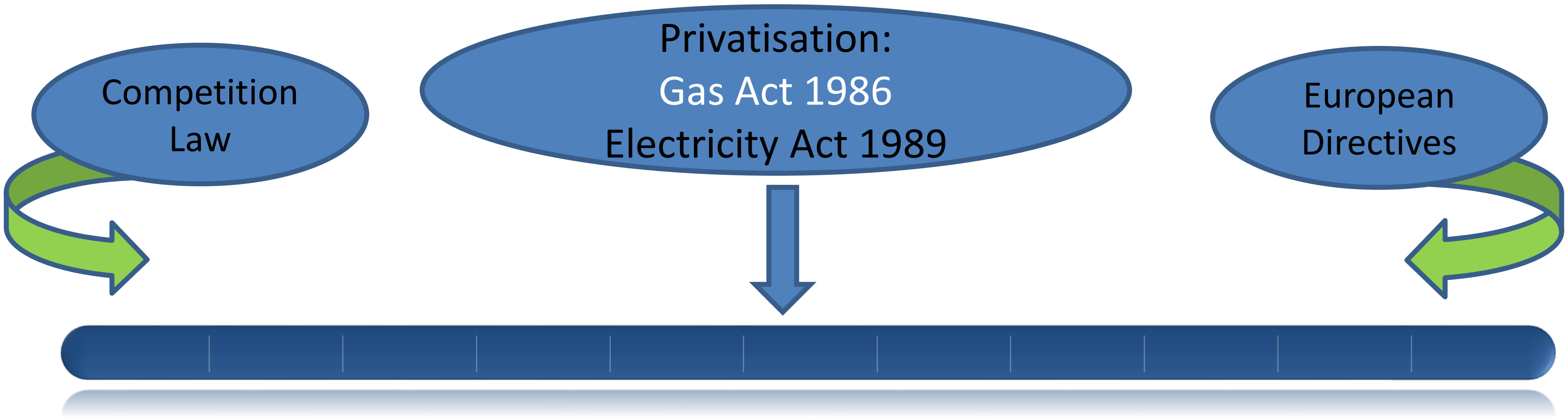
Market Regulation



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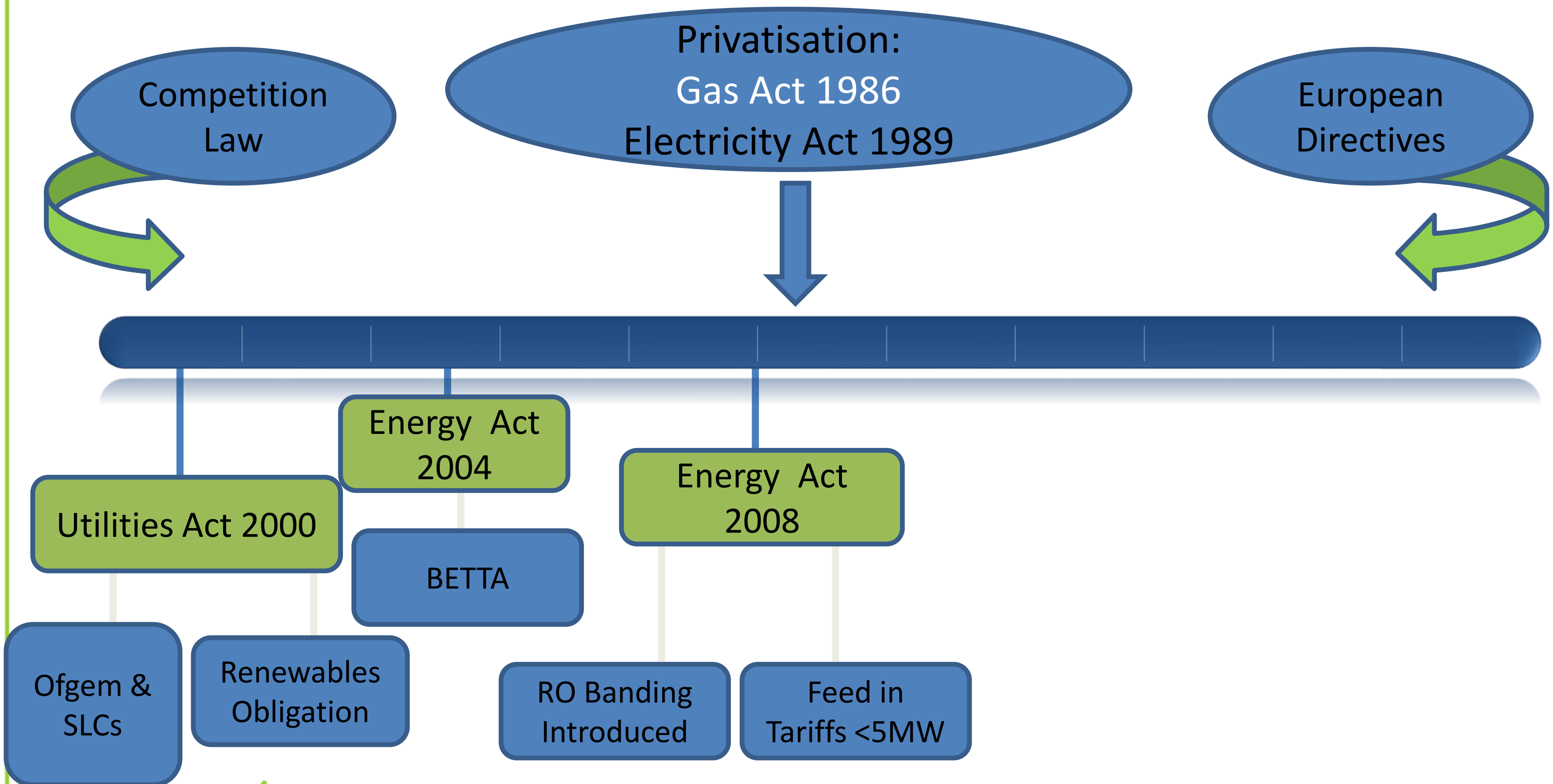

