



Is Energy Liberalisation Passé? A view from the UK

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Outline

- What is/was Energy Liberalisation?
- Is there reason to change?
- Visions of the future
- What does this mean for Energy Liberalisation?

What is/was Energy Market Liberalisation?

What was Energy Market Liberalisation (in the UK)?

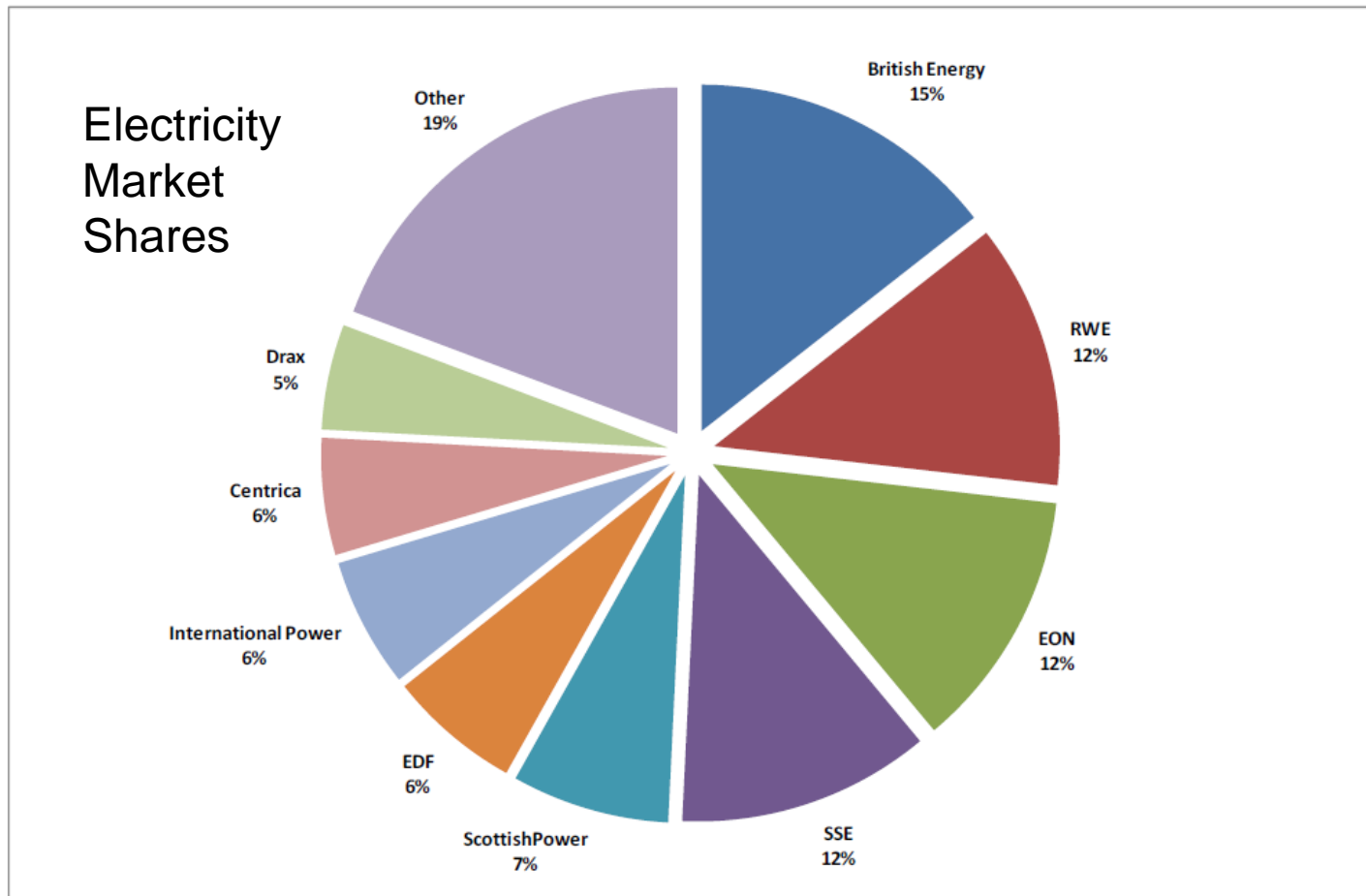
Table 1: Main Steps in Electricity Reform

Restructuring	- Vertical unbundling of generation, transmission, distribution, and supply activities
	- Horizontal splitting of generation and supply
Competition and Markets	- Wholesale market and retail competition - Allowing new entry into generation and supply
Regulation	- Establishing an independent regulator
	- Provision of third-party network access
	- Incentive regulation of transmission and distribution networks
Ownership	- Allowing new private actors
	- Privatising the existing publicly owned businesses

