Presentation of the Hatfield IGCC Project

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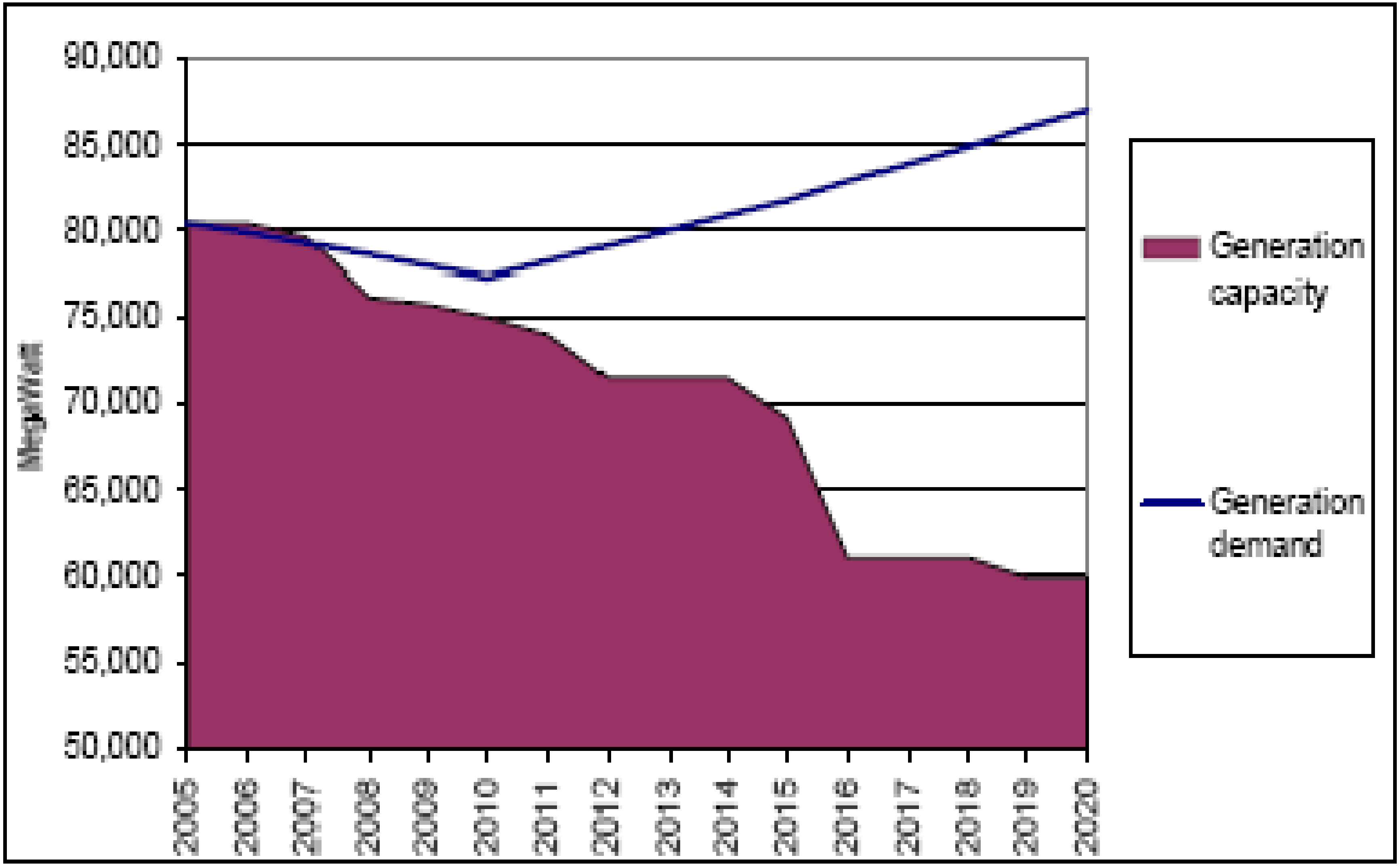
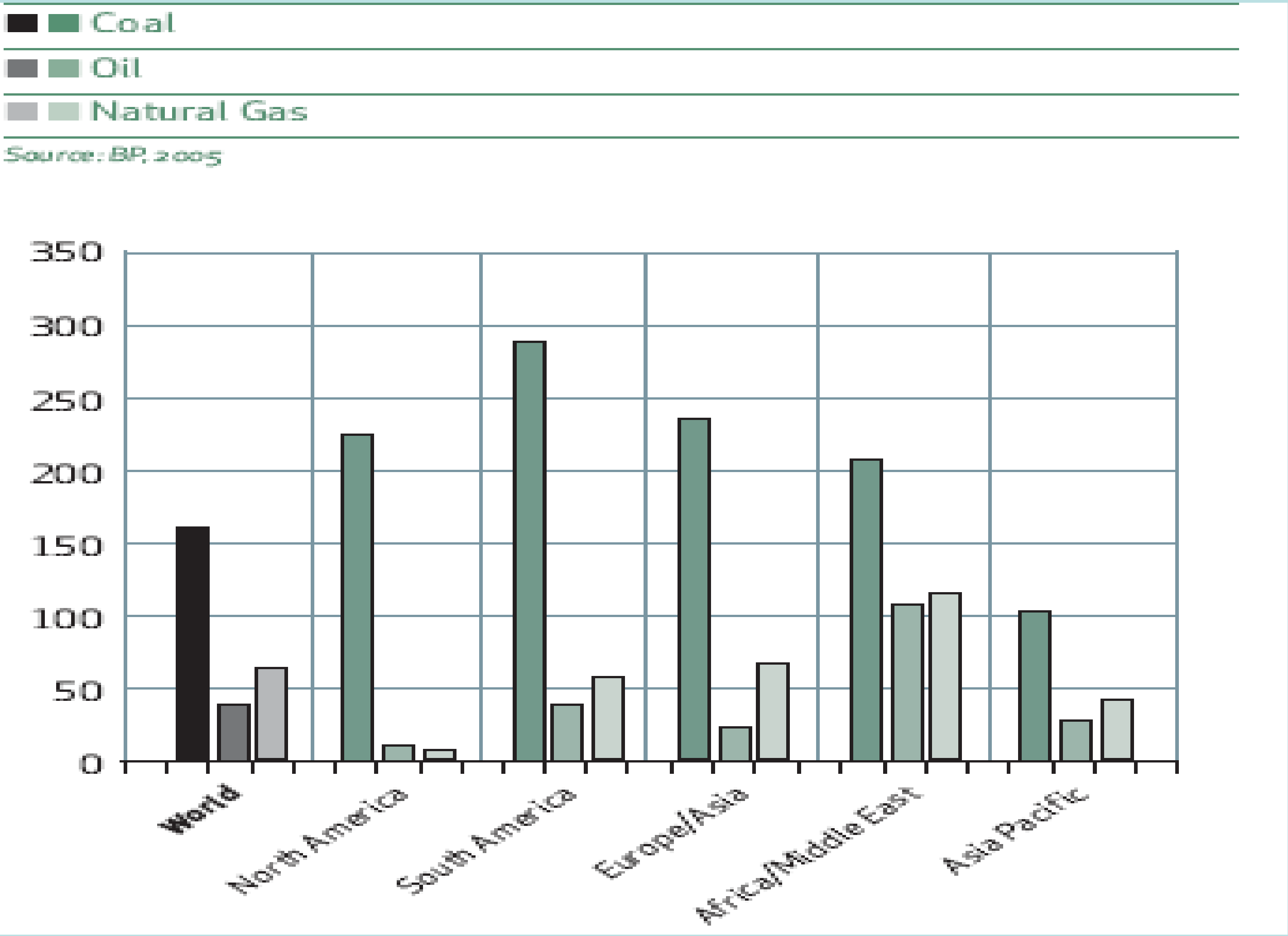
The Generation Gap