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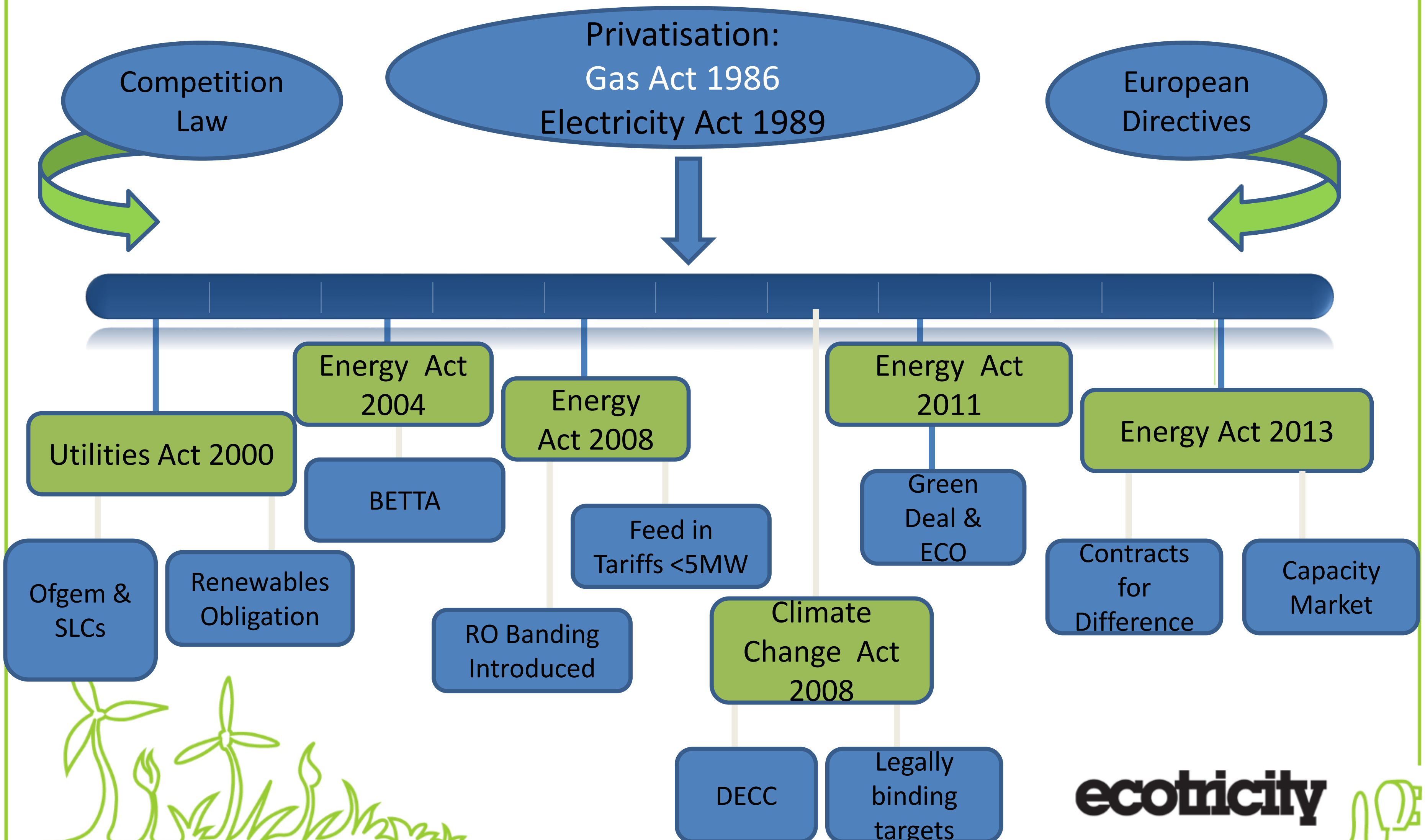