Progress Report: Restructuring

- Vertical ownership unbundling continuing to make progress:
 - TO/SO in Scotland (2005)
 - GDN/GTO in UK (2005)
 - DNO/Supply (significant voluntary ownership split)
- Evidence appears to be:
 - Further unbundling of TO/Generation necessary
 - Creation of GNO comparators successful
 - Further DNO/Supply straightforward

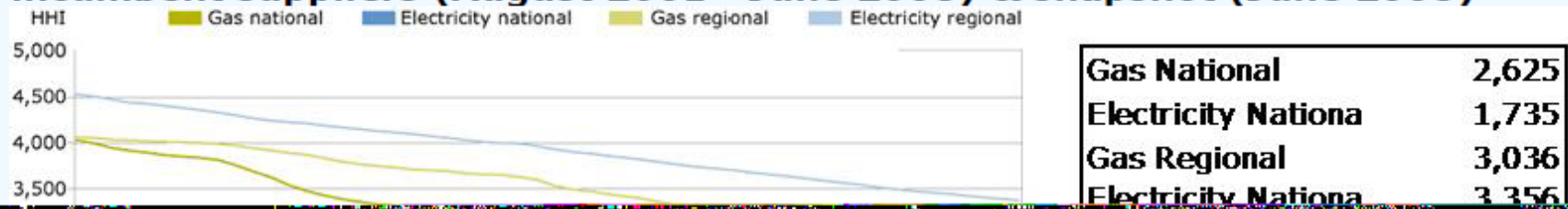
Progress Report: Wholesale Market Competition



HHI: c.1000. Gas more difficult to determine but also competitive.
Source: UK National Report to ERGEG, July 2008, p.37.

Progress Report: Retail Market Competition

Figure 3.5: Average electricity and gas supply HHIs for former electricity incumbent suppliers (August 2001 - June 2008) & snapshot (June 2008)



Memo: OFT: Concentrated HHI>1000, Highly Concentrated HHI>1800.
 Source: Energy Supply Probe, Initial Findings, October 2008, p.35.

Progress Report: Regulation

- Independent Regulator, Ofgem
 - Competition ‘wherever appropriate’
 - Sustainability and Fuel Poverty
 - New responsibility for ‘future consumers’
- Third party access
 - Distributed generation access
 - Grid code / locational pricing
- Incentive Regulation of Networks
 - DPCR5 ongoing
 - Subject to major review (RPI-X@20)

Progress Report: Ownership

- Successful sale of British Energy stake (to EdF) in Sept, 08.
- Electricity Transmission:
 - Only 8 EU-27 (inc.UK) with majority private TSO.
 - Only UK has 100% private ownership *and* ownership unbundling.
 - Auctions for OFTO licences proceeding. Possible move to ITOs/ISO model.