…..the UK needs major investment in new generating capacity….

Reserves/Production Ratios



The case for coal fired power

- Abundance of coal
- Proven technologies for generation
- Wide choice of coal suppliers and geography (including UK!)
- Low cost
- Can be stored
- Can generate flexibly
- No major safety/waste issues

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Stern Review – for HM Treasury

- Climate change risks to economic and social activity are similar to those associated with the great wars
- It is difficult or impossible to reverse them
- Climate change threatens access to water, food production, health, use of land etc
- The poorest countries and people will suffer earliest and most
- The costs of stabilisation at 500-550 ppm CO2 are ca 1% of GDP by 2050
- Power sector should be 60-75% decarbonised by 2050
- CCS allows continued use of fossil fuels without damage
- Establishing a carbon price is essential policy measure
- Policies are required to support low carbon technologies URGENTLY

…..there is a need for investment in coal power – with carbon capture……

The Opportunity for Gasification

- Greater diversity of fuels, and fuel sources
- Renewed interest in coal to liquids
- High CO2 concentration, pressure
- Proven carbon capture processes
- Offers hydrogen co-production
- Natural gas replacement possible
- Use of proven technology throughout

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The Hatfield Power Project

- Owned by Powerfuel Plc
- New investment in colliery secured
- 51% shareholding from Kuzbassrazrezugol (KRU), Russia
- KRU – world top 10 coal exporter
- Powerfuel is first major acquisition for KRU outside Russia

Hatfield, South Yorkshire

The Hatfield IGCC Project

- Colliery in Yorkshire, NE England
- Access to potential 100 million tonnes coal
- Has planning permission and partial government consent to build IGCC power station – only UK coal station with consents in place
- 25 miles from North Sea (for CCS/EOR)
- Cluster of power stations in area

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The Hatfield Power Project

Core Project

- Ca 900 MW (gross) coal fired IGCC
- Current target generation 2012
- Carbon capture from outset
- £1 billion project financing

Other features

- Hydrogen available for transport use
- Could supply syngas to CCGTs, (nat gas grid?)
- Bio-ethanol investment on site

Key Issues

- Engineering work
- Contracting strategy
- Development of CO_2 infrastructure
- Regulatory issues in North Sea
- Long term allocation of units in ETS
- Protocol for release of ETS units for CCS
- Government support framework