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Regulating Suppliers

Regulating Suppliers

- Significant Regulation of domestic supply

Subsidy Regimes

Small scale (<5MW)

Large Scale (>5MW)

Feed In Tariff (FiT)

- Direct payments from suppliers to generators.
- Fixed subsidy for 20 years.
- Tariff varies by technology.
- Regular degression.

Renewables Obligation (RO)

- Suppliers are obliged to present Renewables Obligation Certificates (ROCs) or pay penalty
- Level of obligation increases each year
- Generators receive ROCs and sell to suppliers.
- Price determined by obligation and market forces.
- Closes to all new generation in April 2017.

Contracts for Difference (CfD)

- New scheme to set a guaranteed (Strike) price for generators
- Generators bid in competitive auction for limited budget

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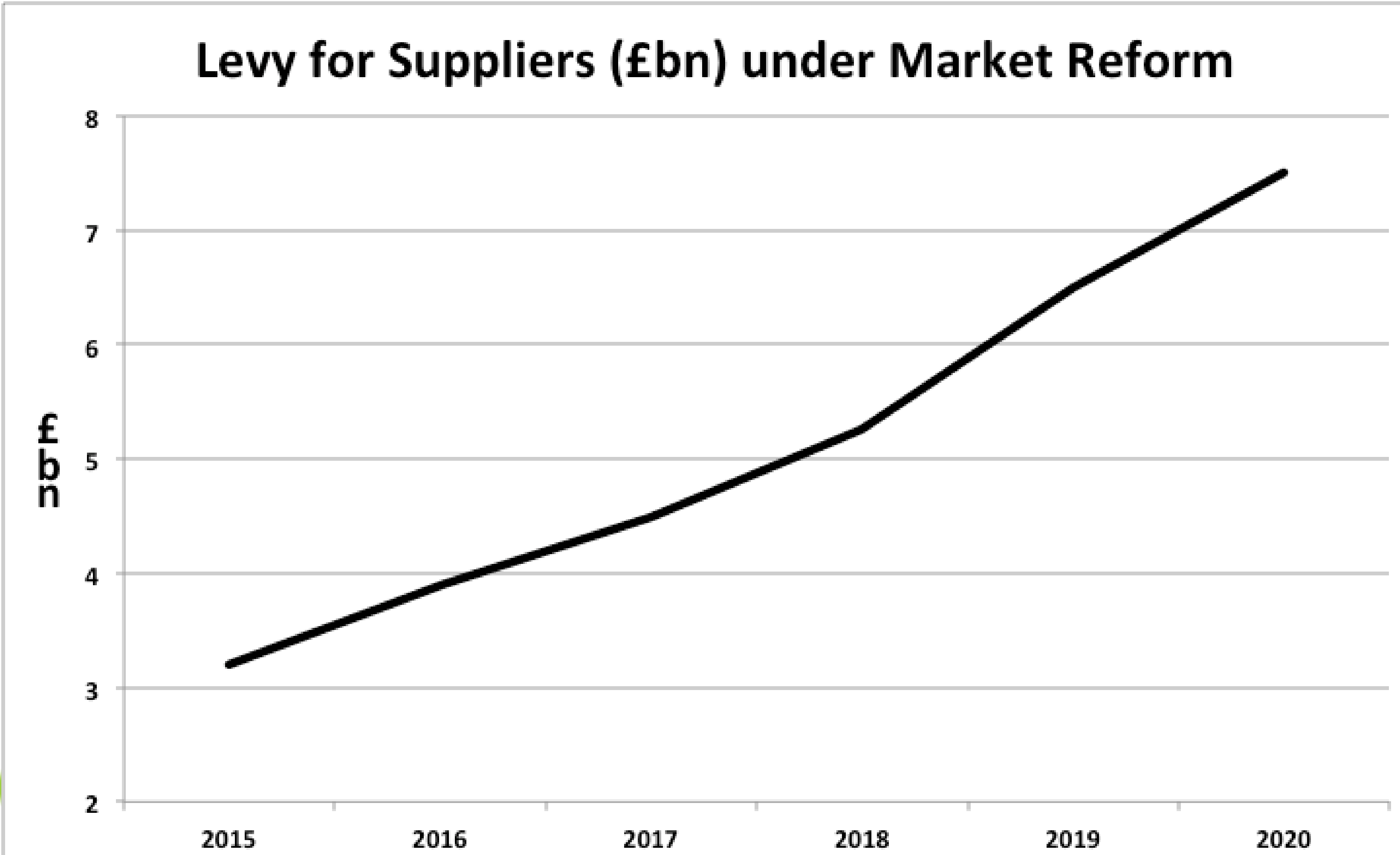
Government Levy



