ofgem Promoting choice and value
for all gas and electricity customers

Sustainable Development Report

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Target Audience: Consumer and environmental groups, gas and electricity market participants, Government departments and regulators, energy consumers and other interested parties.

Overview:

Ofgem has a duty to contribute to the achievement of sustainable development. In carrying out our remit, we have an important role in shaping the future of the gas and electricity industries, and we place environmental and social considerations at the heart of our activities. This annual Sustainable Development Report assesses the progress made towards developing more sustainable gas and electricity markets, provides an update of our activities and intentions over the next year as well as reflects on wider developments.

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Foreword

Achieving a sustainable low carbon economy is impossible without a low carbon energy sector. The challenges facing the energy sector to 2020 and beyond are clear - dramatic changes, over a sustained period, are needed to achieve a low carbon energy system. These changes will come at a significant cost, although the costs of unmitigated climate change will be higher, at a time of historically high energy prices, financial turmoil and difficult economic prospects. This combination presents real difficulties for vulnerable customers. Minimising these impacts is an important part of achieving sustainable development.

As energy regulator, we are alive to these tensions. We are committed to doing what we can to address climate change and to do so in a way that avoids unnecessary burdens on customers. A consistent theme of our work is working with Government and the electricity and gas sectors to create a framework for innovation and smarter solutions.

This report shows improvement on some key sustainability indicators such as a reduction in final energy demand from industry and households – and more could be made of these successes to reinforce behaviour change. But the report also highlights some critical areas where improvement is slow and further action is needed, such as the deployment of renewables. We see it as our duty to facilitate change where we can, either directly or by persuading relevant players to deliver the actions that we think are required. For example, Ofgem is working closely with Government and National Grid to improve how the transmission network is used and developed to reduce grid access constraints. This will facilitate the connection of more renewable generation and complement work being undertaken by Government to tackle other barriers to renewables deployment that are beyond Ofgem's direct control.

We are contributing to the sustainability of the energy sector across many other important areas. The impact of recent price rises on the fuel poor has been a key issue and our recent retail markets probe showed that some customers are being left behind. Building on the outcome of the Fuel Poverty Summit we held earlier in the year, we will work to extend the benefits of competition to all customers. We are also reviewing the governance of industry codes to ensure that the market rules allow timely changes to be made and we have made environmental issues a key theme of the distribution price control review. Externally, we continue to advise Government and European institutions on policies for reducing energy consumption and emissions.

Our approach to sustainable development embeds environmental and social considerations in our policy-making process. Consistent with Government guidance, we use the Shadow Price of Carbon in all of our Impact Assessments. But we have gone beyond that to build it into our policy instruments as well, including it when setting incentives for gas distribution companies and the transmission system operator to reduce losses.

We are building on our approach in our core activities to extend into other areas where a proactive approach could deliver more sustainable outcomes. For example,

we are working jointly with Government to develop offshore transmission arrangements and facilitate distributed generation. We are also developing our own intiatives, such as work we are now launching on energy consumption behaviours and the retail market. We have been working with the suppliers to create greater transparency in the marketing of green tariffs – with the goal of ensuring consumers understand the additional environmental benefits associated with specific tariffs. We are taking on new areas, such as the heat sector, and will use our expertise to inform the broader policy debate and advise as new policy proposals for the sector emerge. Alongside all of this, we have expanding responsibities in administration of programmes such as the Renewables Obligation, the Carbon Emissions Reduction Target and the tendering process for development of the offshore transmission network.

The Energy Act 2008 has made two notable changes to the duties of the Gas and Electricity Markets Authority. The first is to highlight that our principal objective refers to future as well as existing consumers. The second is the promotion of our duty to contribute to the achievement of sustainable development so that it is on an equal footing with our duties to meet reasonable demand and financing authorised activities. We recognise the importance of these amendments and welcome the opportunities the changes bring. The challenge of sustainable development is huge. Building on the progress we've made over the previous three years I am determined that we at Ofgem fully play our part in meeting this challenge.

Robin Bidwell
Chairman, Sustainable Development Committee
Gas and Electricity Markets Authority

Ofgem statement on sustainable development

The UK Government and Devolved Administrations set out a strategy for sustainable development, *Securing The Future*, in 2005. Drawing on this framework and stakeholder feedback, we focus on the five themes which we think capture how the Gas and Electricity Markets Authority should contribute to the sustainability challenges of the 21st century:

- **Managing the transition to a low carbon economy**. We are responsible for the framework for the efficient functioning of gas and electricity markets. Our decisions on the industry rules governing the wholesale and retail markets and the regulation of monopoly networks facilitate the development of lower carbon technologies. We are clear that any assessment of economic efficiency should incorporate the environmental costs associated with a proposal.

- **Eradicating fuel poverty and protecting vulnerable customers**. While the causes of fuel poverty go beyond energy markets, we are committed to driving forward the debate and working with Government to eradicate fuel poverty. Competitive markets can deliver lower prices, better service and more innovative products than regulated markets but some regulation remains necessary to protect vulnerable energy customers. Our position recognises the potential conflicts between seeking to tackle climate change and reducing fuel poverty but we aim to ensure that sustainable development is achieved at least cost.

- **Promoting energy saving.** Energy conservation and improved energy efficiency are critical elements in any sustainable development strategy. We recognise the huge range of benefits - environmental, social and economic - that energy saving can bring and are committed to playing our part to encourage all energy consumers to be more energy efficient and facilitating the provision of energy services by market participants.

- **Ensuring a secure and reliable gas and electricity supply**. Our regulation of the electricity and gas networks, and our commitment to sustaining a regulatory environment that supports investment, underpin our goal to ensure that cost-effective, reliable and diverse energy supplies are always available to consumers.

- **Supporting improvement in all aspects of the environment.** Beyond the climate change agenda, the gas and electricity industries affect the environment through other emissions and their impacts on our countryside and communities. We are committed to working with all stakeholders to ensure that we take these wider considerations into account in all of our decisions and provide advice where relevant.

1. Introduction

Chapter Summary

This chapter sets out the purpose and structure of this document. It also outlines the context for achieving sustainable development in the gas and electricity sectors.

Purpose of the document

1.1. This is our third annual Sustainable Development Report on Ofgem's commitment to its duty to contribute to the achievement of sustainable development. It is structured around a set of five themes and eighteen indicators that we have identified to assess progress towards making the gas and electricity markets more sustainable. The indicators capture what we think are the key measurable indicators of performance in sustainable development in the gas and electricity sectors.

Structure of the document

1.2. A section is provided on each indicator. It includes a description, a graphic presentation of the indicator and analysis of current status and trends. We also set out the contribution that Ofgem makes to improving performance under each indicator, provides an update on the actions set out in last year's report and identifies the actions that we intend to take in the coming year.

1.3. For each indicator we also include a short section on the broader context, "Meeting the challenge". This recognises that in many areas, the impact of our work is indirect and other bodies have primary responsibility and influence. It examines the issues from a broader perspective, summarising Ofgem's views of other parties' roles, including energy companies, Government and the Devolved Administrations, which have important environmental responsibilities, and European institutions.

1.4. In the final chapter, we set out the activities that we undertake to improve our internal practices, to build good working relationships with other organisations and improve understanding of social and environmental issues related to the energy sector.

Your views

1.5. We would very much appreciate your feedback on this report, including views on the relevance of existing themes and indicators and any new indicators that could be introduced. Your views will continue to influence the way in which we work and feed though into our corporate planning. Details on how to provide feedback are provided in Appendix 2.

Context for sustainable development in the gas and electricity sectors

1.6. Climate change and energy security are high on political agendas worldwide and the imperative to meet these challenges is reflected in the Government's four energy policy goals:

- to reduce carbon dioxide emissions – the main contributor to greenhouse gas emissions – by 60 percent by 2050 relative to 1990 levels[1];
- to maintain the reliability of energy supplies;
- to promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity; and
- to ensure that every home is adequately and affordably heated.

1.7. Over the last 12 months there have been several pivotal developments in energy policy, in the EU and the UK, confirming the direction of policy and increasing the level of ambition. For example, in March this year the Government committed to new EU targets to reduce carbon emissions by increasing the use of renewables to meet its share of the 2020 targets. The Government also passed Acts for Climate Change, Energy, and Planning in 2008 to help facilitate the UK's transition to a low carbon economy, and deliver a long-term secure energy supply.

1.8. At the same time, the global energy and economic context is evolving, which adds to the challenge, including:

- volatile fossil fuel prices and slower than expected liberalisation of EU energy markets at a time when the UK is increasingly relying on imported energy;
- heightened awareness of the risks arising from the concentration of the world's remaining oil and gas reserves in fewer regions around the world, namely the Middle East, North Africa, Russia and Central Asia;
- in the UK, companies will need to make substantial new investment in power stations, the electricity grid, and gas infrastructure; and
- a global financial and economic downturn.

[1] This is distinct from the target in the Climate Change Act to cut greenhouse gas emissions from the whole of the UK economy by 80 percent in 2050 relative to 1990 levels.

2. Theme 1 - Managing the transition to a low carbon economy

Chapter Summary

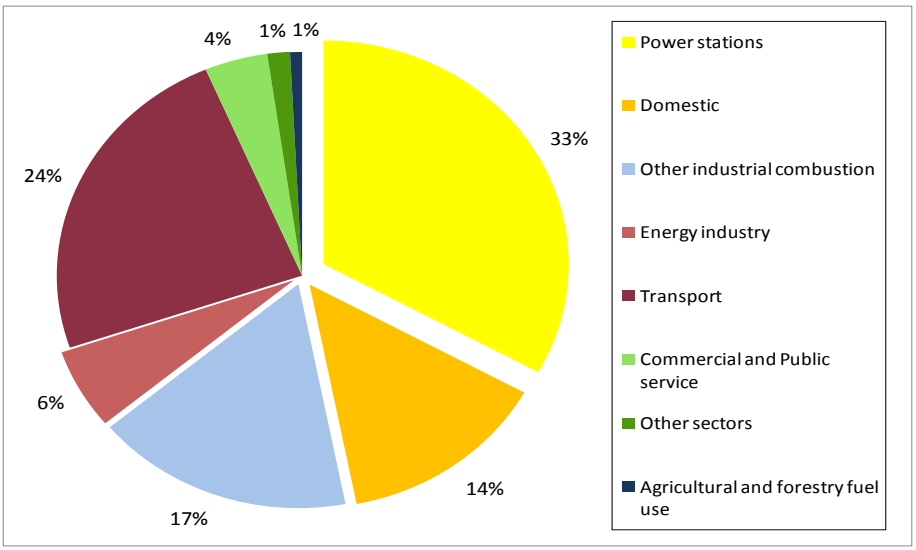
In this chapter we discuss the performance of the GB energy sector in contributing to a reduction in the carbon intensity of the wider economy. We look at the causes of changes in the performance of the sector and identify some of the challenges posed by making the transition to a low carbon economy. We also look at the policy measures and initiatives which the UK is using to meet these challenges. We examine developments against the following key indicators:

- Greenhouse gas emissions from the gas and electricity sectors
- Impact of carbon price on the cost of generation
- Renewable electricity generation
- Electrical capacity from combined heat and power

Introduction

2.1. The majority of greenhouse gas emissions (GHG) from the gas and electricity sectors comprise carbon dioxide (CO_2) from the combustion of fuels in power stations and from the direct use of gas by domestic and non-domestic consumers. Electricity generators, households and the industrial sector have an important role to play in tackling climate change. Together these sectors contribute around two thirds of CO_2 emissions (see figure 1).

Figure 1: Share of CO_2 emissions by end user in 2007[2]



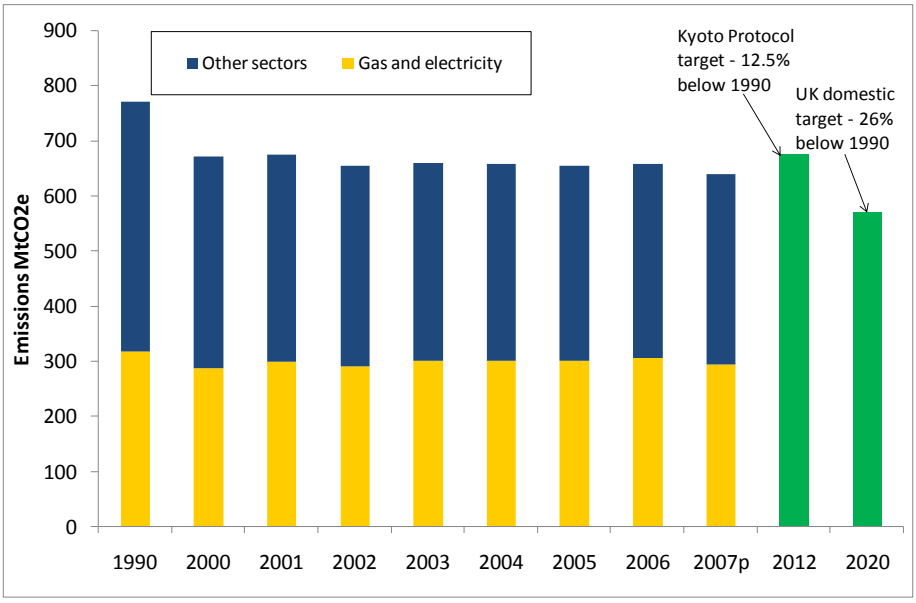
[2] Source: Energy Trends - BERR March 2008. Note: energy industry includes consumption to support the transformation process e.g. own electricity use in power plants and energy used to extract oil and gas. Other industrial includes industry other than energy, transport and agriculture. Other sectors include waste and fugitive emissions from fuels.

Indicator 1: Greenhouse gas emissions from the gas and electricity sectors

Trends in Indicator 1

2.2. Provisional estimates in figure 2 show that the UK's gas and electricity related GHG emissions fell by around four percent in 2007 from 2006, and are currently around 13 percent lower than 1990. The UK has an international commitment under the Kyoto Protocol to reduce net GHG emissions in 2012 by 12.5 percent relative to 1990 levels. The UK also has a domestic target for all of the UK economy to cut net GHG emissions by at least 26 percent in 2020 compared to 1990 levels.

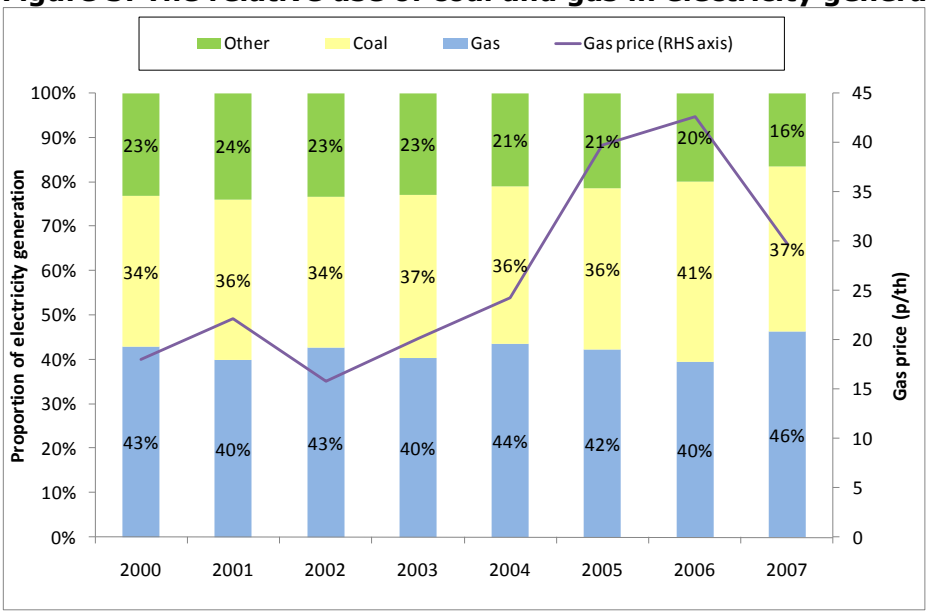
Figure 2: Gas and electricity sector contributions to national GHG emissions 1990-2007[3,4]



[3] Source: Major pollutants, NAIE 2007. Provisional data for 2007 calculated on basis of Table 5.1 – Fuel used in electricity generation and electricity supplied, DUKES 2008, BERR.