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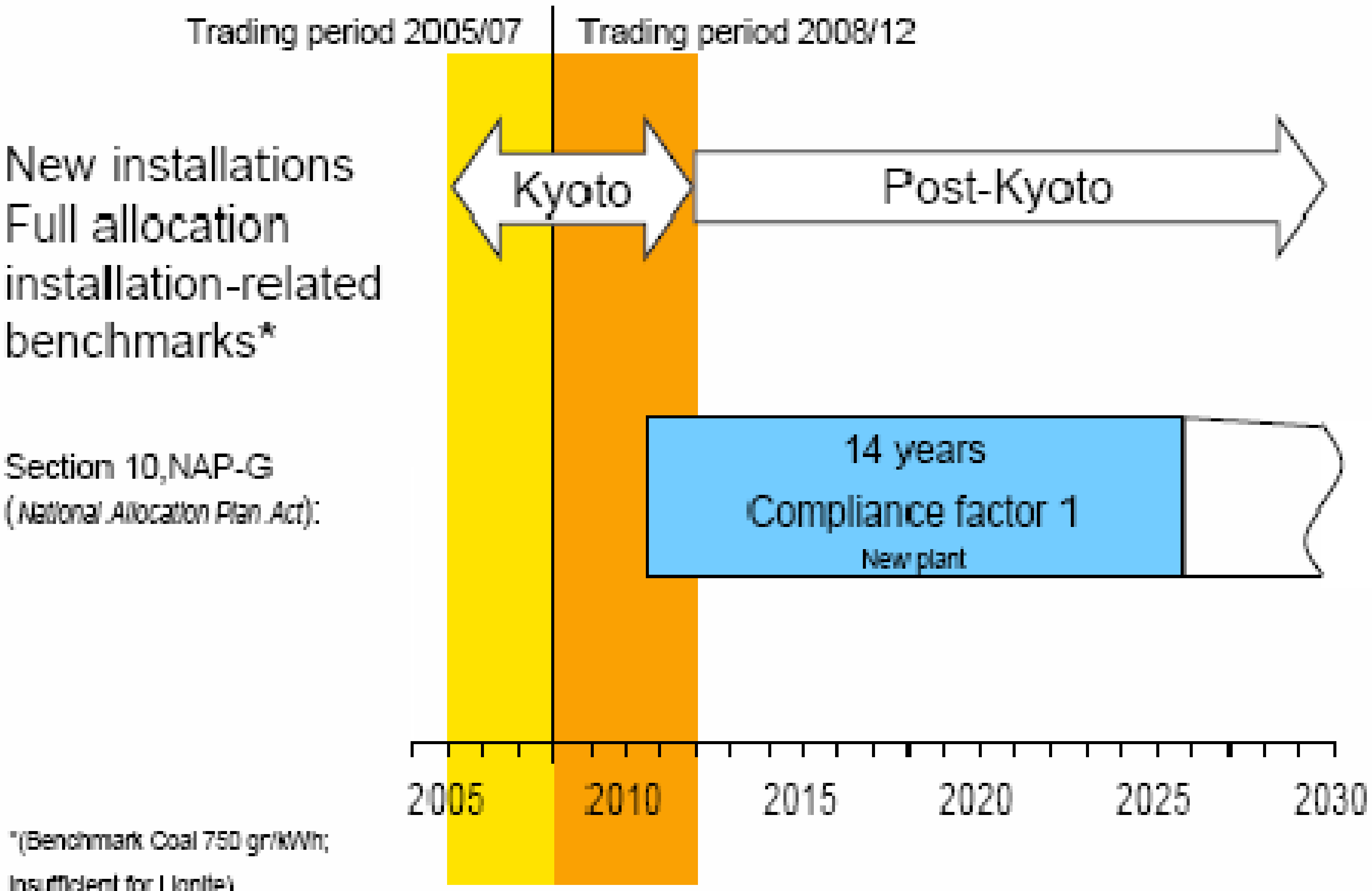
…...the issue of EU ETS allocations…..

CO_2 Emissions and ETS Allocations

1000MW Coal fired Power Station	CO_2 Emissions Million tonnes p.a.	Free ETS Allocation Million p.a. units	Value of Allocation @ €25/t	CO_2 Emissions Saved Million tonnes p.a.
Existing (old) coal UK station	6.8	4.1	€102 m.p.a.	0
New UK – e.g. Hatfield	0.6	2.1	€53 m.p.a.	5.4

Source – Clean Coal Task Group

Emission trading regime in Germany gives longer term certainty



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New German Station	5.6	5.6	€140 m.p.a.	0