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Regulation: Strong Enough?

Foreign Ownership

Impact of Foreign Ownership

Transfer Pricing:

- Generation businesses sit outside UK; and
- Sell power to Trading Business Entity (some non-UK);
- Trading entity sells power to UK Retail arm
- UK Retail arm has high cost base as margin for above transactions sit in other countries
- Could be factor in un-ethical retail pricing

Energy in the Media

Energy in the Media:

Prices &
Customer Vulnerability


Monday, July 18, 2011

Energy Prices Soar

Britains big energy suppliers are hiking up energy prices due to soaring wholesale costs. Electricity prices are set to rise 11% and gas prices by 18% Households and businesses have 3 options.....

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Retail Prices: In the Media

Privatisation of energy industry was a mistake, Ed Miliband suggests

Ed Miliband, the Labour leader, mocks claims that the privatisation of energy in the 1980s was a success

Why your cash really IS going up in smoke: Alarming new figures reveal how families' biggest cost is now heating and looking after their homes

- Average family spending for 2012 revealed by Office for National Statistics
- Energy bills and house maintenance overtakes transport as biggest cost
- Spending on motoring falls as drivers cut journeys to save petrol
- Brits increase spending on clothes and shoes despite falls in prices
- Richest homes spend £1065.60 a week compared to poorest's £189.30

Gas and electricity customers who don't switch providers are being fleeced by up to £234 a year by Big Six providers, says competition watchdog

- 95 per cent of customers could save £234 per year by changing provider
- Despite the potential savings half of customers have never switched
- Single mothers and the disabled more likely to be

CMA
Competition & Markets Authority

Ed Miliband: Labour would freeze energy prices

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Retail Prices: In the Media

Heating bills concern 38% of UK population, survey suggests

COMMENTS (433)

More than a third of people in the UK say they are concerned about paying for their heating bills this winter, a BBC Radio 5 live survey has suggested.

It found 25% of people had put up with "unacceptably cold" homes in the past year as they struggle to pay bills.

And 63% of the 1,035 **adults surveyed** said they had cut their energy use because of rising costs.

More than half of those polled have cut their energy use in the face of rising bills

Energy bills rise by 37% in three years

Gas and electricity prices are rising at up to eight times the rate of earnings, warns Citizens Advice

The big six suppliers have increased their prices by a total of 36% since October 2010. Photograph: Dan Kitwood/Getty Images

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Consumer Vulnerability: Energy Efficiency