[4] Provisional estimates of carbon dioxide emissions for 2007 were produced by Defra and BERR in March from provisional inland energy consumption statistics. These provisional estimates will be subject to revision when final estimates are published in January next year, but they provide an indication of the emissions in the most recent calendar year. The majority of provisional estimates are within 1 percent of the final figures.

Figure 3: The relative use of coal and gas in electricity generation[5]



2.3. The reduction in CO_2 emissions can partly be explained by generators fuel switching to less carbon intensive fuels. In 2007 coal prices rose, whilst gas prices to generators fell (see figure 3). Consequently electricity generators that could do so switched some production from coal to gas fired stations. Generation from gas in 2007 was at a record level while generation from other sources fell due to a number of outages for repairs and maintenance and the closure of two nuclear stations. There was a small increase in renewable generation over 2007 (see indicator 3).

Update on Ofgem's commitments from 2007 Sustainable Development Report

2.4. **Contribute to managing the transition to a low carbon economy.** We have worked with Government on a number of policy initiatives established by commitments in the 2007 Energy White Paper. This included a joint review of transmission access arrangements, long-term electricity network scenarios, advice on proposed reforms to the Renewables Obligation and the Supplier Obligation, and responding to the Heat Call for Evidence.

2.5. In June 2008 Ofgem issued guidance to code panels on the consideration and treatment of the costs of GHG emissions under the existing code objectives. This guidance sets out Ofgem's view that the economic costs of GHG emissions should be taken into account by code panels and industry participants when assessing modification proposals for industry arrangements.

[5] Source: Energy Trends BERR 2008, Heren

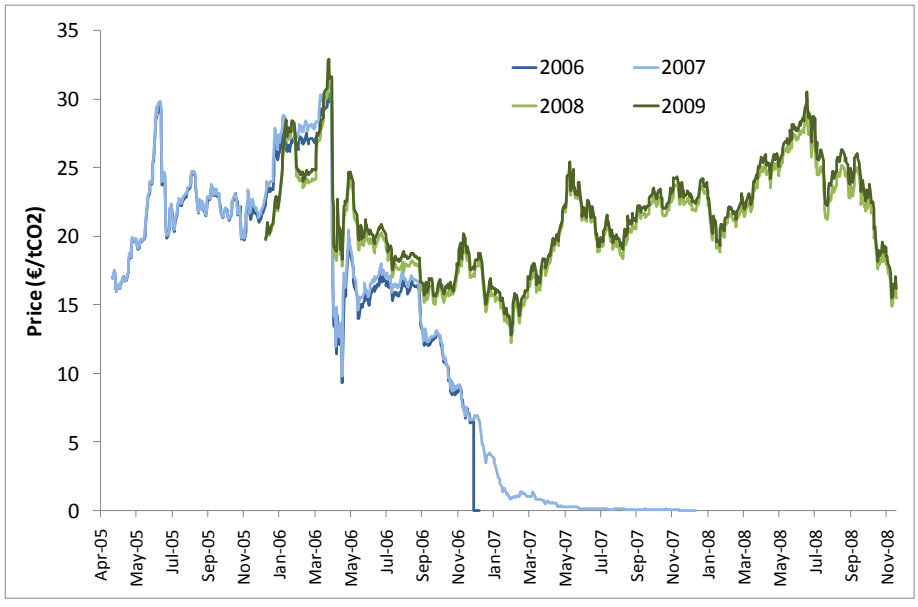
Indicator 2: Impact of carbon price on costs of generation

Trends in Indicator 2

2.6. At the heart of the UK's long term strategy is the EU Emissions Trading Scheme (EU ETS). The EU ETS has two fundamental components: a cap on emissions, and a system for trading the 'right to emit'. The cap sets a regulatory limit on the total emissions from the power sector and other large emitting industries across Europe. The installations are required to obtain an allowance for each tonne of CO_2 that they emit. The trading part of the EU ETS sees allowances allocated and/or auctioned to installations. Installations have to buy additional allowances if their emissions exceed those for which they have allowances, and can sell allowances they do not need. This trading in allowances, together with an overall cap on emissions, gives CO_2 a market and creates a 'carbon price'.

2.7. Apart from the initial constraints set by the EU ETS cap and National Allocation Plans, the expected level of emissions is the main variable that can change and affect the CO_2 price. As the scheme is strengthened and the number of allowances available is successively reduced, the carbon price, and hence the incentive to abate CO_2 emissions will increase. The forward price reflects the expected difference between the number of emission certificates and level of emissions over the phase of the scheme.

Figure 4: Evolution of EU ETS forward prices[6]



2.8. Figure 4 shows that forward prices for emission certificates in 2008 and 2009 strengthened over the first half of 2008, but have fallen in recent months. The increase earlier in the year largely reflected tighter allocations of emission allowances

[6] Source: European Climate Exchange

in Phase II of the EU ETS. In the UK, for example, the total number of allowances for Phase II is capped at 47 percent of projected emissions, whilst the proportion covered by the EU ETS is 52 percent. However, forward prices for carbon allowances have tumbled as a result of the sharp economic downturn and cuts in industrial production and a fall in demand for electricity across Europe.

Update on Ofgem's commitments from 2007 Sustainable Development Report

2.9. **Monitor the development of the allowance market.** Ofgem responded to the consultation on the proposed UK auction design for use during Phase II of the EU ETS.

2.10. As **chair of the European Regulators Sustainable Development Taskforce**[7] Ofgem led a response on behalf of the Council of European Energy Regulators (CEER) to the European Commission's consultation on the "Climate action and renewable energy package" (Green Package). We commended the approach in the proposed EU ETS Directive for strengthening Phase III of the EU ETS (the 2013-2020 period). This includes the removal of individual National Allocation Plans (NAPs), the introduction of 100 percent auctioning in the power sector, flexibility for Member States in how they might use a part of the auction revenues, and an increase in transparency.

Indicator 3: Renewable electricity generation

2.11. There is a clear imperative at the EU and domestic levels that renewables will play an important role in achieving a substantial decrease in the CO_2 emissions from the power sector.

2.12. In March 2007, the European Council committed the EU to a binding target of reducing GHG emissions by 20 percent. In January 2008 the European Commission published a Green Package to achieve this target including a proposal for a Renewable Energy Directive and a target to source 20 percent of final energy from renewable sources. The Commission has indicated that the UK's share of the renewable energy target will be in the region of 15 percent. The UK Government has committed to the new EU targets and proposed a target of 35 percent renewable electricity generation to meet our EU commitments in the consultation on a Renewable Energy Strategy.

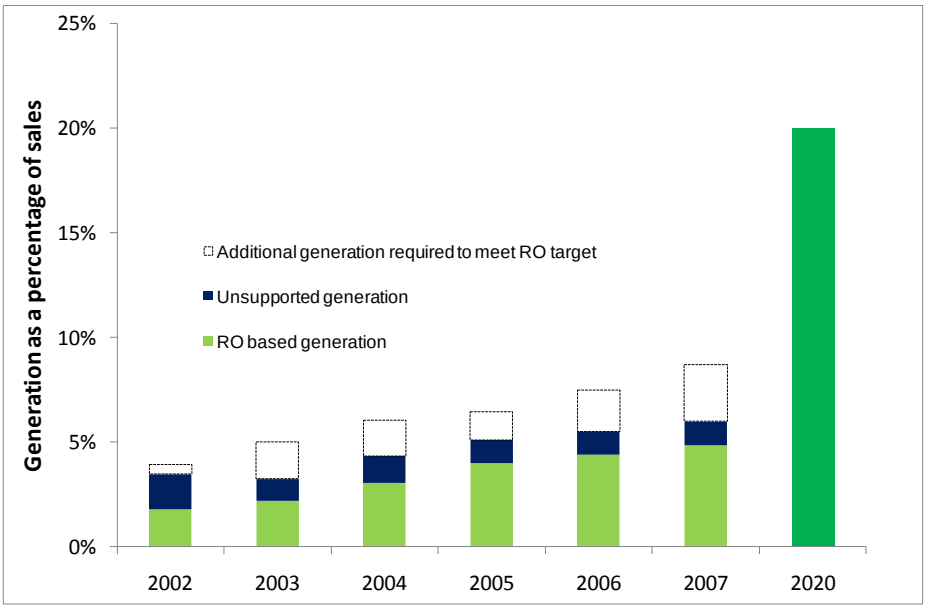
Trends in Indicator 3

2.13. Total renewable generation in Great Britain increased to six percent of sales in 2007 up from 5.5 percent in 2006. The current share is well below the renewable

[7] In 2008 the EU Regulators Environment Taskforce and the Renewable Energy Taskforce were combined to create the Sustainable Development Taskforce (SDE TF) with responsibility for issues concerning the environment, including renewables.

electricity required to meet the UK's contribution to the proposed EU 2020 Renewable Energy target (see figure 5).

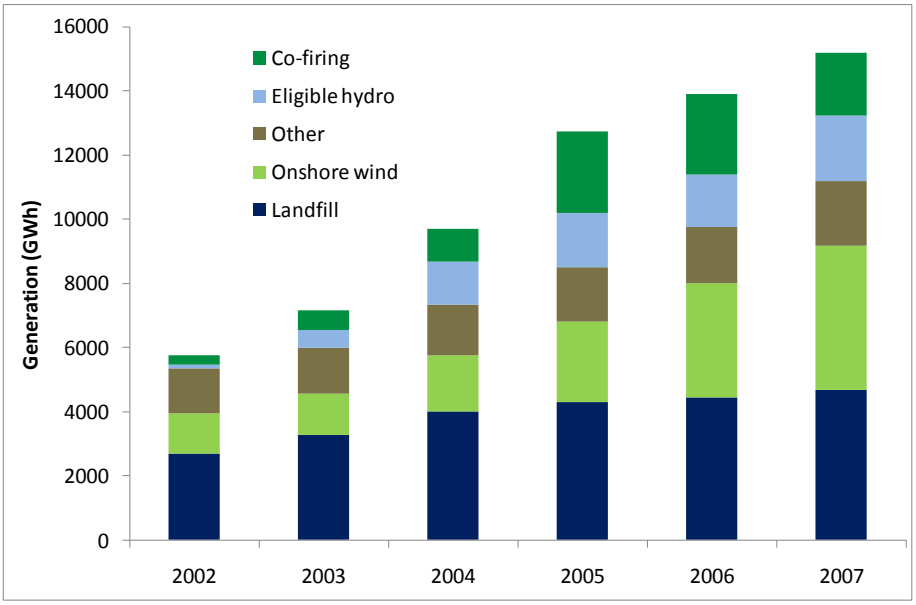
Figure 5: Electricity from renewable generation[8]



2.14. The Government's main support for renewable generation is provided by the Renewables Obligation[9]. In 2007 five percent of total renewable electricity sales in the Great Britain was eligible for the Renewables Obligation, up from 4.4 percent in 2006 (some renewable generation such as existing large hydro are not eligible). To date, most growth in renewable generation has been from onshore wind and co-firing generation as illustrated in Figure 6.

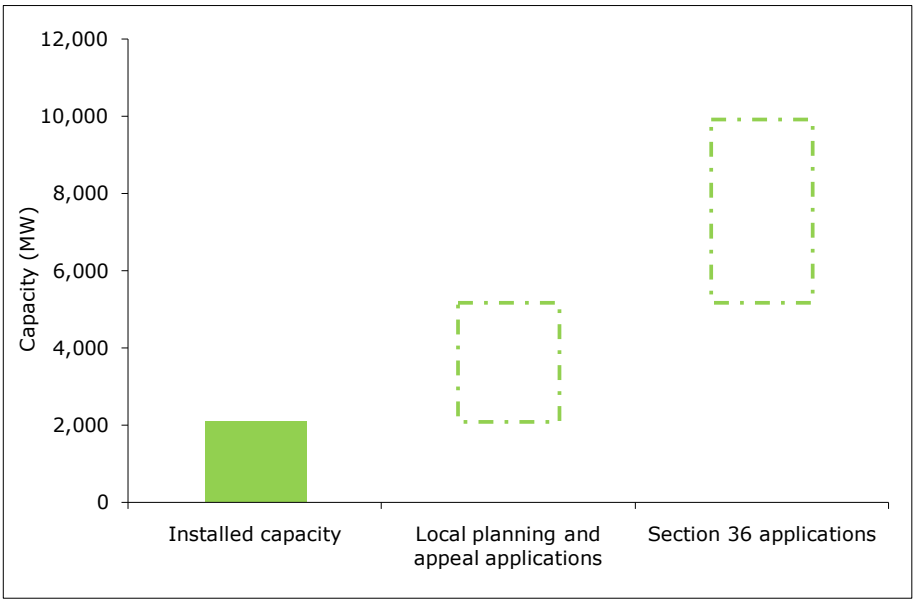
[8] Source: Energy Trends BERR 2008, Digest of UK Energy Statistics BERR 2008
Note that we have estimated RO targets on a calendar year basis for consistency within the document.
[9] The RO was introduced in 2002 and is the primary means to support the development of renewable technologies in the UK. It is a market based mechanism that requires electricity suppliers to source an increasing percentage of their electricity sales from eligible renewable sources.

Figure 6: Generating technologies supported by the Renewables Obligation[10]



2.15. The renewables industry cites that the major hurdles to the deployment of renewable generation are the planning system and access to the transmission grid.

Figure 7: Onshore wind generation capacity in the planning process in the UK[11]



2.16. According to industry statistics there are approximately 240 onshore wind projects currently in the consent application process, representing a four-fold

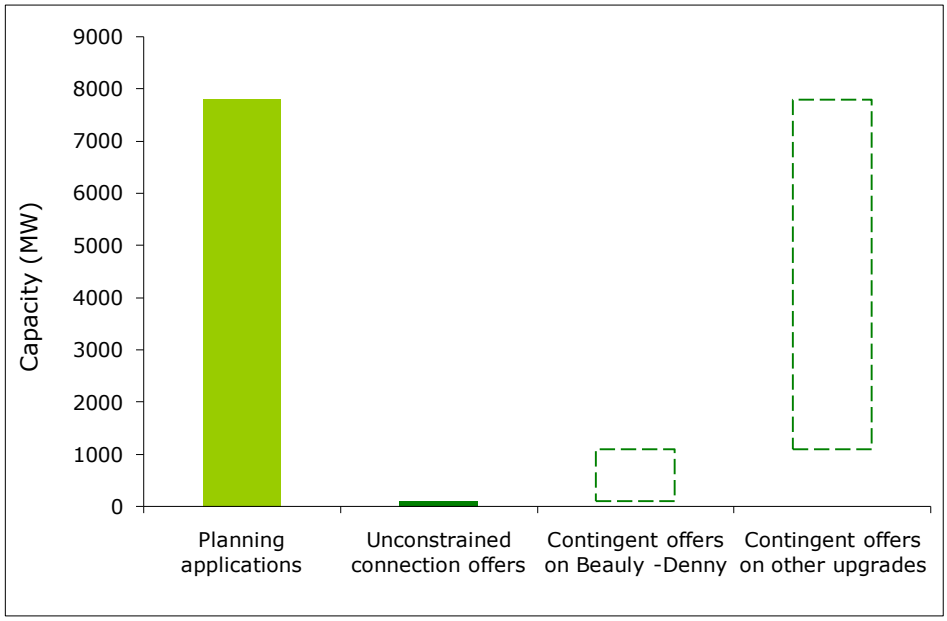
[10] Source: Digest of UK Energy Statistics, BERR 2008
[11] Source: BWEA Planning statistics available as at August 2008. See www.bwea.org.uk

increase in generation capacity of the existing installed onshore wind capacity (see figure 7). Nearly 5GW of these projects are individually over 50 MW capacity and being considered under section 36 of the Electricity Act 1989[12].