*Source – Clean Coal Task Group

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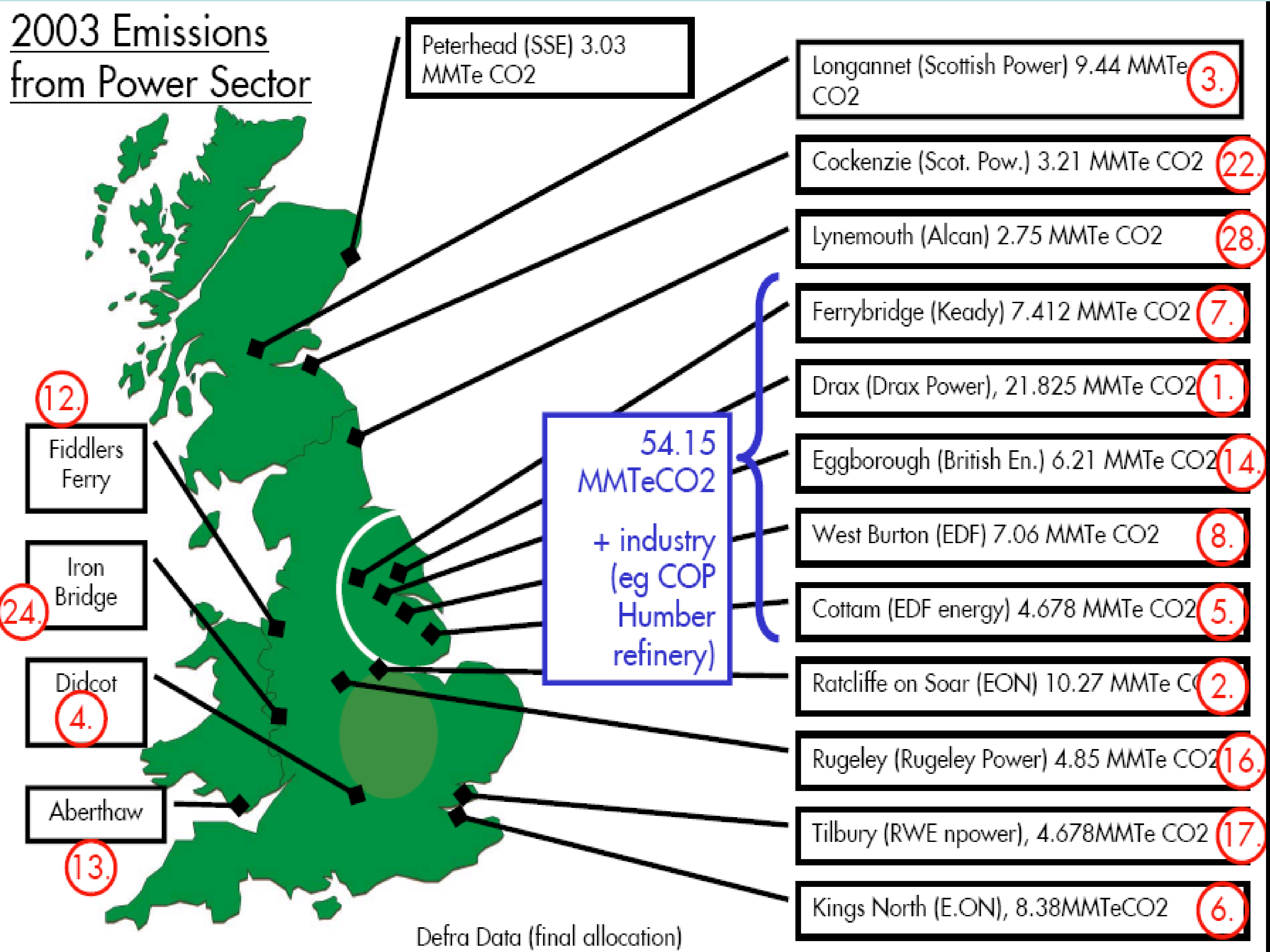
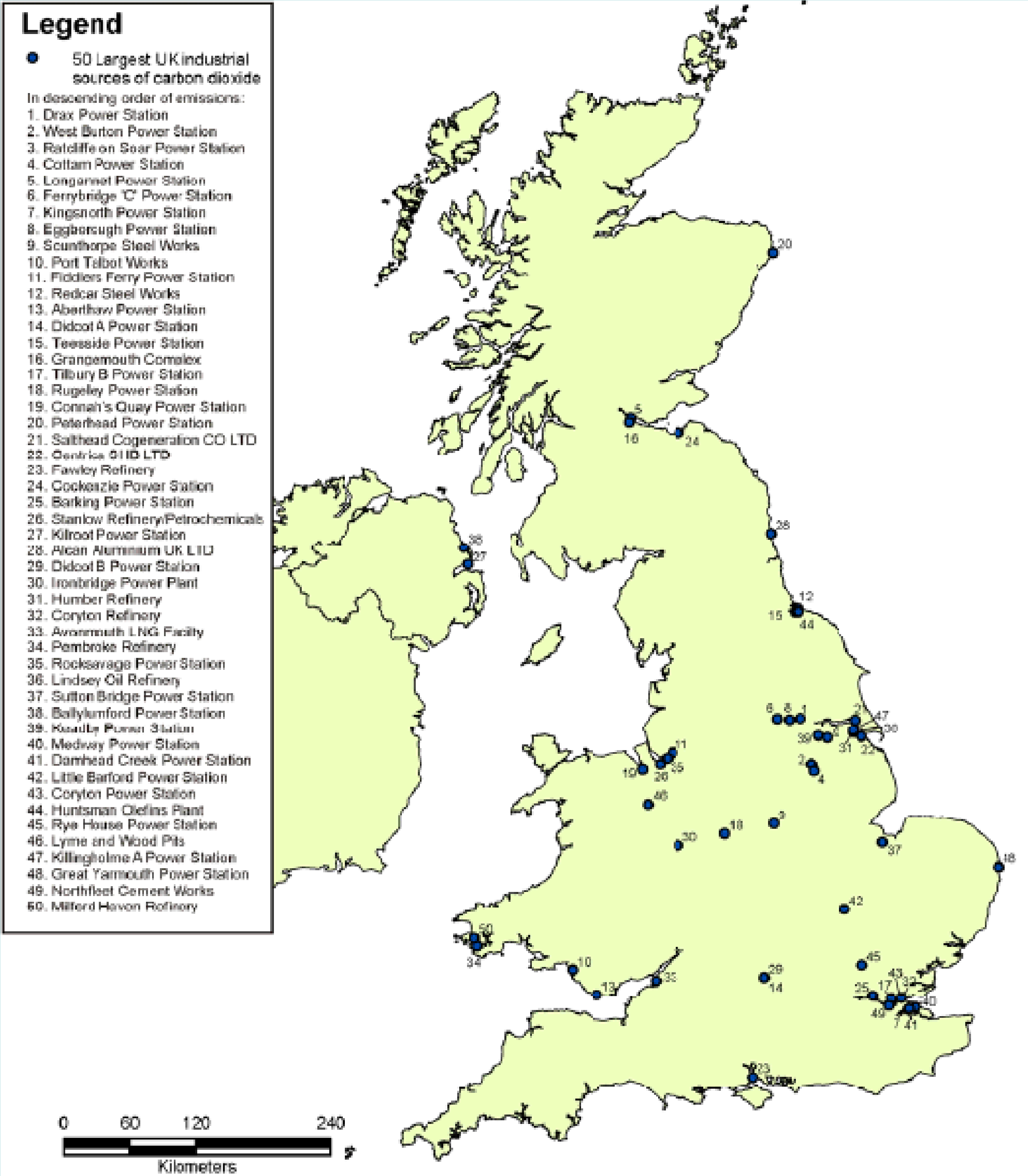
….the CO_2 transport infrastructure issue…