**Is there reason to change the
model?**

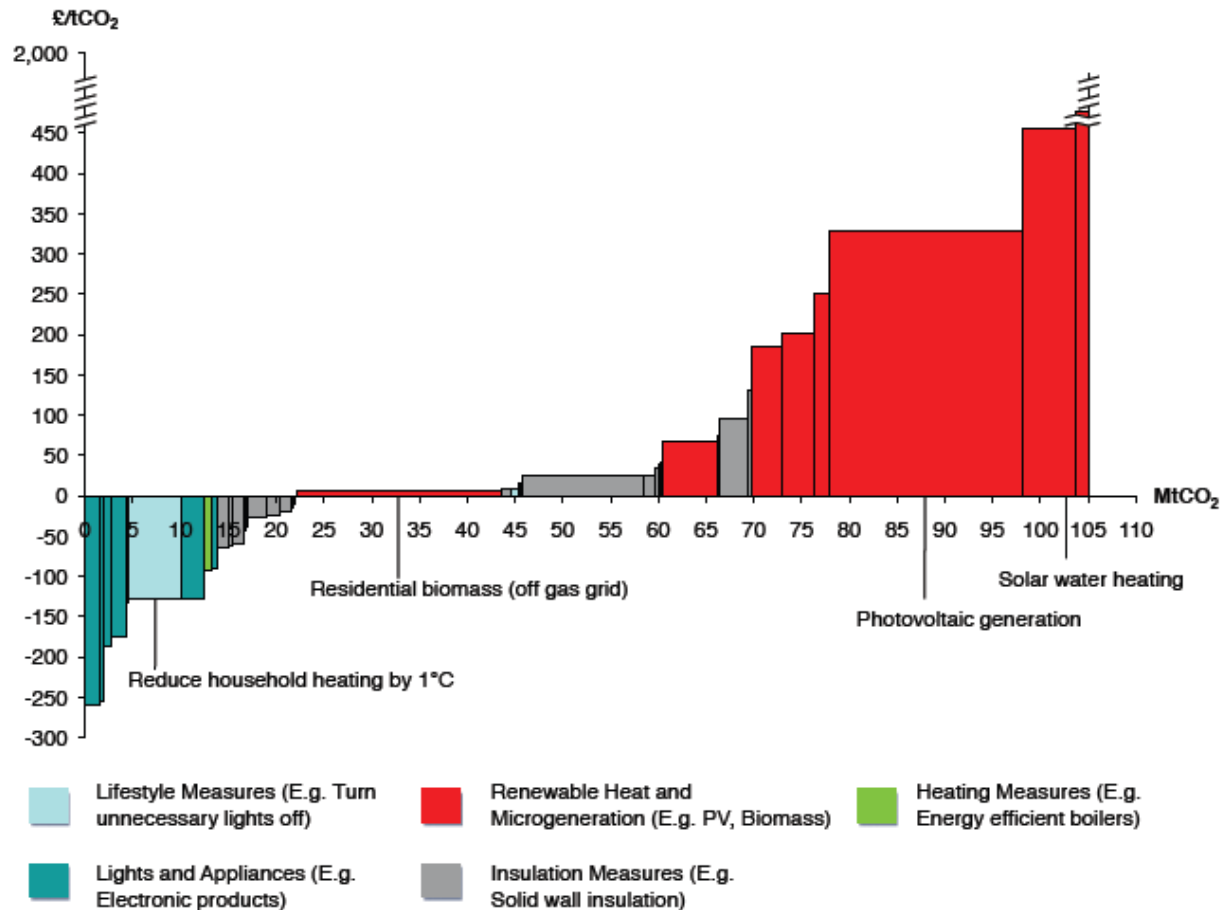
Drivers of Change

- Rising investment requirements
 - replace c.50 GW by 2030
 - expand and renew networks
- Growing concerns about fossil fuel supply
- Increasing intermittent renewables on system
- Climate change policy has tightened substantially
- Wildcard of effect of actual climate change?

Climate Change Policy in the UK

- Climate Change Act 2008
- CCC First Report:
 - 80% GHG reduction target by 2050
 - 26% (21% or 31%) reduction by 2020
 - 90% decarbonisation of electricity 2030
- Projecting 25% rise in electricity price by 2020
- Targets very ambitious by any standard, especially history of UK (worldwide only French Nuclear ramp-up comparable for 2020 target).

Figure 6.11 Residential sector MACC – technical potential in 2020 including hidden and missing costs and private discount rates and fuel prices



Source: CCC

Source: CCC First Report, 2008, p.226.

Note: Complete decarbonisation of residential building sector possible.

UK CCC Targets for 2022

Table 6.6 Emissions Reduction Potential from Energy Use in Buildings and Industry (MtCO₂)

	Technical Potential	Current Ambition	Extended Ambition	Stretch Ambition
Residential	105	13	29	32
Non-Residential Buildings	33	5	11	11
Industry	11	4	6	6
CHP	8	1	1	1
Total	152	23	47	50

Source: CCC

Extended ambition meets EU GHG 20% reduction target.

Source: CCC First Report, 2008, p.247.

How much will this cost?