2.17. Encouragingly, the British Wind Energy Association has estimated that the time taken by Local Authorities in England to reach decisions on wind farms in 2007 has gone down from the 17 months taken in 2006 to around 14 months on average. On average, local authorities gave permission to just under 60 percent of the applications they considered.

2.18. In many areas of the country the GB transmission system has limited potential to accommodate new generation without further system reinforcement. As a result electricity generators are waiting to connect to the transmission system and are being held in what has become known as the GB Queue. This includes a significant proportion of renewable generation projects seeking connection to the transmission system (see figure 8).

Figure 8: Required grid upgrades for onshore wind generation in Scotland[13]



2.19. The proposed upgrade of Beauly-Denny transmission line is important for approximately 115 individual renewable projects in Scotland. However, the plans to upgrade the line have attracted more than 18,000 objections, many on environmental grounds. A decision is expected on the Beauly-Denny line in 2009.

[12] Section 36 of the Electricity Act is the legislative provision under which the Secretary of State considers development consent applications for generating stations above 50 MW.
[13] Source: National Grid

2.20. The consultation on the Renewable Energy Strategy suggests that between £10-11bn of grid investment is required by 2020 to meet the European target, of which about 80 percent would be for offshore grid investment.

Update on Ofgem's commitments from 2007 Sustainable Development Report

2.21. **Review transmission access arrangements to facilitate more timely connection of generation projects**. In a joint project with DECC, Ofgem has conducted the Transmission Access Review (TAR) to introduce enduring arrangements to facilitate the connection of new generation, including renewables. Our proposals for reform include a radical re-design of the existing arrangements, financial incentives to invest in new transmission capacity to connect generation projects and build future capacity ahead of when new generation comes on stream, and short term measures to help minimise the current queue for connections[14]. One of the key conclusions in the TAR final report is that the suite of changes that have been identified will address the problems associated with grid access without having to resort to prioritising any particular technology.

2.22. Ofgem has worked with DECC on **developing the regulatory regime for the offshore transmission network** required for offshore wind generation[15]. Offshore wind is expected to contribute to the renewable energy target. A key feature of this regime is that each new tranche of transmission assets required by offshore generators will be awarded through a competitive tender process. This process will be run by Ofgem, using competition to secure the most efficient and economic outcome for GB consumers.

2.23. **Work with Government on proposed changes to the Renewables Obligation**. We have used our knowledge of the support schemes for renewable and low carbon technologies based on our experience of their administration to work closely with the Government on the reform of the Renewables Obligation.

2.24. **Review potential efficiency improvements in administration of Government's environmental programmes.** We have implemented new IT systems and more automation to reduce the administrative burden on us and the industry in the environmental programmes schemes we manage on behalf of the Government.

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http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/tar/Documents1/080626_TAR%20Final%20Report_FINAL.pdf

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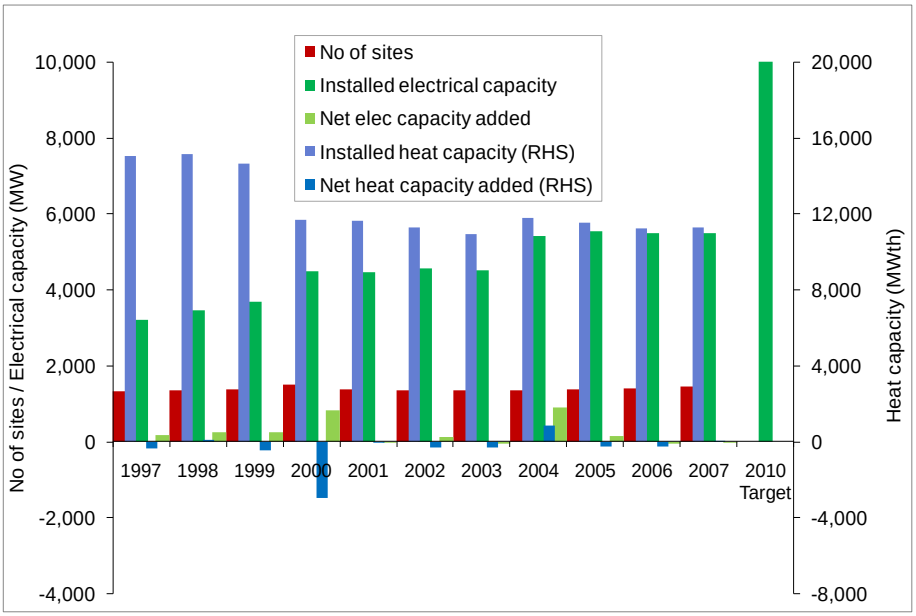
http://www.ofgem.gov.uk/Networks/Trans/Offshore/GrpsWrkshops/Documents1/Note%20of%20Ofgem%20BERR%20joint%20external%20communications%20session%20–%207%20July%202008.pdf
http://www.berr.gov.uk/files/file46629.pdf

Indicator 4: Electrical capacity from combined heat and power

2.25. Combined heat and power (CHP) is the simultaneous generation of usable heat and power in a single process. CHP can contribute to the energy mix and lower GHG emissions in two significant ways. First, it provides primary energy savings compared to separate generation of heat and power. Second, CHP is typically sized to make use of the available heat and connected to the local distribution network. Thus it provides efficiency gains compared to an electricity-only generation plant connected to the grid transmission network by avoiding distribution and transmission losses.

Trends in Indicator 4

Figure 9: CHP Capacity 1996-2007 (including 2010 target)[16]



2.26. Figure 9 shows that year-on-year there was a small increase in the number of CHP sites but a slight decrease in the combined installed electrical capacity of such schemes in 2007[17]. The economics of CHP improved during 2007, due to a fall in the price of gas relative to that of electricity[18]. Although this was favourable for existing CHP investment the installation of new CHP remained subdued.

2.27. The electricity generated by CHP schemes in 2007 was 28,677 GWh, representing around seven percent of the total electricity generated in the UK. CHP schemes in total supplied 53,050 GWh of heat in 2007. The carbon emission savings

[16] Source: Digest of UK Energy Statistics (DUKES) – BERR July 2008
[17] During 2007 improvements in the quality of the CHPQA data resulted in the removal of schemes that do not supply data regularly or no longer exist. Please refer to DUKES 2008, chapter 6 for more detail.
[18] This is known as the spark spread (i.e. the difference between the price of electricity and the price of the gas required to generate that electricity).

from CHP in 2007 compared to the average UK fossil fuel carbon intensity was 14.3 $MtCO_2$ (which equates to 2.6 $MtCO_2$ per 1000 MWe installed capacity[19]).

Update on Ofgem's commitments from 2007 Sustainable Development Report

2.28. **Address barriers to Distributed Energy**. DECC and Ofgem proposed measures to increase flexible licensing and regulatory options for Distributed Energy (DE) in June 2008. The proposals aim to reduce the trading and regulatory barriers to distributed energy and make it easier for DE schemes to operate as licensed suppliers in the community.

2.29. **Remove barriers to participation in the energy markets.** Ofgem commissioned a study to assess competition in the market for output from small generators. The findings showed the market for small generator output appears to be competitive and diverse. Overall, we concluded that the market is maturing and has led to an improvement in prices, contract terms and sharing of benefits for DE schemes[20].

2.30. **Continue to administer the exemption from the Climate Change Levy (CCL) for CHP generation.** This is part of the ongoing work undertaken through Ofgem's environmental programmes work.

2.31. **Review the market for residential scale exported electricity.** The review was published in March 2008. We found suppliers are offering fair value export offers for households wanting to sell back surplus power. However, the market for exported electricity is still in its infancy, and household microgeneration in general could be improved by better provision of information to help customers find the best deal that suits their circumstances and easier access to financial incentives[21].

Meeting the challenge for Theme 1

2.32. Climate change is a global challenge, and the UK Government is committed to reducing GHG emissions and moving to a low carbon economy. In 2008 the Government welcomed the recommendation of the Climate Change Committee to increase the UK's long term goal to reduce UK emissions by 80 percent on 1990 levels by 2050. The Climate Change Act 2008 enshrined this ambition in law.

2.33. Meeting our climate change targets will require significant transformation of energy systems, through higher energy efficiency by end users and the

[19] Digest of UK Energy Statistics (DUKES) – BERR July 2008, page 158
[20] Offtake arrangements and market access for small-scale distributed energy generators http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=5&refer=Sustainability/Environmnt/Policy/SmallrGens/DistEng
[21] Review of the market for export electricity from microgeneration http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=1&refer=Sustainability/Environmnt/Policy/SmallrGens/DomsScMicro

decarbonisation of electricity production. Incorporating a robust carbon price into fossil fuel generation is an essential element of a long-term strategy to drive the changes and deliver lower emissions over time. A price for CO_2, however imperfect, is a signal that the right to emit GHGs is scarce and must be paid for. Market participants can respond to a carbon price and complementary policy initiatives in a number of ways. On the supply side, companies can invest in new infrastructure to deliver more or alternative energy supplies. On the demand side, customers can invest in energy saving technologies and change their energy consumption habits.

Ensuring a robust carbon price

2.34. A robust carbon price (and market for carbon in general) relies on successful bidders paying an amount for a permit that equals the value they think it is worth having considered the emissions abatement options. In turn this requires that participants have confidence in the way allowances are allocated. Full auctioning of allowances under the EU ETS is the most efficient mechanism for allocation as this will ensure that allowances are allocated to those who value them the most.

2.35. The UK NAP for Phase II set a limit of seven percent for auctioning - around 85 million allowances over the period 2008-2012. The auctioning arrangements in Phase II will have an crucial role in facilitating the development of a robust carbon price. Therefore it is important that the arrangements operate effectively and are reviewed over the course of the Phase II to address any concerns where necessary. The introduction of auctioning arrangements will provide comfort that observed increases in the carbon price, and consequently energy prices, are the result of changes in supply-demand fundamentals. The UK's experiences from Phase II auctions will also usefully contribute to the development of EU auctioning policy for Phase III.

Greater policy coordination and consistency

2.36. The Government has consulted on a strategy and various proposals to drive up the use and deployment of renewable energy. Increases in renewable energy are likely to entail a significantly greater deployment of renewable electricity generation. It is vital that the final strategy fully integrates the potential for renewable heat, energy efficiency, consumer behaviour and demand management in seeking cost effective implementation and achievement of the renewable energy target. When finalising its proposals we urge the Government to aim for consistency across the different policy interventions to minimise the potential for distortions in investment decisions (for example seeking the most generous subsidy, rather than the most efficient use of each renewable resource) and to avoid undue complexity.

Improving the cost-effectiveness of subsidies

2.37. The costs to current and future consumers of delivering the target (in addition to the impact on prices caused by the third phase of the EU ETS) will be significant. With rising energy bills and fuel poverty, the Government must aim to improve the cost-effectiveness of both existing and future subsidy mechanisms. Ofgem will aim to ensure that the costs represent value of money to consumers and will draw on its

Consumer First programme to ensure that consumer views and preferences can be built into this process.

Addressing informational barriers

2.38. As part of our work on addressing regulatory barriers for DE we have gained a better perspective of the information requirements and expertise needed by DE developers in considering the feasibility of DE options. It is clear that information on the end-to-end process of setting up and operating a scheme is patchy. Although several sources of information exist, the accessibility and helpfulness of such information could be improved if it were consolidated in one place with advice on key steps, best practice and relevant parties involved in the process. The Government could support those individuals, communities or developers who either want to or are required to consider DE options to meet planning requirements by providing an open access, web access information exchange.

District heating schemes and consumer protection issues

2.39. The supply of heat by third parties is likely to become a more established part of the competitive market as a result of the forthcoming Government consultation on low carbon heat including district heating schemes, and Energy Act provisions for a renewable heat incentive. As and when district heating networks expand, there will be potentially large numbers of domestic energy consumers outside the scope of consumer protections provided for gas and electricity consumers. While district heating arguably increases choice for consumers the district heating networks themselves almost certainly entail local monopoly networks. We are considering what role Ofgem might usefully take, consistent with its statutory remit. For example, Ofgem's role could include monitoring developments in the emerging heat sector and contributing to an industry working group on consumer protection issues.

Ofgem's commitments for 2009

2.40. Ofgem has proposed an overhaul of the governance of gas and electricity industry codes. Ofgem will consult in 2009 on a framework under which Ofgem would manage major policy changes by initiating and leading high level policy reviews. These reforms could allow a quicker response to the need to tackle climate change and to boost competition.

2.41. As part of its 'RPI-X at 20' project Ofgem will assess whether our existing regulatory model for the gas and electricity networks is still fit for purpose after twenty years. Challenges, such as the transition to a low carbon economy, will require significant changes and the regulatory framework may need to change to deliver them.

2.42. Ofgem will continue to oversee the competitive markets to ensure they provide transparent price signals so that market participants can respond to signals from policies such as emissions trading.

2.43. Ofgem will help to connect new generation more quickly through improvements in the way the GB Queue is managed, and in part through an interim mechanism - a form of "connect and manage". Ofgem will also oversee reforms to introduce enduring arrangements to facilitate the transmission access of new generation, including renewables.

2.44. Ofgem will implement the new regulatory arrangements for the offshore transmission network in 2008. This will involve the development of the various code, licence and agreement amendments to accommodate the offshore regime. We expect to run the first competitive tender process in 2009.

2.45. As part of the fifth Distribution Price Control Review (DPCR5), Ofgem will consider the role of DNOs in helping to tackle climate change, both directly through managing their own carbon footprint and indirectly by facilitating new uses of the networks that are likely to arise as we move to a low carbon economy. In DPCR5 we will consider a range of flexible incentives for DNOs to be more proactive in connecting renewable and low carbon forms of distributed generation to help manage their networks. Ofgem is currently consulting, at a high level, on the regulatory framework for the DPCR5[22]. Detailed proposals will be finalised in December 2009[23].

2.46. We will provide independent advice to Government on the most cost-effective means of helping the UK meet its share of the 2020 renewables target, including the need to look in an integrated way at the implications of environmental measures for fuel poverty. We will work with DECC on specific proposals such as further reform to the Renewables Obligation, a feed-in tariff for microgeneration and a renewable heat incentive.

2.47. We will work with industry and DECC to implement the proposals for more flexible market and licensing arrangements for distributed energy schemes by Q1 2009.

2.48. Ofgem would like DNOs' use of system charging regimes to be more cost reflective network to ensure, among other things, they reflect the benefits that DE can bring to local systems. Ofgem will consider the options for implementing charging methodologies to coincide with the start of the next price control period.

2.49. We are working with the Energy Saving Trust (EST) to ensure that domestic customers can easily compare the range of export/generation reward available from energy suppliers. Information on export and generation tariff prices, fact sheets and guidance for customers on how to choose the best tariff for their individual circumstances will be provided by the Green Homes advisory service and through the EST website. This will be in place in the first half of 2009.

[22]The DPCR5 policy paper is available at the link below:
http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=132&refer=Networks/ElecDist/PriceCntrls/DPCR5

[23] DPCR5 documents are published on the Ofgem website at the following location:
http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/DPCR5/Pages/DPCR5.aspx

3. Theme 2 - Eradicating fuel poverty and protecting vulnerable customers

Chapter Summary

This chapter sets out how Ofgem, through its Social Action Strategy, works to protect vulnerable customers and help the Government meet its targets for eradicating fuel poverty. It shows the number of households estimated to be living in fuel poverty has risen as a result of higher energy prices. Many customer groups are benefiting from competition, however some customers are not yet benefiting fully from the competitive market. Vulnerable customer groups are disproportionately affected. This chapter sets out the detail of further work planned in this area for the coming year in relation to the following indicators:

- Total number of households in fuel poverty
- Competition and vulnerable customers
- Disconnection for debt

Introduction

3.1. The Government defines fuel poverty as where a household needs to spend more than 10 percent of its income on energy to maintain a satisfactorily warm home. A lack of affordable energy can have a significant impact upon the lives of individuals, raising health issues and having implications for general wellbeing and economic prosperity. The Government and the Devolved Administrations have committed to eliminating fuel poverty and have separate targets - the overall aim being that no household in the UK should live in fuel poverty by 2018[24].