Defra Data (final allocation)

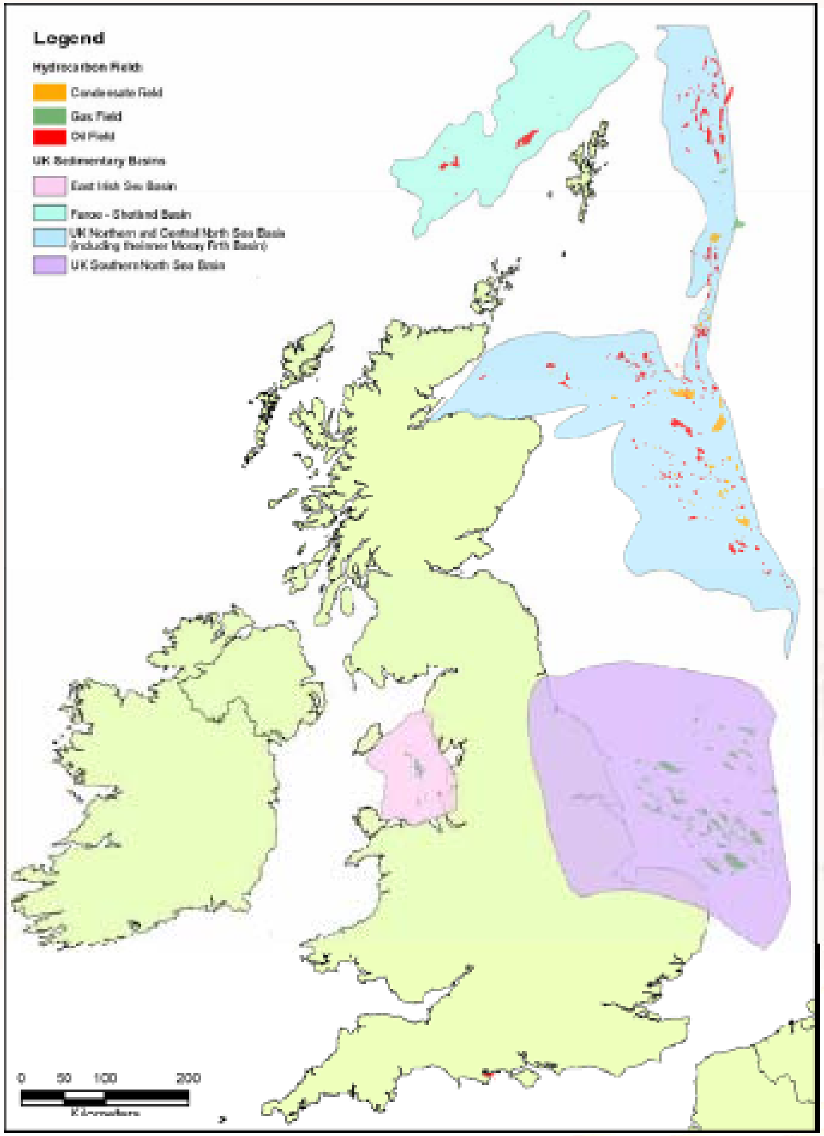


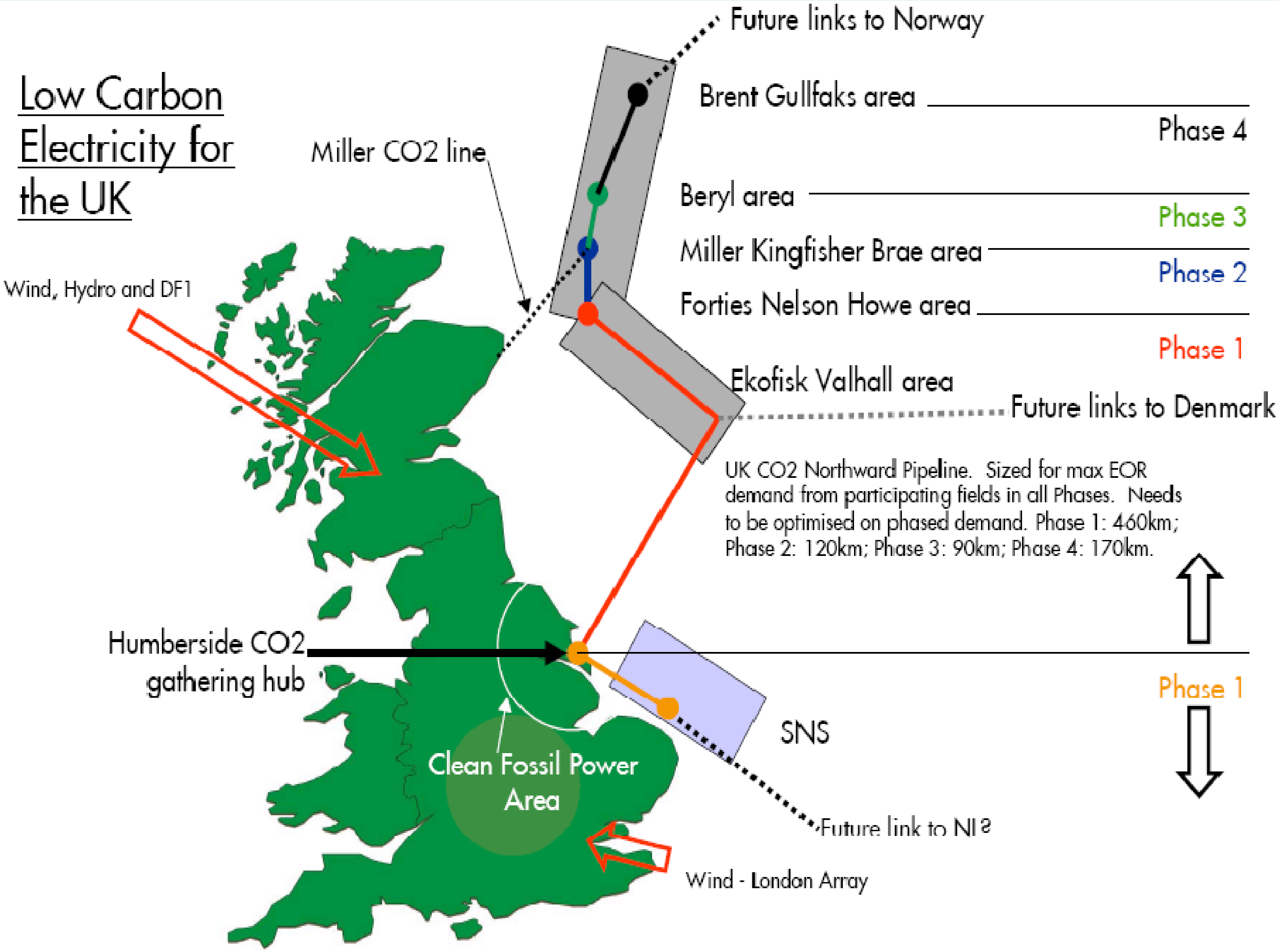
Clusters of sources

1. At and around Humberside
2. Thames estuary
3. Merseyside
4. Forth estuary

Sinks

- Oil fields
- Gas fields
- Gas/condensate fields
- Saline-water-bearing reservoir rocks (saline aquifers)
- Coal seams