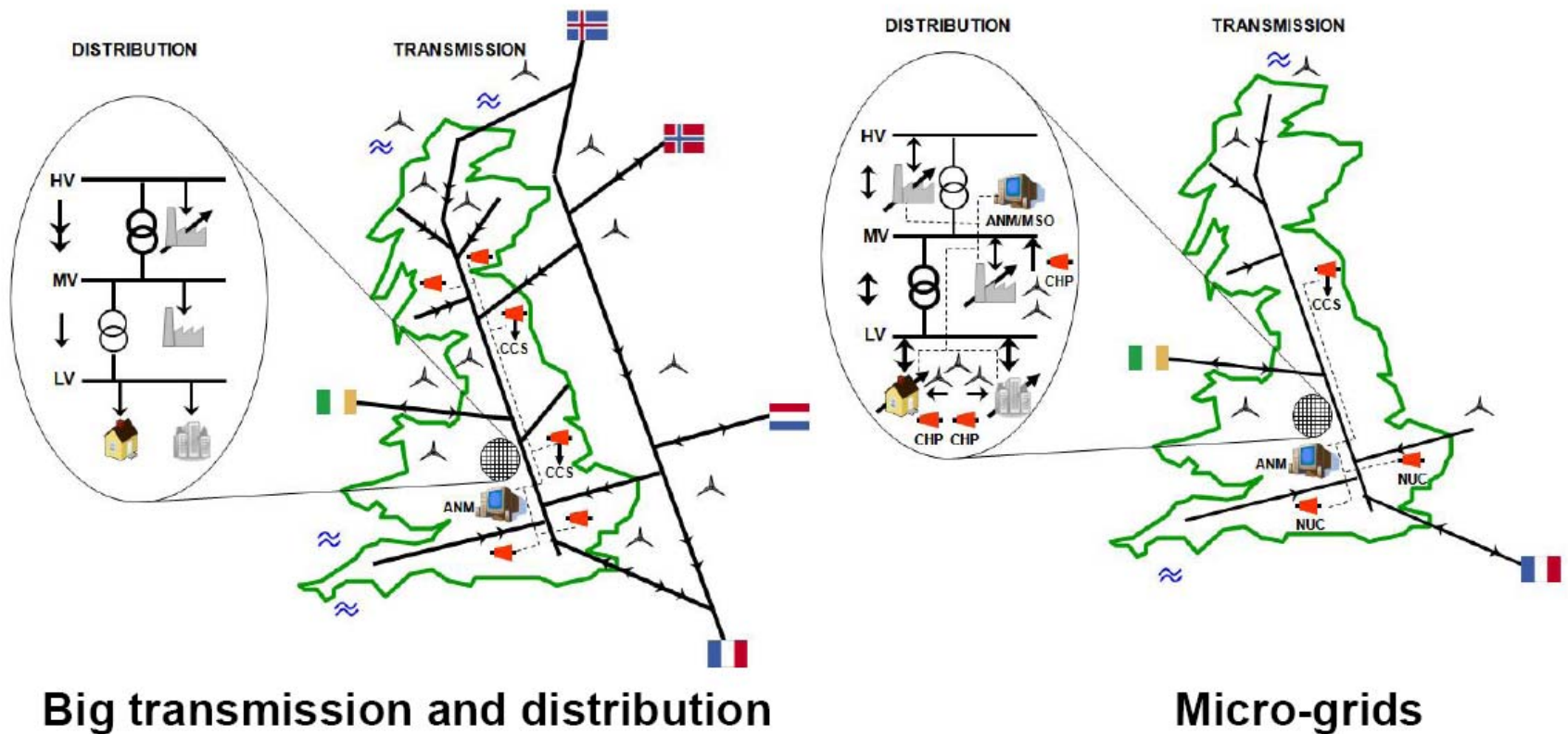
Table 1.5 Annual Total Costs and Benefits by 2020, (2008 prices)

	Conventional	Renewable Scenarios		
		Lower	Middle	Higher
<i>New Generation capacity (£ billion)</i>				
Renewable Capacity	2.3	50.1	60.2	77.4
Non- Renewable Capacity	14.9	12.6	12.3	12.0
<i>Total</i>	<i>17.2</i>	<i>62.7</i>	<i>72.5</i>	<i>89.4</i>
<i>Network (£ billion)</i>				
Offshore wind connection	0.0	8.4	10.6	14.1
Onshore wind connection	0.1	1.0	1.2	1.4
Other reinforcement	0.8	0.8	0.8	0.8
<i>Total</i>	<i>0.9</i>	<i>10.2</i>	<i>12.6</i>	<i>16.3</i>
Total Grid Investment Costs (Generation+network)	18.1	72.9	85.1	105.7
<i>Marginal Generation cost</i>	35.9	25.0	22.6	18.9
<i>Cost per MWh produced (£/MWh)</i>				
Generation costs (Fixed and variable)	46.8	51.9	52.6	54.5
Balancing and intermittency	1.7	6.3	7.2	8.7
Grid expansion for renewables	0.1	3.5	4.1	5.2
Total Cost including network (£/MWh)	48.6	61.7	63.9	68.4

Source: SKM (2008, p.8)

Visions of the Future

Uncertainty about the Future: The UK power grid in 2050 (two scenarios)