3.2. Ofgem has specific statutory obligations in relation to vulnerable customers and works to meets it social objectives and help the Government to meet its targets for eradicating fuel poverty. Our aim is to:

- improve the ability of all households to adequately heat their homes;
- ensure that more vulnerable customers can and do access the lower prices and better services and products available to them; and
- ensure that customers who are having difficulty paying their bills are given help to manage their debt and prevent their energy supply being disconnected.

3.3. Ofgem's Social Action Strategy (SAS) sets out how we will seek to meet our social obligations and contribute to the Government's targets to eliminate fuel poverty[25].

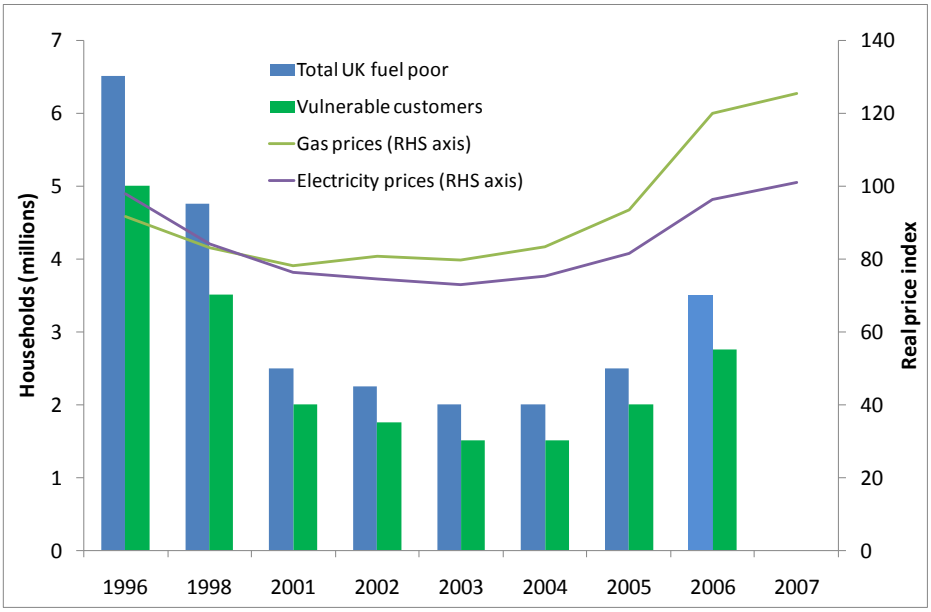
[24] In England, the Government's target is to eliminate fuel poverty for vulnerable households (containing children or those who are elderly, sick or disabled) by 2010 and 2016 for all households. For the Devolved Administrations the target is for overall elimination, for Scotland by 2016 and Wales by 2018.

[25] Ofgem's Social Action Strategy was launched in October 2005. Each year we publish an update to our Social Action Strategy which provides an overview of our progress over the previous year and sets out our key deliverables for the coming year:

Indicator 5: Total number of households in fuel poverty

Trends in Indicator 5

Figure 10: Estimated number of UK households living in fuel poverty 1996-2006[26]



3.4. Official fuel poverty figures for 2006 estimate that 3.5 million households in the UK were in fuel poverty, of which 2.75 million were vulnerable households[27]. Retail prices have continued to increase since 2006 on the back of rising global energy prices and the cost of expanding environmental programmes. Government projections estimate that the number of households in England experiencing fuel poverty may have increased by another 0.7 million in 2007 and rise by a further 0.5 million in 2008.

Update on Ofgem's commitments from 2007 Sustainable Development Report

3.5. **Support initiatives to improve targeting of support for vulnerable customers.** Ofgem has been very active over the past year in contributing to and influencing the debate about measures to help tackle fuel poverty, in particular, helping to promote a joined up and holistic approach, targeting help to those who need it most and improving the effectiveness of individual measures. For example, in April 2008 we convened a Fuel Poverty summit which brought together Ministers, Government officials, energy suppliers and consumer organisations to agree a

http://www.ofgem.gov.uk/Sustainability/SocAction/Documents1/sapstrategbroa4july07.pdf

[26] Source: 6th Annual Report on the Fuel Poverty Strategy – 2008, DEFRA

[27] A vulnerable household in this context is one containing children, or those who are elderly, sick or disabled.

programme of practical action to improve the targeting of existing help to those in fuel poverty and to help more vulnerable consumers participate more effectively in the energy market. The key outcomes from the Summit are listed below:

- The Government committed to legislate to allow the Department of Work and Pensions (DWP) and energy suppliers to share data so that help can be targeted at vulnerable pensioner customers and subsequently introduced amendments through the Pensions Bill;
- Energy suppliers committed to improving the targeting of their social measures to fuel poor customers and keep consumer advice groups better informed of the wide range of help available to customers struggling to afford their energy bills;
- Leading switching site providers will promote their telephone switching service for customers without internet access;
- Defra, eaga[28] and energy suppliers ran a pilot programme to check that 3,000 vulnerable customers were on their supplier's best tariff given their circumstances, which may include a cheaper social tariff or the cheapest tariff; and
- DECC is funding the national roll-out of the Energy Best Deal campaign. This is the Ofgem/Citizens Advice campaign to help customers on low incomes make more informed energy choices.

3.6. **Dissemination of best practice among suppliers.** Following the 2008 Budget announcement the Government secured an agreement with suppliers to increase their collective expenditure on their social programmes by £225m over the 2008-11 period. Government asked Ofgem to lead a process to set the parameters for what can be included by suppliers as part of this spend and the associated reporting arrangements. In July Ofgem published a monitoring framework and guidance document which sets out the types of initiatives that energy suppliers can include towards their social spend commitments, such as tariffs, rebates, trust funds, joint industry and partnership schemes and energy efficiency initiatives additional to statutory obligations. It also specifies that for a supplier's social tariff to count as such against their spend commitments it must be as good as the lowest tariff they offer to customers in that area, including online deals, regardless of the payment method. This means that vulnerable and fuel poor customers, who struggle most to pay their energy bills, can be assured of being on the best deal their supplier offers in their area when on a social tariff.

3.7. **Remove regulatory barriers to the development of smarter metering**. On behalf of the Government and industry, Ofgem is managing a three year Energy Demand Research Project (EDRP) to trial better billing and a range of smart meter technologies. The project is assessing customers' long term response to better information on their energy use and the effectiveness of different interventions in delivering energy savings. The EDRP trial interventions involve around 50,000 households across Great Britain, including specific customer segments such as the fuel poor.

[28] Eaga is a commercial provider of energy efficiency services.

3.8. **Work with other Government departments and key stakeholders on the design and development of the supplier obligation**. We have been working with Defra regarding the supplier obligation and other options for Carbon Emissions Reduction Target (CERT) post 2011.

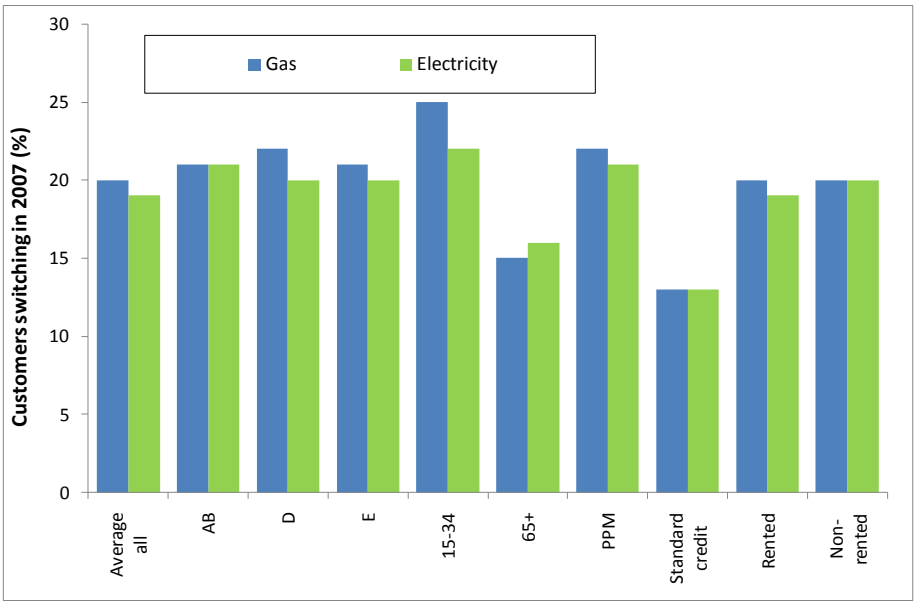
3.9. **Allow for the expansion of gas networks**. As part of the gas distribution price control review we introduced incentives for Gas Distribution Networks (GDNs) to extend the gas network which could help to reduce energy charges for fuel poor households who currently use other more expensive heating fuels. Alongside this we also introduced a Discretionary Reward Scheme for GDNs which will focus on, among other things, initiatives to cut the upfront charges of network extensions and in-house works that customers in fuel poor communities face if they want connections to the networks. Encouraging network extensions can help to alleviate fuel poverty and can also bring environmental benefits, for example where customers replace fuel oil with mains gas.

Indicator 6: Competition and vulnerable customers

Trends in Indicator 6

3.10. This indicator shows the proportion of customers who have changed electricity and gas suppliers in 2007 across different customer groups, including more vulnerable customers. The levels of switching within these groups, and their comparison to the national average, indicate whether or not all customer groups including vulnerable customers are benefiting from competition.

Figure 11: Number of customers who switched their energy supplier in 2007[29]



3.11. In 2007 20 percent of gas customers and 19 percent of electricity customers switched supplier. Compared to the respective switching rates in 2006 there was a small increase in gas, but a slight fall in electricity. Overall there is greater consistency in switching activity across social groups than in 2006, with indications that some vulnerable customers are increasing their level of switching. Customer groups aged over 65 years and on standard credit terms remain less likely to switch.

Update on Ofgem's commitments from 2007 Sustainable Development Report

3.12. **Research switching among more vulnerable customer groups** As part of our Consumer First initiative, we commissioned research to develop our understanding of how vulnerable customers engage with the energy market. We commissioned IPSOS Mori to carry out a quantitative survey amongst a cross section of energy customers to compare behaviour between vulnerable and non-vulnerable customers and track year-on-year changes. This was published in April 2008.

3.13. **Identify and tackle barriers to switching.** As part of its Consumer First initiative, Ofgem commissioned a programme of focus groups and individual interviews with a range of vulnerable customers including those on low incomes, single parents, non-English speakers, those aged 75+, people with low levels of literacy or numeracy and people living in remote areas. Our research sought to explore the barriers to some of these more vulnerable customers switching supplier

[29] Source: Ipsos MORI, March 2008
http://www.ofgem.gov.uk/Sustainability/SocAction/Publications/Documents1/MORI%20report%20switching%20rates.pdf

so that action can be taken to help overcome, or where possible, remove those barriers.

3.14. Ofgem launched an investigation in February 2008 into whether the energy market is working well for all customers in response to mounting consumer and public concern over the competitiveness of the retail energy market. Building on the above work, the Energy Supply Markets Probe examined the consumer's perspective and experience of the market including access to information and barriers to switching supplier, including debt blocking. It also looked closely at the issue of price differentials for customers on different payment methods. The Probe found some specific concerns relating to the ability of vulnerable customer groups to effectively participate with the competitive market which stops them from benefiting fully from the range of prices and services on offer[30]. The Probe identified a number of areas where there are what we consider to be unjustified price differentials – 'in-area' versus 'out-of-area', differentials by payment method and high margins on electricity than gas which disadvantages customers off the gas network. All of these have the potential to impact disproportionately on vulnerable customers. We are consulting on our findings and the actions we might take to address these concerns.

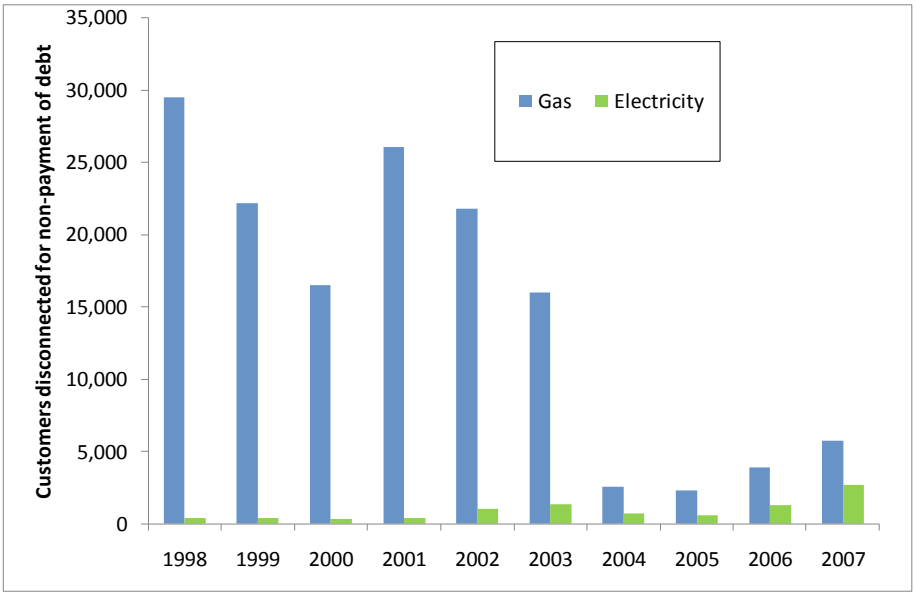
Indicator 7: Disconnection for debt

Trends in Indicator 7

3.15. This indicator considers the number of gas and electricity customers who are disconnected each year due to their failure to repay a debt. Accumulation of debt and the threat of disconnection may arise for reasons other than fuel poverty. In many instances customers who persistently fail to meet their energy bills do so due to financial constraints rather than a wilful refusal to pay.

[30] We estimate that around a quarter to a third of all customers are vulnerable in some way.

Figure 12: Total number of customers disconnected for non payment of debt: 1998-2007[31]



3.16. The total number of customers disconnected for non-payment of their energy bill increased 64 percent in 2007 to 8,384 customers. The number of electricity disconnections doubled to 2,657 in 2007 from 1,258 in 2006, while gas disconnections increased by 48 percent in 2007 to 5,727. However, there was a 16 percent fall in the number of disconnections carried out in the first quarter of 2008 when compared to the last quarter of 2007. Disconnection rates in the first quarter of 2008 were also lower than for any quarter in 2007. Overall disconnection rates remain significantly lower than they have been historically.

Update on Ofgem's commitments from 2007 Sustainable Development Report.

3.17. **Drive forward supplier progress in preventing debt accumulation**. Ofgem has continued to press all suppliers to step up their efforts to help customers – particularly vulnerable customers – to manage their energy bills, to resolve debt early and avoid disconnections. In January 2008 we published our Debt and Disconnection Best Practice Review which examined suppliers' procedures in this area and identified a number of areas of best practice, setting a benchmark for industry to draw on to further improve performance in this area. This has been helpful in reducing the number of disconnections as evidenced by the reduction in disconnections in the first quarter of 2008 when compared to the same quarter last year.

[31] Source: Ofgem annual monitoring of supplier performance

Meeting the challenge for Theme 2

3.18. Dramatically rising energy prices have already bought major increases to the number of households in fuel poverty. Rising wholesale energy prices and the Government's environmental policies are likely to result in further increases still to consumers' energy bills and push more households into fuel poverty.

3.19. Against this background, further efforts and resources will be required to tackle fuel poverty and a wider review by the Government of its Fuel Poverty Strategy is needed. Improving the energy efficiency of housing stock is a sustainable and enduring way of tackling fuel poverty and must be a focus of any approach. It is also essential that any strategies and programmes to tackle fuel poverty are joined up and holistic so that when a fuel poor household is identified the full range of appropriate action is taken to lift them out of fuel poverty.