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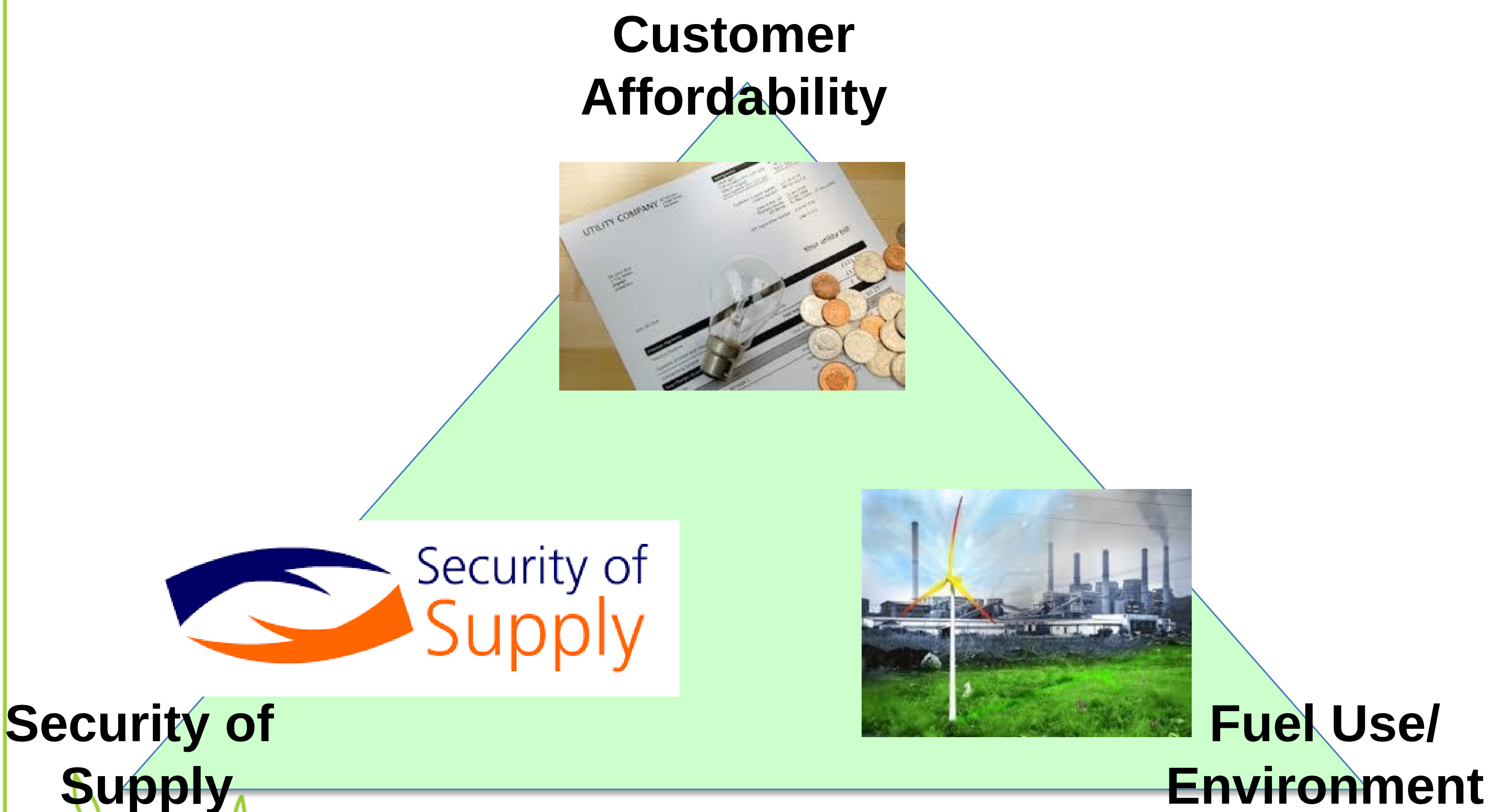
The Energy Trilemma

The Energy Trilemma



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- Media focus

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- **Ecotricity** C
  - Journey
  - Outlook
  - Summary

C) Ecotricity's Journey

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Ecotricity History: The First Decade

Ecotricity History: The First Decade

1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004

- 1995: Ecotricity founded
- 1996: First turbine built in Gloucestershire
- 1996: Supplied our first customer: Cheltenham & Gloucester College
- 1999: Built UK's first multi MW turbine at the Ecotech Centre
- 2000: Ecotricity chosen as the sole supplier of the Millennium Dome

Ecotricity History: The First Decade

Ecotricity History: The First Decade

1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005

- 2001: Built first Merchant Wind Power site at Sainsbury's in East Kilbride
- 2002: First sites built under the RO
- 2003: Entered the domestic supply market
- 2004: Ford Dagenham
- 2005: Land mark turbine at Green Park on M4 built