See: Ault et al., 2008

Table 1: The LENS scenarios

<p>Big Transmission and Distribution (T&D) – in which transmission system operators (TSOs) are at the centre of networks activity. Network infrastructure development and management continues as expected from today’s patterns, while expanding to meet growing demand and the deployment of renewable generation.</p>
<p>Energy Service Companies (ESCOs) – in which energy services companies are at the centre of developments in networks, doing all the work at the customer side. Networks contract with such companies to supply network services.</p>
<p>Distribution System Operators (DSOs) – in which distribution system operators take on a central role in managing the electricity system. Compared to today, distribution companies take much more responsibility for system management including generation and demand management, quality and security of supply, and system reliability, with much more distributed generation.</p>
<p>Micro-grids – in which consumers are at the centre of activity in networks. The self-sufficiency concept has developed very strongly in power and energy supplies. Electricity consumers take much more responsibility for managing their own energy supplies and demands. As a consequence, microgrid system operators (MSOs) emerge to provide the system management capability to enable customers to achieve this with the new technologies.</p>
<p>Multi-purpose Networks – in which network companies at all levels respond to emerging policy and market requirements. TSOs still retain the central role in developing and managing networks but distribution companies also have a more significant role to play. The network is characterised by diversity in network development and management approaches.</p>

Source: Ault et al., 2008, Forward by Stuart Cook.

LENS scenario implications: Some principles

- Presumption of engagement between players
- Use of competitive mechanisms where possible
- Role of differentiated pricing
- Value in keeping options open at start
- Need to be consistent in climate change agenda

What does this mean for Energy Liberalisation?

Restructuring Prospects

- Near Term:
 - TO/Generation split in Scotland
 - ISO/ITOs split
- Longer Term:
 - DNO/Supply split completed
 - DNO/DSO split
 - Local wire unbundling? (See Pollitt, 2009b, EPRG 0914)
- Smarter grids means information/hard asset split.

Competition Prospects 1

- Failure of EU ETS price signal a big problem for a competitive generation market in Europe.
- Failure to develop a competitive European gas market a threat to UK (but more to Europe).
- Threats from renewable/low carbon funding mechanisms:
 - Lots of lobbying for specific projects
 - ROC schemes can work (but don't in UK)
 - Return to low carbon capacity auctions sensible.

Competition Prospects 2

- However competition is an evolutionary process which responds well to sustained long run incentives.
- This is not primarily an optimal control problem but a problem of incentives.
- Decentralisation of solutions in the face of complexity is the only sensible option.
- Therefore important to:
 - Incentivise demand response
 - Allow new entrants and business models
 - Have wider view of ‘competition’
 - Realise international markets are important.

Regulation Prospects

- Still a major issue as to the role of independent regulation in the climate policy era.
- However clearly role for oversight of competition in the sector and of competitive delivery of government targets (Pollitt, 2008).
- ‘Sub-government’ role of regulator in managing ‘negotiated settlements’ (Littlechild and Cornwall, 2009).
- Regulation has to focus on promoting innovation, entry and experimentation in the interests of future consumers (see Cave, 2009).

Ownership Prospects

- Integrated national ownership of electricity a failure in UK.
- Some projects however might require public ownership/guarantees.
- Energy with a 'local face' may be important in education and demand side management.
- Energy poverty may be a significant driver of local government involvement.
- 'Consumer energy' via local cooperatives and self-generation may yet have a role.
- New technology will stimulate new players in the sector (e.g. from IT sector).

Conclusions

- Markets and proper incentives are never passé.
 - Markets are the primary driver of long-run economic progress.
 - But, they need to be regulated by appropriate local institutions.
 - Markets are dynamic institutions.
- Important not to panic (and abandon economic principles) in the face of a long-run economic problem.
- Markets have generally adapted well in the past to growing concern for the environment (and the incentives this brings).
- Energy security and fuel poverty clearly conflict with climate policy objectives and pose additional challenges.
- ‘Death by a thousand regulations’? (see Keay, 2006)
- None of the elements of liberalisation – restructuring, competition, regulation and private ownership - are going away.

Conclusions 2

- The EU Single Energy Market project shows mixed results so far: good for productivity, more difficult to say for prices (Pollitt, 2009b).
- However competitive, EU-wide markets in energy and carbon are necessary for every country:
 - To optimise location and remuneration of intermittent renewables (especially).
 - To sensibly allocate increasingly scarce natural gas.
 - To link in to global agreements on CDMs/Carbon.
- Effective national manifestations may show variety:
 - e.g. small scale municipal ownership in Scandinavia.
- However much bad economic reasoning remains in national policies, which are not in that society's interest.

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