3.20. Trusted third parties and intermediaries have an invaluable role to play in clarifying and explaining the help that is available from the Government and energy suppliers to vulnerable and hard to reach consumers including advice on how to change supplier or payment method and how to access the benefits of the competitive energy market.

3.21. The Government has committed to working with the Financial Inclusion Taskforce to promote the use of direct debit as a payment method to fuel poor and vulnerable customers, where appropriate, to make bill payments easier and more affordable. Ofgem is engaging in this debate.

3.22. Fuel Direct should be promoted and encouraged as a payment method as it can provide much needed help and support to fuel poor customers and those having difficulty paying their energy bills[32].

3.23. The pressure on the affordability of energy bills is likely to remain, given the wider credit squeeze. Many of those suffering fuel debt will also have other debt problems. The wider advice and support from money and debt advice agencies will become increasingly important.

Ofgem's commitments for 2009

3.24. As a result of our conclusions from the Probe we intend to take forward a number of specific remedies, subject to consultation. These will help to ensure among other things that all customers groups are able to benefit from competitive markets and that tariffs for different payment methods reflect a sound cost basis. This includes measures to promote active customer engagement, help customers make well-informed choices, and address concerns over unfair price differentials.

[32] Fuel Direct is a scheme designed to act as a last resort measure for vulnerable households receiving certain benefits who are threatened with disconnection. It allows for deductions to be made directly from the customer's benefit towards repayment of their energy debt and current consumption, to be paid by the DWP direct to the customer's supplier.

3.25. We will monitor the levels of switching among more vunerable customer groups, including research into year on year variances in switching amongst vunerable customer groups. Building on the lessons learnt from the Probe we will look to monitor the quality as well as quantity of switching, to ensure customers are actually switching to better deals.

3.26. We will report on suppliers' social programmes and monitor their progress against their spend commitments. As part of our reporting and monitoring arrangements energy suppliers have agreed to review their current targeting and any lessons learnt and report their findings to Ofgem. We will publish best practice examples on the most effective targeting strategies as part of the 2008-09 report.

3.27. We will monitor progress against the commitments made at our Fuel Poverty Summit in April. We will work with DECC, Defra, DWP and energy suppliers to facilitate data sharing to improve the targeting of help to those pensioners most vulnerable to fuel poverty.

3.28. More generally, we will work with Government and key stakeholders to influence and drive forward the debate around fuel poverty and the most effective way to tackle it. Our Social Action Strategy Review Group remains an important vehicle for delivery in this area.

3.29. Ofgem has consulted on extending the eligibility criteria of the non gas fuel poor networks extension scheme to maximise its effectiveness. For example, where the GDNs work with a relevant funding agency in any domestic premises and secure funding for the "in house" work costs associated with network extensions, the premises shall be deemed as eligible for the fuel poor connections discount. The outcome of this consultation will be published later this year.

3.30. We will assess information from the EDRP to monitor progress and issues arising out of the scheme. Where possible we will ensure that analyses of results from these trials inform policy about the potential of smarter metering to help tackle fuel poverty through increased energy efficiency and lower cost prepayment meters.

3.31. Ofgem will monitor and assess suppliers' performance in relation to debt and disconnection. Following recent increases to retail energy prices we may see growing numbers of customers facing difficulty in paying their energy bills over the coming year. It is essential that suppliers retain a strong focus on this area and do all they can to assist their customers, particularly those who are vulnerable, to manage their energy bills and to prevent the build-up of debt. We will not hesitate to take further action, including naming and shaming suppliers, if this is required.

4. Theme 3 - Promoting energy savings

Chapter Summary

In this chapter we examine indicators of energy intensity across the UK economy that show a continued decline, although transport continues to remain relatively energy intensive.

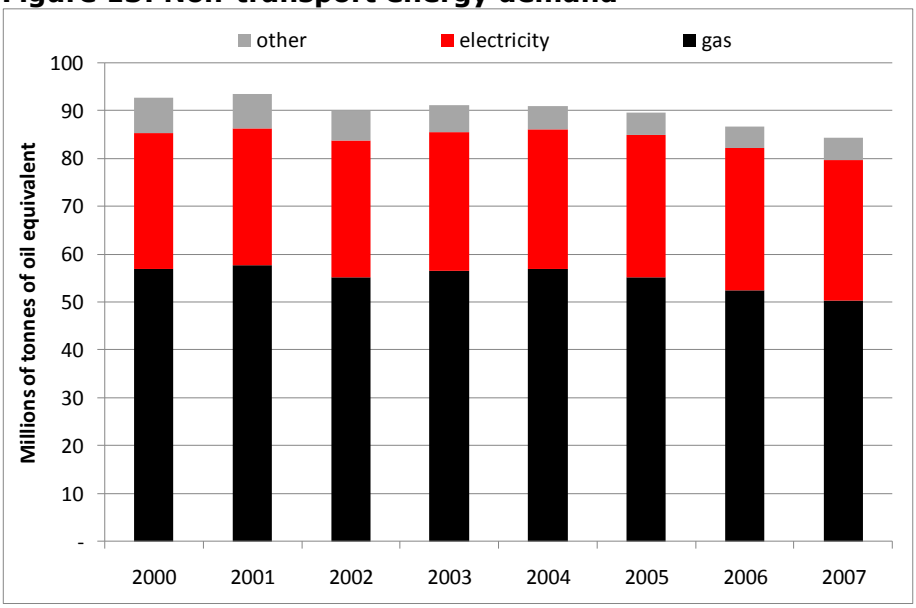
Energy savings from the Energy Efficiency Commitment (EEC) show that energy suppliers have been successful in promoting energy efficiency measures to households across Great Britain and have exceeded targets.

Although electricity transmission losses have continued to be broadly stable, distribution losses increased in 2007. Methane emissions from the gas network have reduced.

Introduction

4.1. Energy efficiency can deliver reductions in emissions, contribute to security of supply and reduce the costs of meeting our energy needs. When global energy costs are increasing energy efficiency can help the competitiveness of the UK industry, relieve the pressure on fuel bills and tackle fuel poverty in households. Energy efficiency is a valuable energy resource and often a cheaper alternative to investing in new generation plant. Figure 13 shows final energy consumption excluding transport fuels. In 2007 demand for gas, electricity and other solid fuels fell by three percent and marks the third consective decline.

Figure 13: Non-transport energy demand[33]



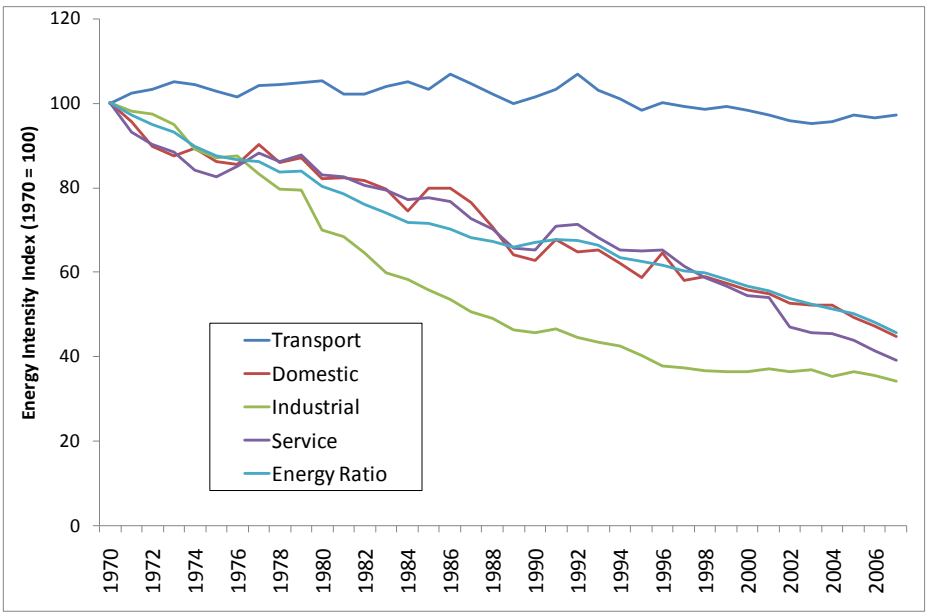
[33] This is derived from data in BERR's Table 1.5 Final Energy Consumption by Fuel.

Indicator 8: Energy Intensity

Trends in Indicator 8

4.2. Energy intensity provides a measure of the relative energy efficiency of different sectors of the economy. Figure 14 shows the energy consumption per unit of output relative to 1970 for the transport, industrial and service sectors and per household for the domestic sector. Although transport remains relatively energy intensive, the other sectors have become less energy intensive since 1970, with a consistent decline in recent years.

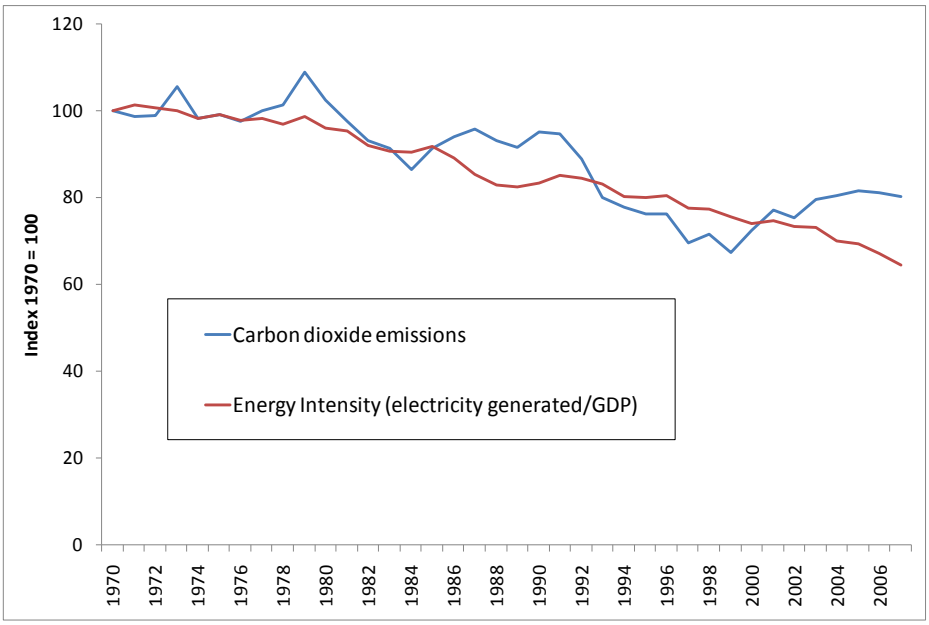
Figure 14: Energy intensity by sector[34]



4.3. Figure 15 charts the energy intensity of the electricity generation sector with CO_2 emissions from power stations. Energy intensity (electricity generated divided by GDP) from power stations measures the quantity of electricity required to meet customer demand (approximated by GDP). The chart shows a significant improvement in energy intensity since 1970.

[34] Source: UK Energy Consumption - BERR 2008

Figure 15: Energy intensity and CO_2 emissions of the power generation sector[35]



Indicator 9: Energy Savings from the Energy Efficiency Commitment

Trends in Indicator 9

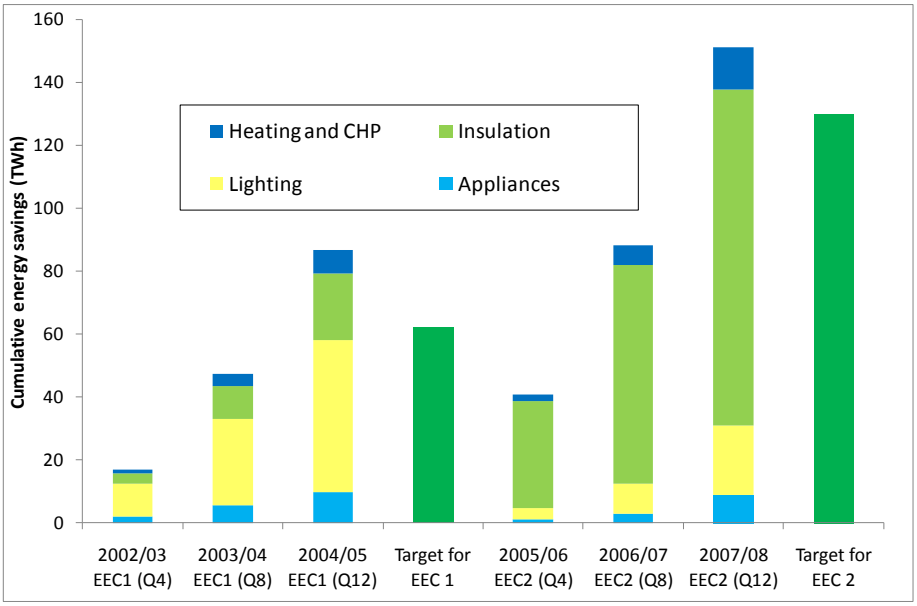
4.4. The EEC 2005-2008 required gas and electricity suppliers to meet an energy saving target in domestic properties. Suppliers were required to meet at least half of their obligation by targeting consumers on a low income, the Priority Group. The EEC therefore also contributes to the Government's Fuel Poverty Strategy.

4.5. Figure 16 shows that at the end of EEC2 2005-2008 suppliers had met, and exceeded, the overall target. In total they achieved 187 TWh of savings against the overall target of 130 TWh, including the carry over from EEC1. Approximately 44 percent of this total activity was in the Priority Group. Relative to the target, the amount of activity in the Priority Group is 63 percent. The range of measures was dominated by insulation, making up nearly 60 percent of the energy savings achieved under EEC2 2005-2008.

4.6. The annual carbon saving is expected to be about 1.2 $MtCO_2$ and about 2.0 $MtCO_2$ by 2010, respectively from EEC1 and EEC2.

[35] Source: UK Energy Sector Indicators - BERR 2008

Figure 16: Energy savings, by measure type, achieved annually from the EEC



4.7. The additional savings will be carried over into the Carbon Emissions Reduction Target (CERT), the replacement for EEC which runs from 2008 to 2011. The CERT target will be set in carbon savings, which is a change from the EEC target.

Update on Ofgem's commitments from 2007 Sustainable Development Report

4.8. **Work with the Government to develop and implement instruments to improve the efficiency of energy use.** We have contributed to Government working groups taking forward policy developments in this area, drawing on our knowledge and experience of administering the EEC and the existing CERT scheme.

4.9. **Work with suppliers on testing and evaluation of consumption information and smart metering.** We have liaised with suppliers on specific trials and have supported the Warm Plan evaluation and assessment. We have also independently evaluated results from a small-scale two year pilot test of smart meters. The monitoring and evaluation of this trial identified several issues that need to be addressed to realise greater benefits of smart meter technology in households. We have fed the lessons learnt from this project into the larger trials that we are monitoring on behalf of the Government. We have also provided advice to Government on smart meters policy development.

4.10. **Administer the energy efficiency schemes on behalf of the Government.** We participated in the development of the CERT which started in April 2008 in several areas including: helping the Government on including microgeneration; ensuring that this interfaces appropriately with other renewables programmes; publishing Supplier Guidance on the programme; and setting suppliers'

individual obligations. Administering the CERT is an ongoing role of the Environmental Programmes team.

Meeting the challenge for indicators 8 and 9

4.11. A focus on energy efficiency is clearly a fundamental starting point for achieving all the objectives of energy policy. Energy efficiency will help to reduce carbon emissions and reduce the need for additional generation, thereby reducing the overall costs faced by consumers in meeting renewable energy targets, carbon emission reductions and lower energy bills. Therefore energy saving as a central principle represents one of most economic and efficient areas for action.

4.12. We have seen a sustained decrease in the demand for non-transport energy over the previous three years. The challenge remains to maintain this downward trend. There is scope for further improvements in energy efficiency across the household, business and public sectors through improving the efficiency of products and processes, and through changes in our consumption or behaviour.

4.13. Stronger carbon prices under phase II of EU ETS and higher global energy prices more generally will provide incentives for energy intensive businesses to consider saving energy. As the allowance price becomes established in energy prices, customers will consider investing more in energy efficiency measures. The Carbon Reduction Commitment (CRC), a legally binding climate change and energy saving scheme which begins in 2010, will also require large organisations in the UK such as local authorities, supermarkets and other large retailers, and Government departments to find ways to reduce their energy usage.