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- Land mark turbine at Green Park on M4 built

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Ecotricity History: The Second Decade

Ecotricity History: The Second Decade

2005

2006

2007

2008

2009

- **2005–2006:** 13,000 Customers Supplied
- **2006:** Two Turbines at Michelin Factory Dundee
- **2007:** Bristol Port Turbines built
- **2008:** 21 Turbines Built in one year
- **2008–2009:** 35,000 Customers Supplied
- **2009:** Green Gas Launched

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Ecotricity History: The Second Decade

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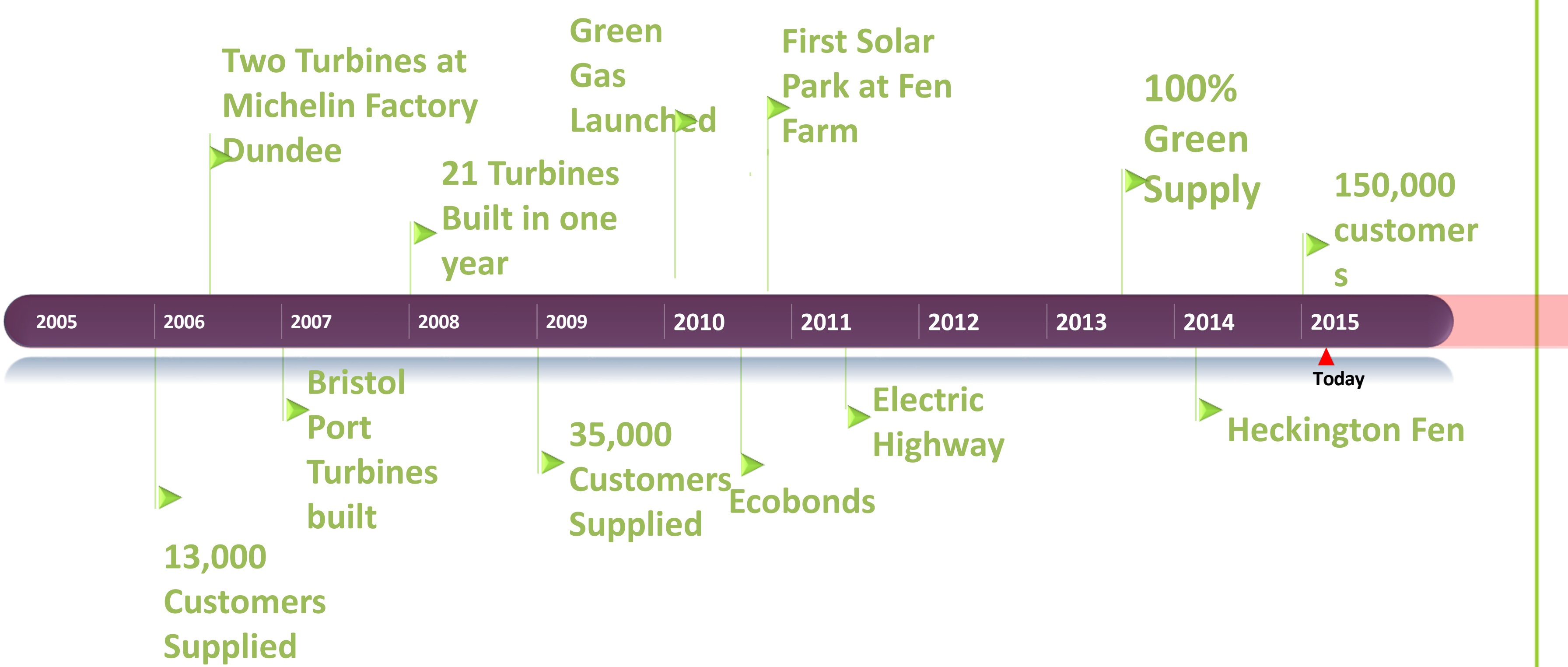