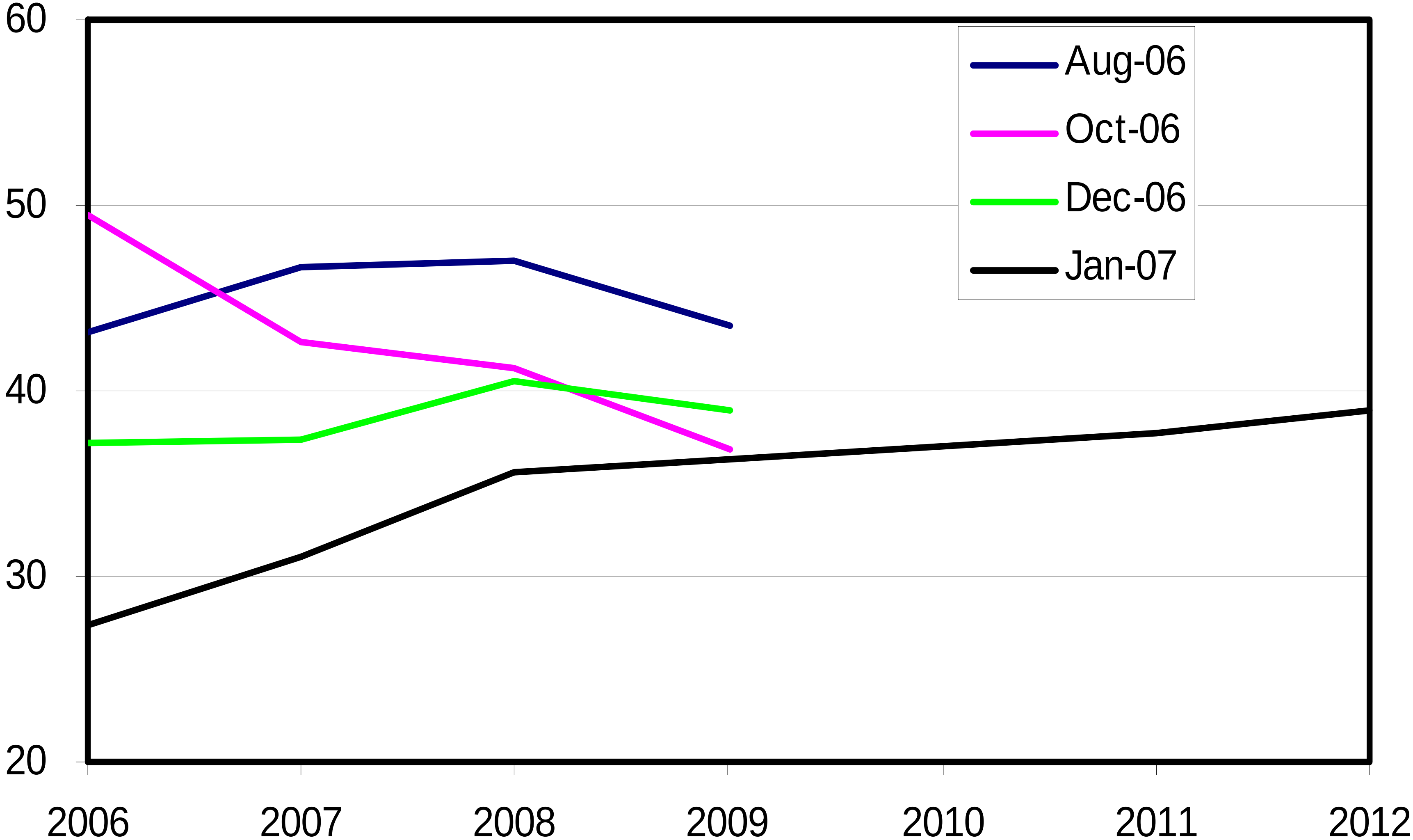


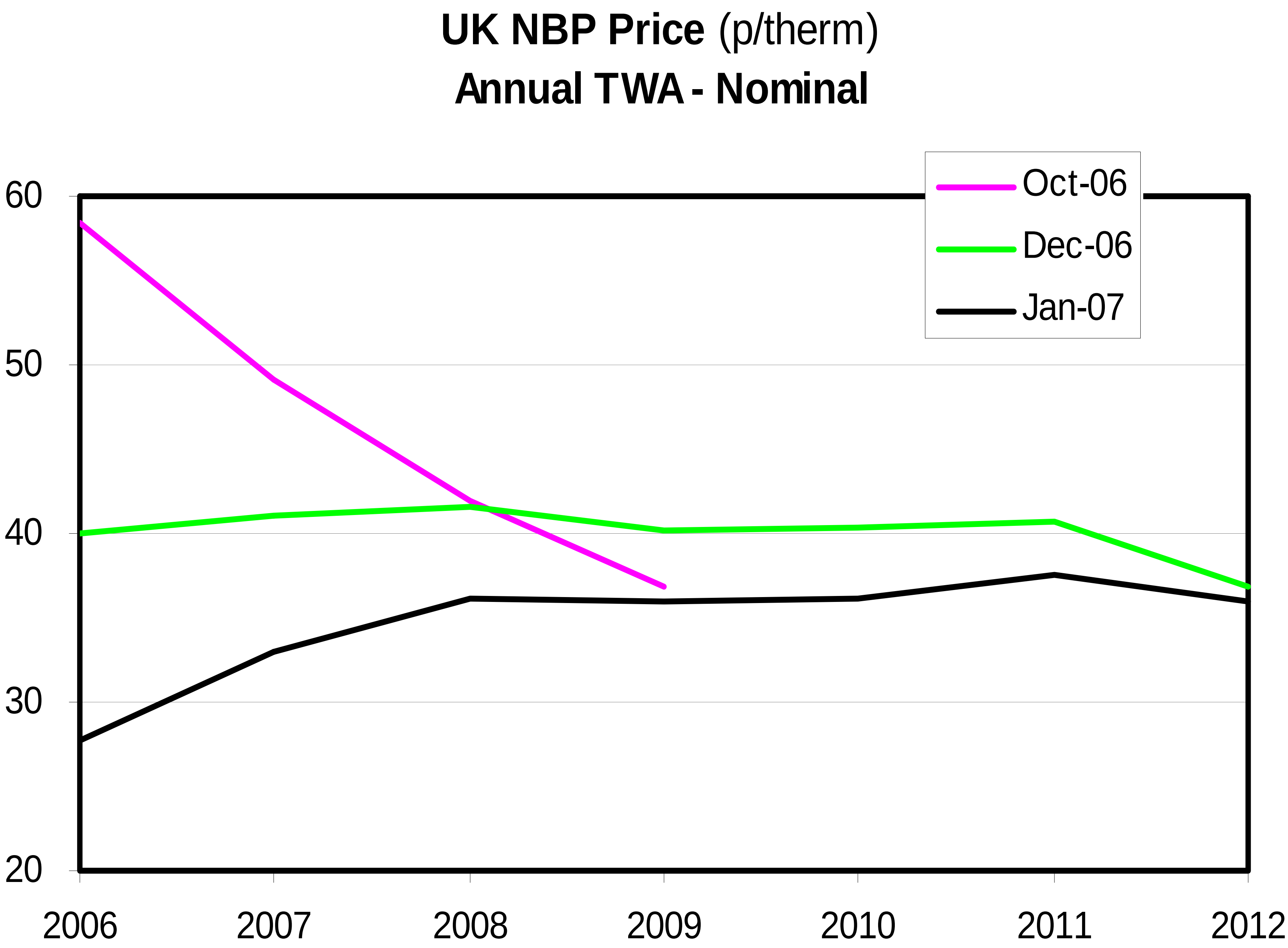

Low Carbon Electricity for the UK
Future links to Norway
Brent Gullfaks area
Phase 4
Miller CO2 line
Beryl area
Phase 3
Miller Kingfisher Brae area
Phase 2
Forties Nelson Howe area
Phase 1
Wind, Hydro and DF1
Ekofisk Valhall area
Future links to Denmark
UK CO2 Northward Pipeline. Sized for max EOR demand from participating fields in all Phases. Needs to be optimised on phased demand. Phase 1: 460km; Phase 2: 120km; Phase 3: 90km; Phase 4: 170km.
Humberside CO2 gathering hub
Phase 1
SNS
Clean Fossil Power Area
Future link to NL?
Wind - London Array