4.14. At the beginning of this year the Commission published its first assessment of National Energy Efficiency Action Plans (NEEAPs), a requirement for all Member States under the Energy End-Use Efficiency and Energy Services Directive. The NEEAPs provide details of the initiatives Member States intend to implement and the actions that they will take to facilitate further energy saving. The Commission's assessment highlighted the various approaches adopted by member states and we consider that it would be prudent for the UK Government to draw upon the experiences of best practice demonstrated by some Member States in seeking to achieve their targets.

4.15. The Government has mandated a roll out of smart meters for business customers and has recently announced a decision to extend the roll out to domestic customers. Putting to one side matters relating to the manner of the roll out, further attention on using smart meters to maximise their contribution to addressing climate change, energy security and fuel poverty would be helpful to ensure their early success. This should include how smart meters can be used to change behaviour and improve energy efficiency. For example, understanding more about what is needed to ensure that smart meters give consumers easy access to accurate information about their energy use and energy costs and how such information could be used by suppliers, and perhaps available more widely to energy service companies, to provide tailored energy saving advice.

Ofgem's commitments for 2009

4.16. We will administer the CERT efficiently and effectively. We will assist in the development of the Government's recently announced £1bn Home Energy Savings Programme. We will ensure that resources are well targeted and that measures interact effectively with fuel poverty programmes such as Warm Front.

4.17. Ofgem will respond to the Government's forthcoming consultation on energy savings and the future shape of obligations on energy suppliers to promote energy efficiency post 2011. Our focus will be on working with the Government to develop and implement measures that promote greater energy efficiency, help fuel poverty and reduce carbon emissions to ensure that sustainable development is achieved at least cost.

4.18. We will report on opportunities to stimulate sustained behavioural change and the uptake of energy efficiency at the household level. This work could consider the signal and incentives of various retail tariffs from the perspective of suppliers and domestic consumers, impact of feedback to households on energy usage, development of Energy Service Companies, and the potential for active demand management.

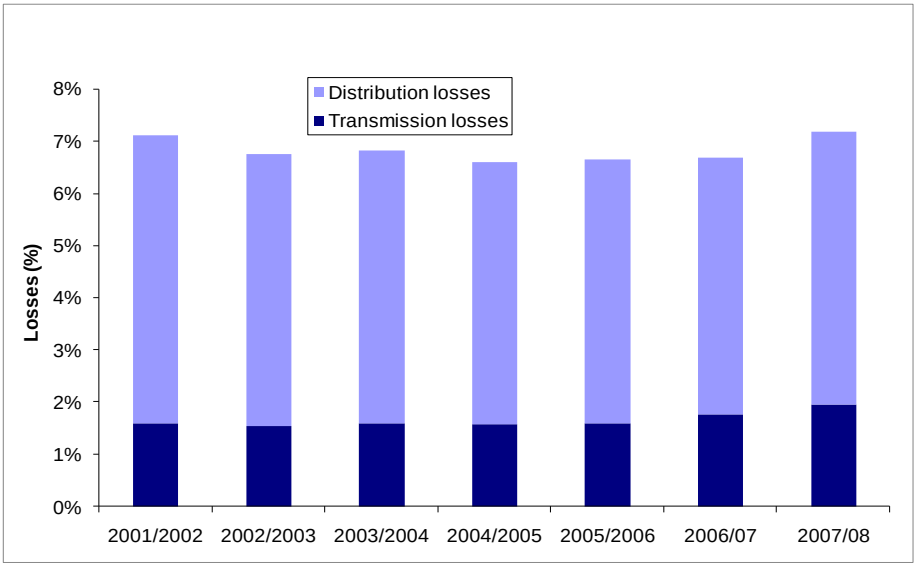
Indicator 10: Gas and electricity losses

Trends in Indicator 10

4.19. The transmission of electricity across wires results in energy being lost as heat. Losses increase with the distance that the energy is transported. These losses have an environmental as well as financial cost. Electricity losses increase emissions of GHGs and other pollutants. Gas network losses result in methane, the principal component of natural gas, being emitted and this is much more potent than CO_2 as a GHG.

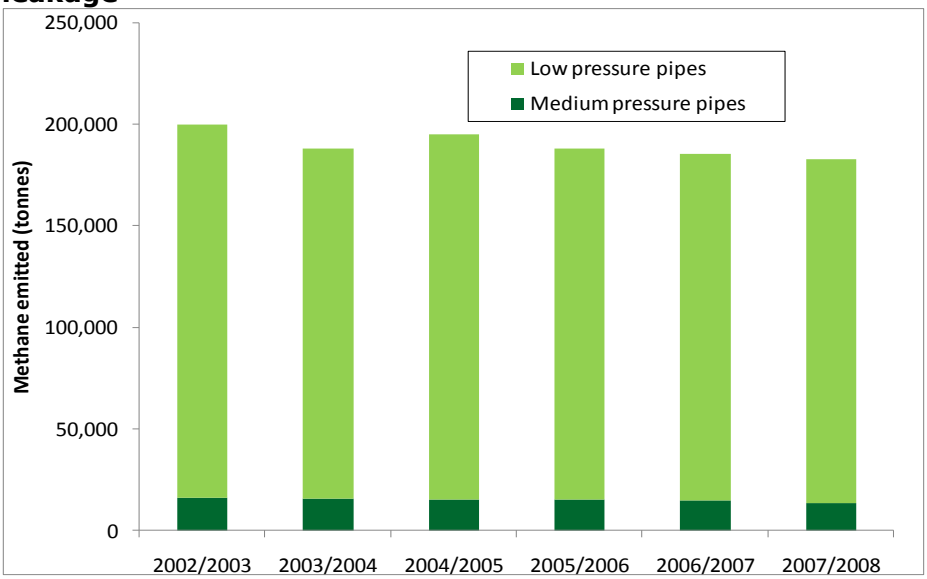
4.20. The information for this indicator is based on information provided to Ofgem under price control arrangements as the environmental performance of networks is an important part of their service quality which is regulated by Ofgem. Figure 17 shows electricity losses from both transmission and distribution networks.

Figure 17: Electricity losses as a percentage of units purchased[36]



4.21. Losses from electricity transmission and distribution networks increased in 2007/08, a reversal of the downward trend seen in earlier years. In previous years, investment in improved metering equipment led to a progressive reduction of electricity losses, particularly on the distribution networks. The cause of the increase in losses is not clear, particularly given that demand has not increased since last year.

Figure 18: Methane emitted from medium and low pressure pipelines due to leakage



[36] Source: Ofgem

4.22. Figure 18 shows that in gas networks losses from low and medium pressure pipelines due to leakage have continued their downward trend in the 2007/08 period.

Update on Ofgem's commitments from 2007 Sustainable Development Report

4.23. **Consider a new environmental incentive in the GDPCR.** Reduction of losses on the gas distribution networks has been achieved in part by two policies, replacement of the Victorian gas mains and an incentive to reduce gas shrinkage. The final proposals for the Gas Distribution Price Control Review 2008-13 introduced an environmental emissions incentive using the Shadow Price of Carbon. This incentive sets a target for gas leakage baselines (similar to losses in electricity distribution). If a gas distribution network achieves a lower level of leakage than its baseline, it receives a reward and if it achieves a higher leakage level then it is penalised based on the shadow price of carbon[37]. Another incentive was introduced to reward innovation targeted to deliver environmental and sustainability benefits.

4.24. **Incentives relating to gas and electricity transmission losses and methane emissions**. The one year incentives introduced on 1 April 2008 included several enhancements to sharpen National Grid's focus on the environmental impact of its actions. This included increasing the price associated with electricity transmission losses and shrinkage in gas volumes to reflect the GHG emissions associated with these. In addition, we have retrospectively introduced an incentive related to methane emissions from the venting of gas compressors.

Meeting the challenge for indicator 10

4.25. We have direct influence over network management through the price controls we set. We place incentives on companies to manage and reduce losses from the networks.

Ofgem's commitments for 2009

4.26. One objective of DPCR5 is to ensure that DNOs manage GHG emissions related to electricity losses. We are reviewing the current incentives and consulting with stakeholders to determine whether the existing regime is appropriate to target improvements in the reduction of losses.

[37] For further details see the final proposals for GDPCR 2007-13: http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=362&refer=Networks/GasDistr/GDPCR7-13

5. Theme 4 - Ensuring a secure and reliable gas and electricity supply

Chapter Summary

The indicators in this chapter are intended to provide an overview of the separate factors which contribute to ensuring secure and reliable gas and electricity supplies for customers. These factors include having sufficient generation capacity, a diverse fuel mix, reliable networks, and a high quality of service.

Introduction

5.1. Interruptions to energy supplies can have severe impacts, causing disruption to commercial activities as well as inconvenience and difficulty for individual consumers[38]. Security of supply has a number of dimensions including the availability and diversity of supplies, adequate availability of network infrastructure and efficient system management and operation.

5.2. The Authority has important statutory duties relating to security of supply. In particular, Ofgem has a duty to carry out its functions in a manner which is best calculated to "…secure a diverse and viable long-term energy supply…" and "…to ensure that all reasonable demands are met."

5.3. Ofgem promotes security of supply by:

- ensuring there is sufficient investment in the regulated networks through price controls;
- setting incentive schemes and quality of service targets for network licensees to encourage network reliability and continuity in supplies to consumers;
- encouraging competition in wholesale and supply markets; and
- monitoring the gas and electricity markets for signs of anti-competitive behaviour.

Indicator 11: Reliability of supply – network performance

Trends in Indicator 11

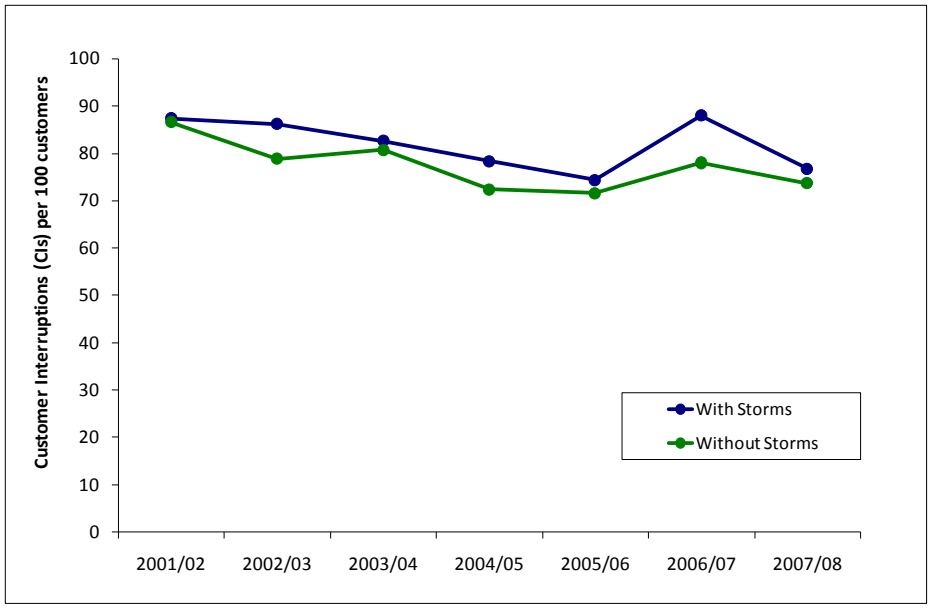
5.4. This indicator looks at the overall reliability of the gas and electricity network by tracking the number of unplanned interruptions to supply customers as a result of issues with electricity and gas networks.

[38] Most customers place value on being able to consume gas and electricity continuously, without interruption. Some customers, such as larger industrial and commercial customers can and do contract to have supplies that can be interrupted, and in these circumstances may either switch to alternative fuels to provide back-up supplies of energy or temporarily cease or postpone their consumption when prices are sufficiently high. However, limited demand-side substitutability for some customers, especially between time periods, and the limitations on economic storage, particularly in relation to electricity, results in value being placed on continuous supply of gas and electricity from the national networks.

Electricity distribution and transmission

5.5. The average number of customer interruptions provides an indication of the average performance for GB's distribution networks. Figure 19 shows power cuts that last longer than three minutes and covers planned and unplanned interruptions from 2001 to date.

Figure 19: Average electricity customer interruptions (CI) per 100 customers[39]

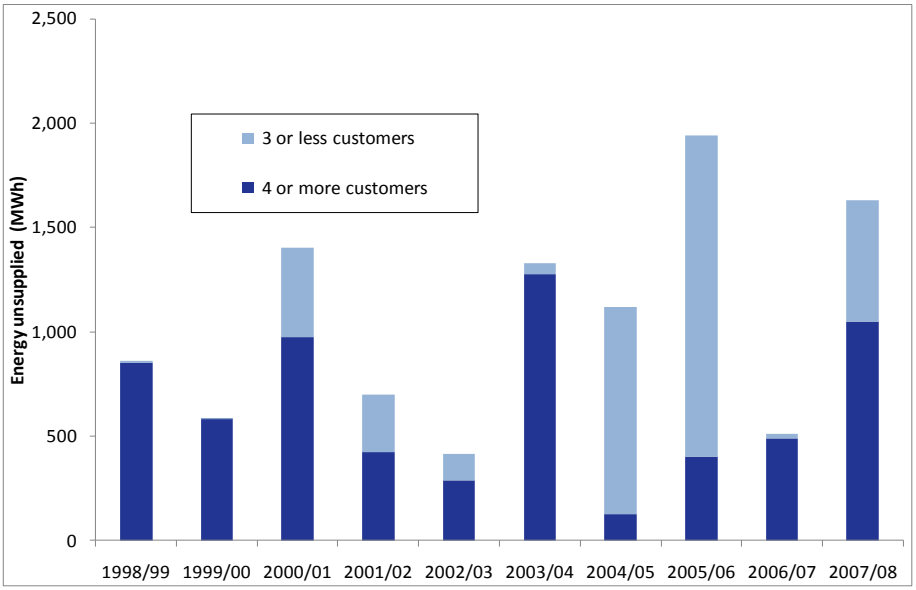


5.6. The performance of GB's electricity networks has generally improved since the introduction of the quality of service incentives in 2002. The trend shows network operators are responding to the incentives to restore customers' supplies promptly and efficiently, although no electricity system can guarantee 100 percent reliability. There will always be some small risk of disruption due to any number of possible causes, including weather-related faults, equipment failures, human error or third-party events. For example, widespread flooding in the summer of 2007 had a material impact on performance.

5.7. The amount of energy unsupplied due to transmission network faults provides an indication of the reliability of the transmission network. Figure 20 looks at the energy unsupplied as a result of unplanned interruptions of electricity transmission only. A reliability incentive was specifically implemented after the London/Birmingham blackouts in 2004.

[39] Source: Ofgem

Figure 20: Energy unsupplied due to transmission network faults[40]



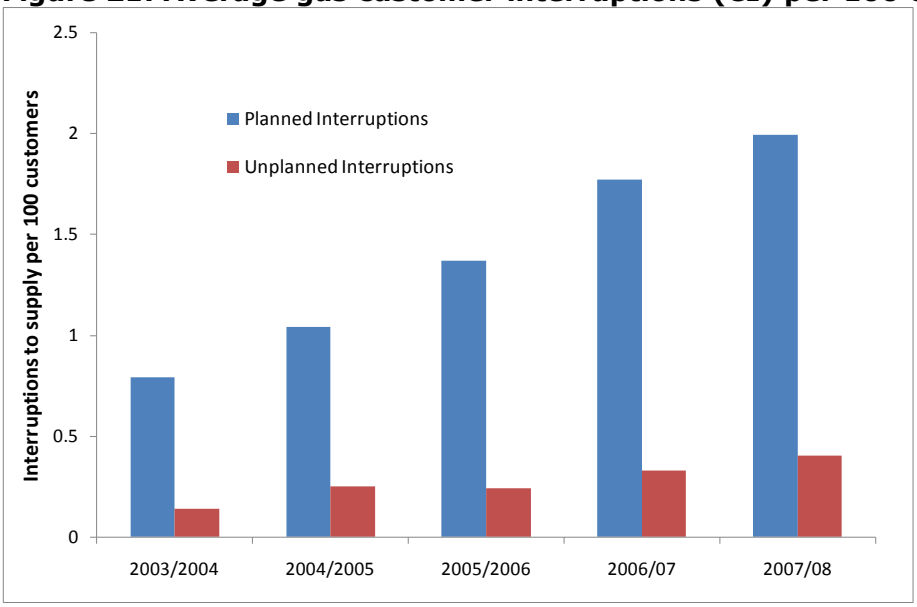
Gas distribution and transmission

5.8. Ofgem uses incentive regulation to encourage gas networks to reduce costs and lower charges to customers. We also specify a number of quality of service outputs and standards which the gas networks must deliver, to balance the drive to cut costs with the need to ensure an appropriate level of service for consumers.