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Energy, Transport & Food

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Energy

Transport

Food

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Ecotricity's Market Outlook

Large Onshore Wind & Solar

70 MW Operational

10MW+ in Construction

60+MW Consented

200+MW in Pipeline

skylark

Joint Venture formed last year

50MW+ in Planning

Aim to deliver 350MW over 5 years

Ecotricity's Market Outlook

Small Scale Wind & Solar

Purchase of Evance

Britwind
Made in Green Britain

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Ecotricity R&D

Ecotricity R&D

Marine

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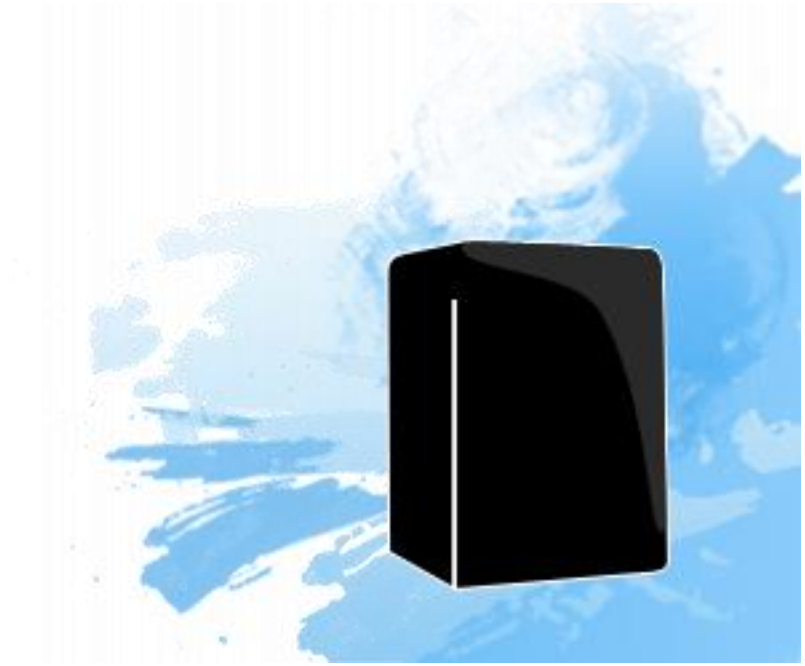
Ecotricity R&D

Ecotricity R&D

Electricity Storage



Fracking – Shale Gas

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Frackers beware: public views on UK energy mix put values above cost

New report finds that fairness, security, affordability and avoiding wastefulness are key to forming public views on energy

Shale gas 'worse than coal' for climate

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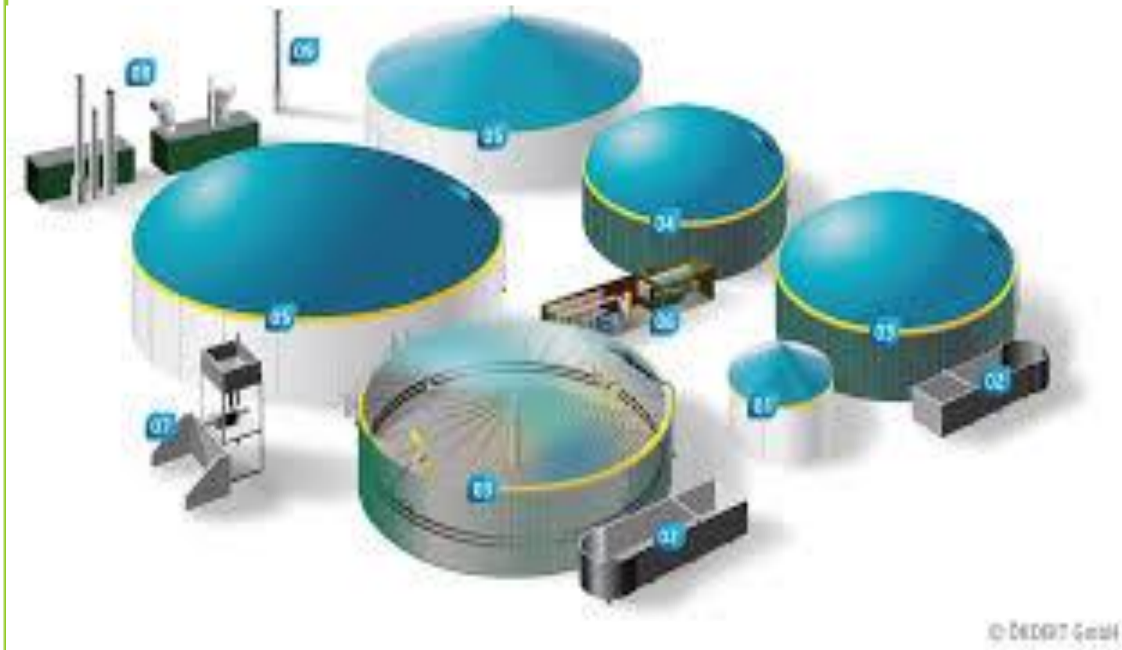
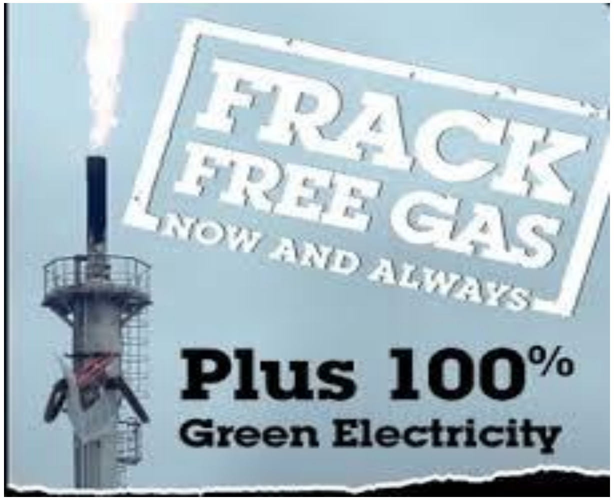
Ecotricity's Market Outlook: Green Gas