Strong progress

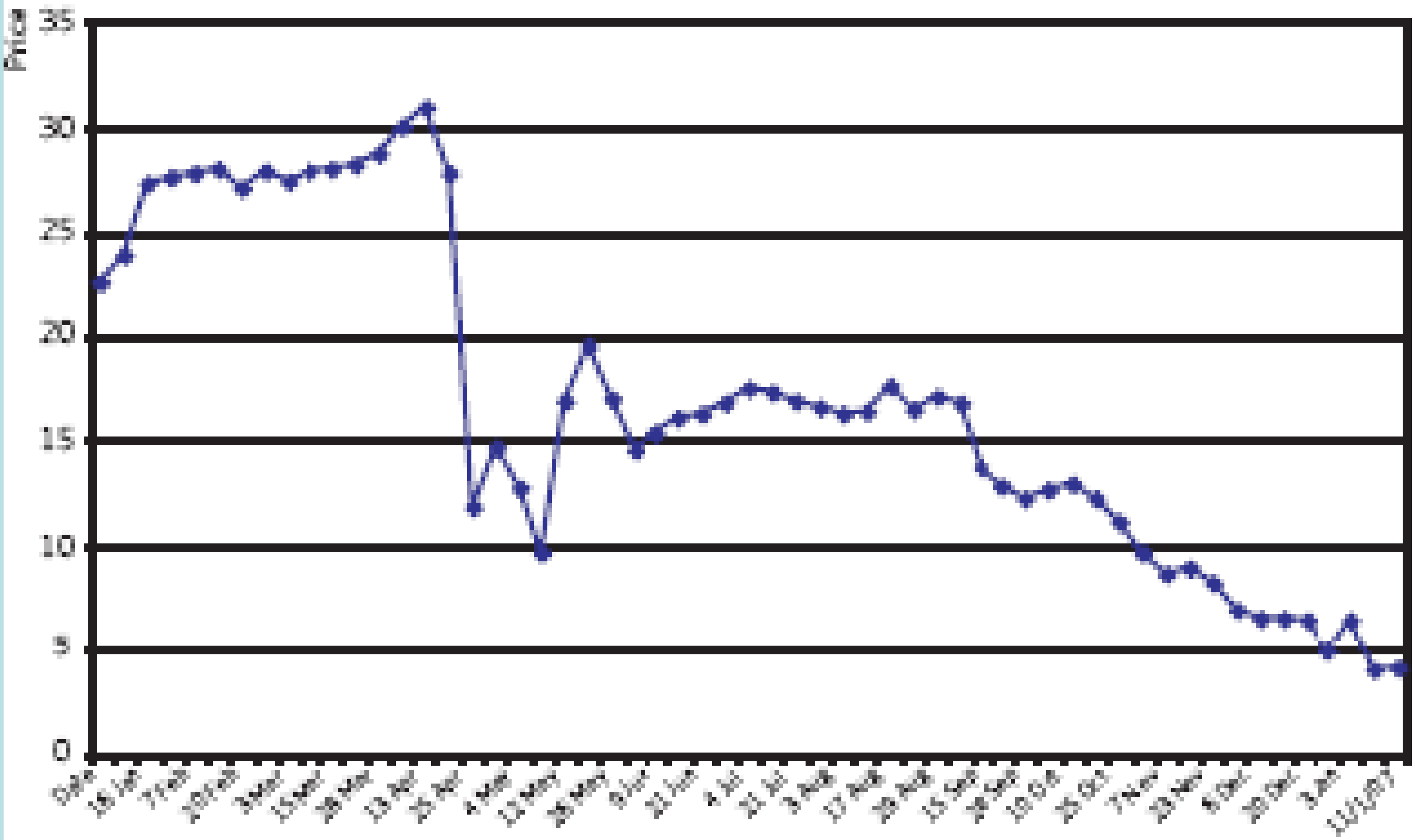
- Gasifier licence agreement signed
- Shell technology selected
- Connection agreement with National Grid
- Prelim design package complete April 07
- Discussions re CO2 line continue
- FEED work being initiated

UK Base Load Price (£/MW)
Annual TWA - Nominal




UK NBP Price (p/therm)
Annual TWA - Nominal
Oct-06
Dec-06
Jan-07
60
50
40
30
20
2006
2007
2008
2009
2010
2011
2012

Market Price of EU Allowances in €/t, 2006-07



Source: Point Carbon

Current big risks

- Lack of Government support framework
- Lack of CO_2 disposal infrastructure

The Hatfield Vision

- To be the first commercial coal fired power station in the world to generate with carbon capture

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Modelling the Hatfield Project

- Advanced modelling techniques
- Costs based on preliminary engineering
- Coal contract key advantage
- Market data subject to change
- Based on 2006 data – a robust project
- But ETS pricing is not bankable