5.9. The current quality of service arrangements require gas distribution networks (GDNs) to report performance on a number of key indicators, including the number and duration of both planned (replacement) and unplanned (emergency and repair) gas supply interruptions. Figure 21 shows the reported number of interruptions per 100 customers arising from GDNs.

[40] Source: Ofgem

Figure 21: Average gas customer interruptions (CI) per 100 customers[41]



5.10. The majority of reported interruptions are due to planned work, as shown in figure 21. This is due to the mains replacement programme, which has been increasing over the period to 2006/07 and will continue at the same rate until completion of the 30 year programme. The replacement of iron mains and associated services is an essential part of the GDNs' strategies for controlling the risk arising from the networks. It also has additional benefits of reducing the leakage by replacing the iron mains with polyethylene pipes.

5.11. The number of unplanned interruptions has increased over the past two years. This is due to a single incident in 2006-07 at Crooke in northern England which affected more than 6000 customers and, more recently, an improvement in the quality of the interruptions data supplied by GDNs.

5.12. The gas transmission network is generally highly reliable and interruptions for planned maintenance are managed through the capacity buyback arrangements.

Update on Ofgem's commitments from 2007 Sustainable Development Report

Electricity distribution

5.13. **Publish the DPCR5 initial consultation**. We published the initial consultation in March 2008 for the scope of the price control that will take effect in April 2010. The initial consultation outlined three key themes of environment, customers and networks. The price control is looking at financial incentives to encourage electricity distributors to make their networks more sustainable and to encourage distribution

[41] Source: Ofgem

to respond more to their customers' needs when running and developing the networks.

5.14. **Performance of customer service reward scheme (2007/08)**. We assessed the electricity distribution customer service reward scheme, which is designed to encourage better service for consumers. The scheme, in its third year, focused this year on DNOs' approaches to corporate social responsibility and wider communications strategy.[42]

Gas distribution

5.15. **Final proposals for GDPCR.** Throughout 2007 Ofgem took forward the GDPCR for the period 2008-2013. Our final proposals allowed for increased spending by the companies primarily to make their networks safer by replacing cast iron mains.

5.16. **Develop incentives for interruption arrangements.** The capacity outputs incentive is intended to encourage GDNs to make efficient use of the capacity management outputs available to them, including making efficiency trade-offs between the use of NTS capacity, investment in their network and the use of customer interruption where the options are possible.

5.17. **Review quality of service arrangements.** During the GDPCR Ofgem reviewed the quality of service arrangements. Our final proposals comprise licence conditions requirements; guaranteed standards of performance, and a comparison of the GDNs' performance, in the form of a published balanced score card. We replaced all of the standards of performance with licence conditions or modifications to the guaranteed standards of performance (GSOPs) because this will allow the Authority to take more appropriate enforcement action against the licensee in the event of a failure to meet the prescribed level of performance. The updated quality of service arrangements took affect on 1 April 2008.

5.18. **Improve the reporting standard of GDNs' quality of service data.** As part of the GDPCR, we introduced minimum standards for the quality of data submitted by GDNs. This will ensure GDNs have in place appropriate systems and procedures to monitor and record data and that data reported to Ofgem is reliable and accurate. Ofgem will be undertaking an audit of GDNs' reporting systems and data early in this price control period to ensure that this is the case. Where information is not sufficiently robust or GDNs do not have appropriate systems in place, Ofgem will take appropriate action to ensure future compliance.

Electricity transmission

5.1. **Long-term electricity network scenario analysis**. In line with a commitment in the 2007 Energy White Paper, Ofgem has taken forward the long-term electricity

[42] http://www.ofgem.gov.uk/Networks/ElecDist/QualofServ/CustServRewSch/Documents1/Decision%20Report.pdf

network scenarios (LENS) project. The main objective of this project is to facilitate the development of a range of plausible electricity network scenarios for Great Britain in 2050 around which industry participants, Government, Ofgem and other stakeholders can discuss longer term network issues. Over the past year, Ofgem has consulted with stakeholders throughout the scenario development process and used their feedback to refine the project's outputs. We have published a final scenarios report setting out five network scenarios with quantification and 2025 way-markers. We intend to publish our views on scenario implications for networks and for the regulation of networks. We envisage that the outcomes of the LENS project will feed into the RPI-X@20 review.

5.2. **Review system operators incentives.** The gas and electricity transmission system operators (SOs) are responsible for keeping supply and demand on the networks in balance in real time and managing short term constraints on the networks. We have set commercial incentives to encourage them to manage and reduce the costs to customers of doing this.

5.3. **Develop arrangements for the offshore electricity transmission regime with DECC.** In a joint project with DECC, we have developed a regulatory regime (for more information see actions under indicator 3 in theme 1).

Meeting the challenge for indicator 11

5.4. The gas and electricity networks are facing many challenges due to the need to support the growth of renewable generation, the connection of new gas import and storage projects, and the development of distributed generation. There is also uncertainty about the future role of networks, particularly with the advent of a roll out of smart meters and higher levels of microgeneration in households. Undoubtedly we are at a critical juncture in the development of GB networks. The networks will require investment to address these challenges and to replace the ageing network equipment.

5.5. While historically we have focussed on incentivising network operators to run their businesses efficiently we may need to take steps to ensure that they are preparing for change in an efficient way. We are committed to ensuring that the regulatory regime is up to this task. Accordingly, we belive the time is right for a formal review of the current regulatory regime.

Ofgem's commitments for 2009

5.6. Ofgem has launched a two year project, RPI-X@20, to review the workings of the current approach to regulating GB energy networks and develop future policy recommendations. Over 2009 the review will involve substantial consultation with a broad range of stakeholders by a variety of means, including stakeholder meetings and a web forum on the Ofgem website for stakeholder contributions.

5.7. We want DNOs to invest efficiently, so that they provide secure and reliable supply at the lowest possible costs while ensuring that any new assests they are installing will meet customers' needs into the future. Our current DPCR5 policy consultation outlines the methodologies and regulatory arrangements that we think are appropriate for the DPCR5, which will reset the revenue allowances for the 14 DNOs for 2010 to 2015.

5.8. We will publish a balanced score card of GDNs' performance in Ofgem's 2008-09 Gas Distribution Quality of Service Report. A comparison of quality of service data provides an incentive for GDNs to improve their quality of service and also helps to identify areas where further regulatory action may be required.

5.9. We are working with National Grid and stakeholders to develop SO incentive arrangements which will apply from 1 April 2009. We have identified a number of areas that should be considered as part of the review of the SO incentive schemes from April 2009. As part of this process National Grid has published a series of initial consultations that look at the development of possible incentive arrangements.

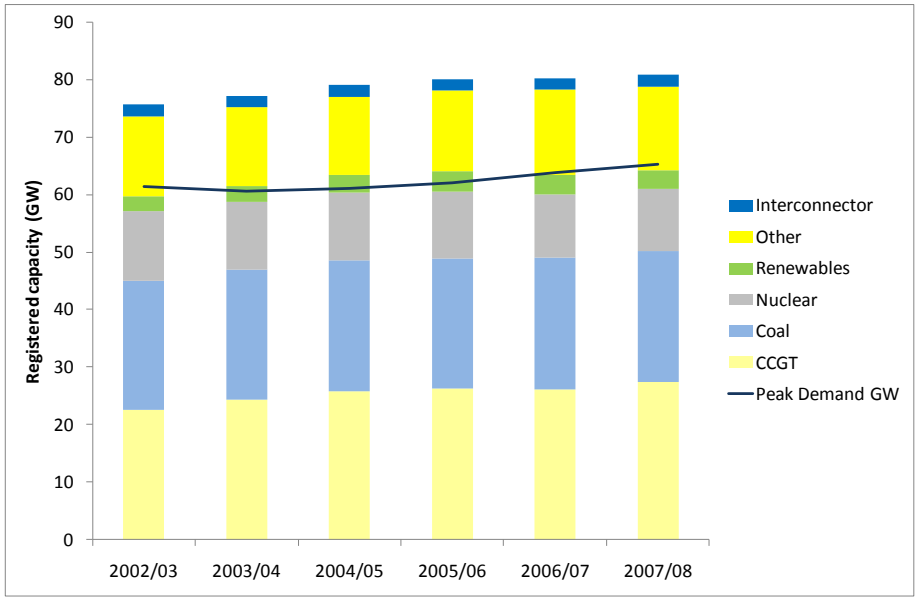
Indicator 12: Security and diversity of supply – market response

5.10. Competitive markets play a crucial role in delivering security and diversity of energy supplies. Market forces of supply and demand signal through prices the need for additional capacity in the future and for rationing demand in the event of short-term scarcity. Competition provides incentives for companies (and customers) to respond to meet their customers' requirements for keenly priced and secure electricity and gas supplies, or risk losing their business. This indicator looks at the existing availability of electricity and gas supplies and expected future capacity to meet demand.

UK electricity generation mix

5.11. Figure 22 shows the proportion of electricity generation from declared fuels and the potential UK gas supply source, against annual peak demand.

Figure 22: The UK electricity generation mix[43]



5.12. In 2007 Great Britain had approximately 80 GW of electricity generating capacity from a diverse mix of electricity generating technologies of various vintages. While more than 40 percent of our present generating capacity was built between 1965 and 1975, a quarter of it has been commissioned since 1995.

Indicator 13: Future electricity generation mix

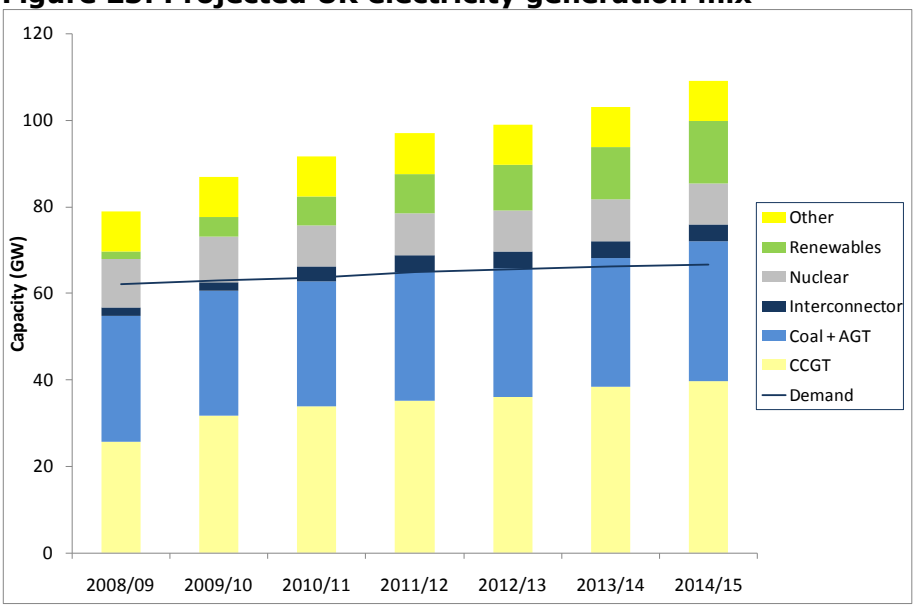
Trends in Indicator 13

5.13. Future levels of generating capacity will depend on how much existing plant is retired from service and how much new plant is built. Expected future profitability is largely informed by investors' views on the supply-demand balance, Government and regulatory policy, environmental requirements, relative movements in fossil fuel and carbon prices, and the capital costs of new plant. These are key factors that influence decisions on plant closure and the timing, volume and type of new build.

5.14. National Grid's projections on the potential future generation mix and peak demand are shown in Figure 23.

[43] Source: BERR- DUKES 2008.

Figure 23: Projected UK electricity generation mix[44]

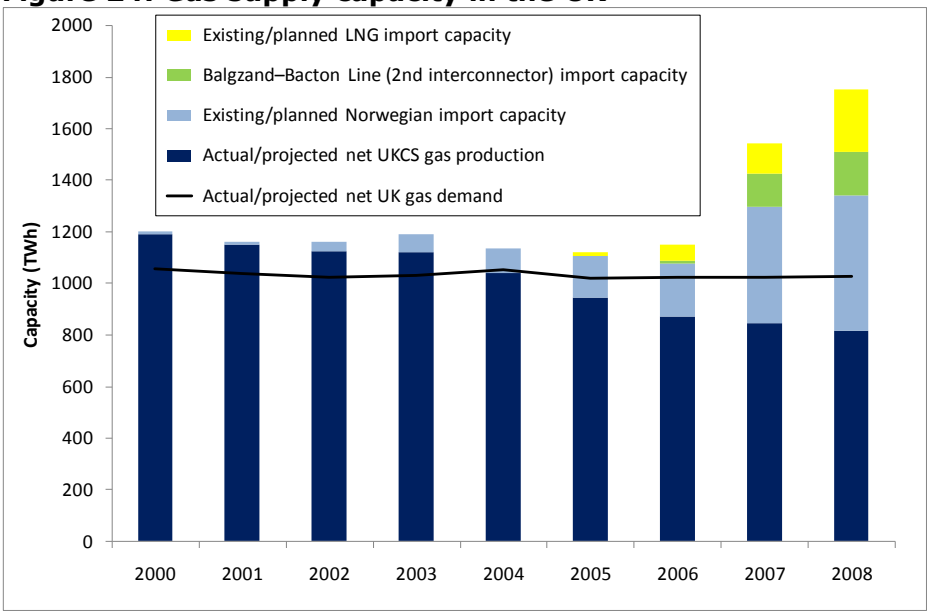


5.15. A significant proportion of the UK's electricity generation capacity is expected to close over the next few years. Capacity margins could fall in the five years between 2015 and 2020. For example, approximately 12 GW of large coal plant will close by the end of 2015 as a result of stringent air quality standards set by the Large Combustion Plants Directive. Around two thirds of UK's current nuclear generation capacity is also scheduled to close by 2020.

5.16. Consented and anticipated new build is expected to replace the expected closures of existing plant capacity. As at September 2008 there is some 10.5 GW of conventional electricity generation capacity with consent to build, of which 7.5 GW is under construction. In addition there is about 8.3 GW of renewable generation with consent to build (1.5 GW currently under construction). A second electricity interconnector to the Continent with a capacity of 1.3 GW is also under development.

[44] Source: NG Seven Year Statement 2008

Figure 24: Gas supply capacity in the UK[45]



5.17. Figure 24 shows the UK's gas supply capacity and annual demand. In recent years the UK has experienced higher levels of dependence on imported gas. However, the risks of gas import dependency are being mitigated by an increase in gas storage capacity and a diversity of import options. For example, a major new supply of gas came on line in 2007 with the opening of the Langaled pipeline to pump gas to the UK from the Ormen Lange field off Norway. Another major development driving future gas supply sources in the UK is investment in LNG reception facilities. LNG import facilities recently commissioned at Teeside and Isle of Grain have added valuable LNG import capacity.