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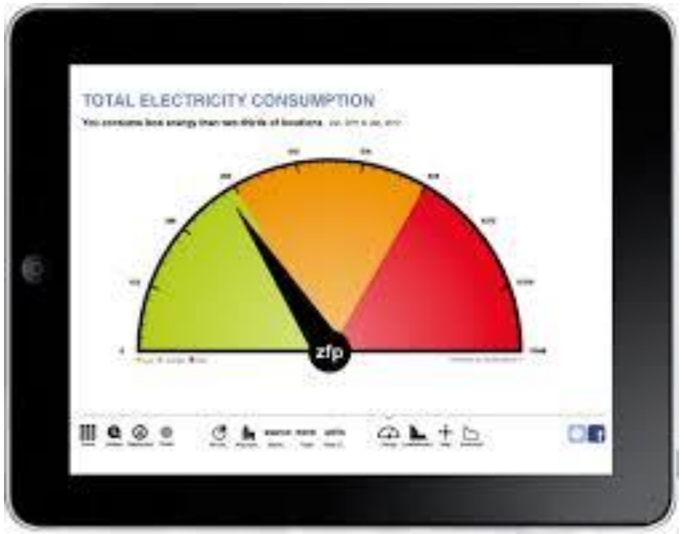
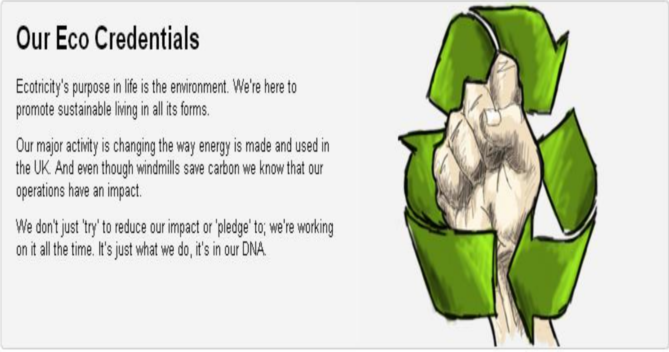
Ecotricity's Market Outlook: Retail





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The Human Touch

The Human Touch

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have the lowest number of complaints in the industry.

Complaints per 1,000 customers (2014). The Top 3

1) Ecotricity	0.86
2) Green Star	3.48
3) Utility Warehouse	6.48

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Summary

Summary

Summary: 25 Years
Quarter of a Century…

Key Area	Take Out
Privatisation	Successful ???
Liberalisation: The Big 6	Not enough competition
Liberalisation: Small Suppliers	Inevitable, Been slow
Oil Prices: Impact	Clear evidence, Hear to stay
LCOE	Renewable vs. Fossil Fuel
Regulation	Unfocussed and slow

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Summary: 25 Years
Quarter of a Century…

Key Area	Take Out
Media Coverage	**Will continue - Trilemma**
Future Prices	**Up. Question is how much and how quick**
Sustainability	**Will continue to be key: Distributed Generation**
	**Aim to be:** **- Cutting edge** **- Sustainable** **- UK Focused** **- People Centric**

Thank You

Thank You

Questions

Questions

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