Update on Ofgem's commitments from 2007 Sustainable Development Report for Indicators 12 and 13

5.18. **Cash out review.** Ofgem has been working with the industry to review aspects of the cash out arrangements in electricity. Over the past year three modifications have been proposed to address concerns that cash-out prices are being 'polluted' by the costs of system balancing actions, such as those taken to manage constraints on the transmission network. Ofgem recently issued a decision to approve one of these proposals, P217A, "Revised tagging process and calculation of cash-out prices"[46].

5.19. **Work with DECC on the Energy Markets Outlook (EMO)** Ofgem has worked with DECC on the EMO report to provide a clear assessment of the outlook for supply and demand and any emerging risks that could impact on security of supply. The EMO helps the industry and consumers make the decisions needed to maintain security of supply.

[45] Source: National Grid's Transporting Britain's Energy 2008: Development of NTS Investment Scenarios.
[46] http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?file=P217 Revised Tagging process and calculation ofcash-out prices.pdf&refer=Markets/WhlMkts/CompandEff/CashoutRev

5.20. **Work in Europe to achieve greater information transparency across Europe as a whole**. As part of the ERGEG Gas Regional Initiative, Ofgem has led a voluntary information sharing project in north west Europe to increase the transparency of gas flows and capacity available to transport gas in a effort to make the European energy markets more competitive. The project has helped network users by providing new information on gas flows and capacity at cross-border points on the gas networks. The transparency project's first implementation report was published in July 2008[47]. Future project implementation reports will be published in February 2009.

5.21. **Facilitate the demand side in contributing to security of supply.** The GB markets team has been working with customers and key stakeholders in support of the Summer Outlook and the Winter Outlook 2008/09 consultation. Ofgem has worked with National Grid in its role as System Operator to create appropriate incentives to enter into arrangements to assist it balancing the system with potential demand side participants where it is efficient to do so. In addition, Ofgem's regular Demand Side Working Group has given particular focus to improvements in the provision of information to the market which demand side participants can then respond to. Following improvements identified by the DSWG, Ofgem also approved industry code changes in the electricity market (implemented in November 2008) to introduce a new electricity data summary page.

Meeting the challenge for indicators 12 and 13

5.22. The objective of security of supply is an explicit element of the UK Government's energy policy. The Government's energy policy is based on markets and independent regulation. Ofgem's direct role in effective market oversight is important to allow markets to deliver secure and sustainable energy in the most cost effective way to energy customers.

5.23. The diversity of the fuel mix, particularly with the growth of renewables and low carbon technologies and reliance on gas imports, will become increasingly significant for energy security in the UK. In addition, rising energy demand in countries such as China and India will increase the competition for resources.

5.24. The value of keeping options open and flexible is high given the energy security challenges ahead. Over the past year the Government has taken a number of policy decisions regarding the role of various technologies in the future energy mix. These include renewables (see indicator 3), nuclear and the use of gas and coal with CCS.

5.25. The Government has concluded that nuclear should have a role to play in the generation of electricity alongside other low carbon technologies and has announced an action plan to facilitate new build of nuclear[48]. It has also concluded that energy companies will have to pay the full costs of decommissioning and nuclear waste

[47] http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=1&refer=Europe/Whatwedo/RegionalInit
[48] This includes the establishment of an Office of Nuclear Development and a National Skills Academy for Nuclear.

management of new nuclear power stations. Accordingly operators will need a Funded Decommissioning Programme, approved by the Secretary of State, in place before construction of a new nuclear power station begins[49]. Although the green light has been given for new nuclear build significant uncertainties remain for investors. For example, operators' liabilities for decommissioning and disposal will be difficult to assess given uncertainties around implementing a geological repository (the Government's preferred long-term solution – see theme 5) and the contingencies that might be necessary.

5.26. Carbon Capture and Storage (CCS) will be an important technology for the shift to low carbon, particularly given the ongoing and important role gas and coal has in UK electricity generation for the foreseeable future. To reconcile the use of these flexible but carbon intensive fuel sources, the Government has recently consulted on steps it is taking to prepare for CCS, including the proposal to support an EU Directive that would require new combustion plants over 300MW to be Carbon Capture Ready (CCR). The costs of assessing CCR and the impact on new investment will depend on how a power plant will be deemed to be CCR. The requirements could significantly increase the capital costs of new build, particularly when transport and storage factors are not yet commercially feasible.

5.27. In November 2008 the European Commission issued its Second Strategic Energy Review (2nd SER). This contains an EU Energy Security and Solidarity Action Plan. The rapid adoption and proper implementation of the third liberalisation package should be a precondition for all other measures. Liberalisation of European energy markets is crucial to the UK. A single market should promote diversity along with common reliability and security standards.

Ofgem's commitments for 2009

5.28. Ofgem will consider the implications of the EU action plan for security of supply and actively seek to influence the debate on the 2nd SER. With the Third Package of liberalisation of European energy markets in place our focus, through our work with CEER and ERGEG, will switch to implementation. Our priorties over the coming year are guided by the interests of British energy consumers and include contributing to the establishment of the new EU energy agency, and facilitating competitive European energy markets through structural unbundling of transmission networks, and improvements in transparency.

5.29. We will seek to remove barriers preventing the market from delivering security of supply that lie within our remit and powers. We will work with the Government to remove others, such as planning, and will advise the Government in relation to its forthcoming National Policy Statement for major energy infrastructure projects.

5.30. We will work with DECC to develop the 2009 Energy Markets Outlook report in the light of the EU Renewables Directive and UK Renewable Strategy.

[49] The Nuclear Liabilities Funding Assistance Board has been set up to oversee the funding arrangements put in place by the operators of any new nuclear power stations for decommissioning and waste disposal.

5.31. We will work with National Grid to ensure an effective Winter Outlook consultation process which benefits market participants by improving transparency, and in particular work to increase the international dimension of these reports.

Indicator 14: Quality of service - supply market performance

Trends in Indicator 14

5.32. This indicator provides an overview of the quality of service that customers receive from suppliers. Given the challenges presented by climate change, and changes in retail prices, we would expect suppliers to be increasingly offering consumers products that enable them to effectively manage their consumption and their energy costs.

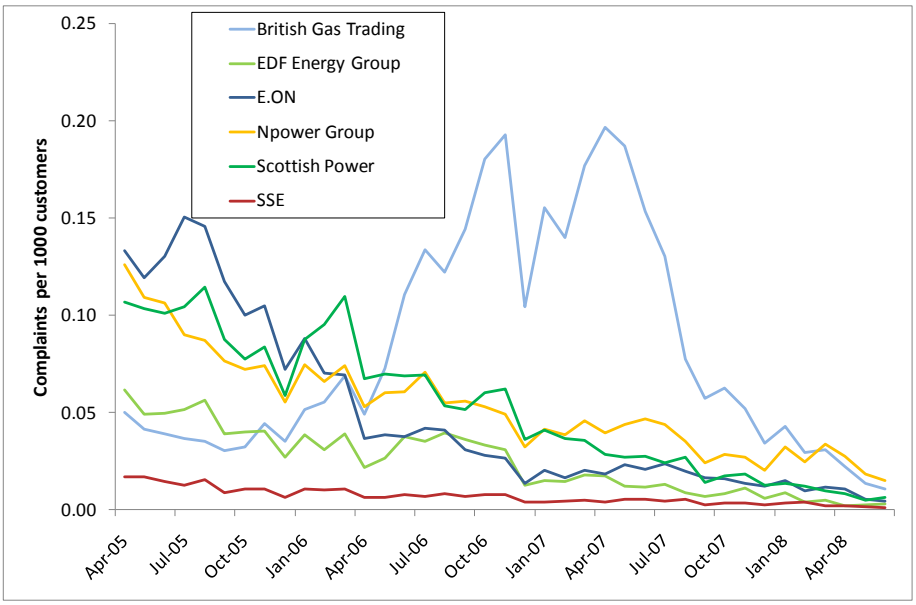
5.33. Assessing suppliers' quality of service has many dimensions. These may include customer satisfaction, quality and accuracy of billing, as well as the availability of energy service products or other services which enable customers to actively manage their own energy consumption.

Consumer satisfaction

5.34. The following charts show the total number of complaints made to energywatch per 1000 customers, and the take up of the new innovative tariffs.

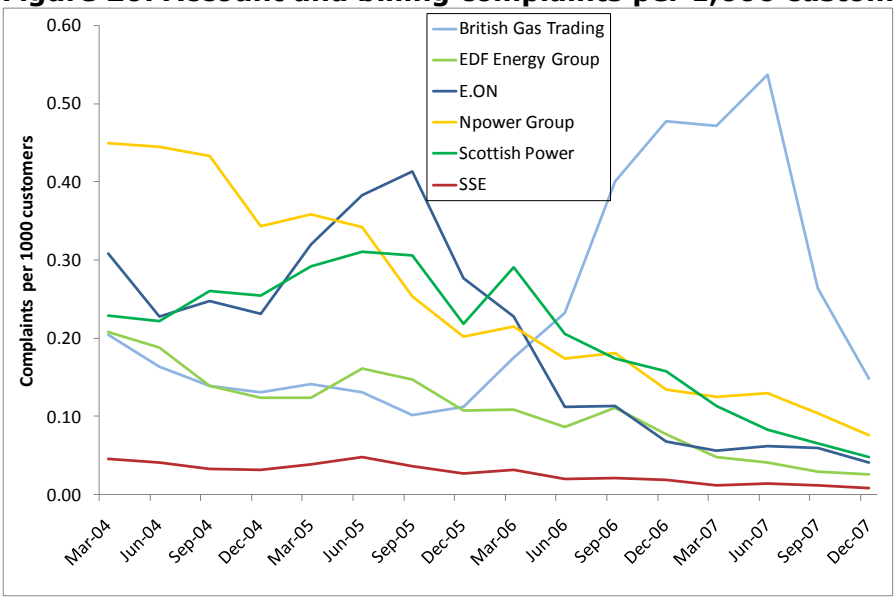
5.35. Figure 25 shows the level of unresolved complaints has fallen for all the big six suppliers over the past year. British Gas in particular has successfully resolved problems experienced in 2006 in transferring customers to a new billing system.

Figure 25: Number of complaints made to energywatch per 1000 customers (by supplier)[50]



Quality and accuracy of billing

Figure 26: Account and billing complaints per 1,000 customers[51]



5.36. Figure 26 shows that the number of accounts and billing complaints for all suppliers fell in 2007.

[50] Source: energywatch
[51] Source: energywatch

5.37. As part of the Government's Consumer Estate Agents and Redress Act consumer representation has changed in the energy industry. Ofgem has appointed the Ombudsman Service Limited (tOSL) to become the new independent ombudsman for energy customers and from 1 October Consumer Direct is providing initial advice to energy consumers[52]. At the same time, Consumer Focus has been established as the new statutory organisation campaigning on behalf of consumers on a variety of issues including energy[53]. These new arrangements have replaced energywatch.

Indicator 15: Product Innovation

Trends in Indicator 15

5.38. Suppliers are offering a range of products to attract and keep customers. These have proved popular in the market: there are some 7.5 million gas and electricity accounts on fixed price, online and 'green'deals, accounting for roughly 16 percent of all energy accounts.

5.39. Figure 27 shows the number of fixed price and online products has fallen compared to the same time last year. The difference is partly the result of the timing. For example, some popular price guarantee products expired towards the end of the financial year and either a similar product was not available or customers did not sign up to the replacement.

Figure 27: Price guarantee and online tariffs[54]

[52] See www.consumerdirect.gov.uk for further details.
[53] See www.consumerfocus.org.uk for further details.
[54] Please note that the number of accounts for 2006/07 was revised down because a large number of product accounts have been excluded that were incorrectly included in these figures previously. Source: Ofgem

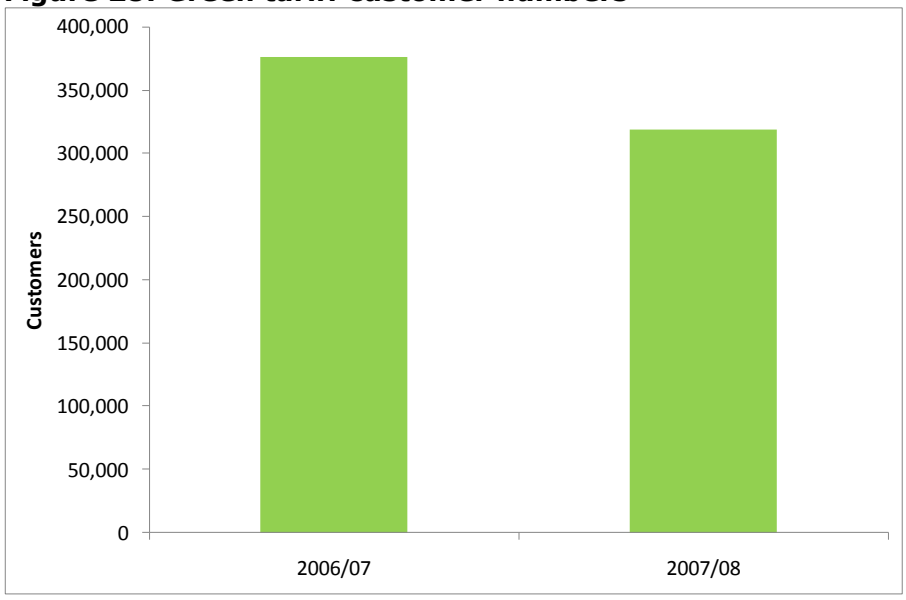
Indicator 16: 'Green' Tariffs

Trends in Indicator 16

5.40. 'Green' tariffs range from committing suppliers to sourcing energy from renewable sources, to giving contributions to green funds, which could offset carbon emissions for example, or contribute in some way to carbon reduction. Awareness of climate change has increased the interest in green tariffs. Figure 28 shows the total product/customer numbers as at the end of the financial year.

5.41. Over the past year Ofgem has been reviewing the guidelines for green tariffs with industry. The aim of this review is to provide greater customer assurance that signing up to a green tariff will provide additional environmental benefits over and above what the current subsidies are delivering. Some suppliers have made changes to the green tariffs they offer with some tariffs that were previously marketed as green tariffs no longer being branded as such. As a result there has been a reduction in the number of accounts on green tariffs in 2007/08.

Figure 28: Green tariff customer numbers[55]



Update on Ofgem's commitments from 2007 Sustainable Development Report for Indicators 14, 15 and 16

5.42. **Review the Energy Supply Ombudsman scheme.** Ofgem appointed tOSL to become the new independent ombudsman for gas and electricity customers. The new ombudsman service replaces the voluntary scheme with a statutory scheme that all energy companies, including network companies, must join. These arrangements

[55] Source: Ofgem

also provide redress to the Energy Supply Ombudsman for energy consumers who are unable to resolve their disputes with energy companies.

5.43. **Set standards of performance for complaint handling**. Ofgem published its regulations for handling complaints in the energy sector in July 2008 in accordance with the statutory requirement set out in the Consumers, Estate Agents and Redress Act 2007. All energy companies were required to sign up to and implement by 1 October 2008. Ofgem is currently conducting an audit of suppliers' compliance with the new standards.

5.44. **Work with industry to develop guidelines for Green Supply tariffs.** We released further recommendations for Green Supply Guidelines in July 2008. The recommendations placed increased emphasis on transparency to ensure that green claims are verifiable and to make the environmental benefit of any tariff a central part of the guidelines. We are currently working with industry to finalise the guidelines.

Meeting the challenge for indicators 14, 15 and 16

5.45. Competition in supply provides incentives for energy suppliers to reduce prices, improve productivity and innovation whilst rewarding consumers with lower prices, better service, and wider choice. Where markets operate freely and effectively competition can be expected to bring all the benefits above.

5.46. Concern about higher fuel bills and increasing awareness of the environmental impacts of energy use are likely to increase customers' demand for more sophisticated products and services to manage energy use and reduce fuel bills. In the face of such demand suppliers have two choices: explore these new business opportunities and respond with products to meet requirements, or risk losing customers. Demand driven innovation can represent a real benefit to customers but it is sometimes difficult for everyday customers to compare the variety of deals and find the best option to suit their circumstances. Ofgem is alert to the need to address the potential for consumer confusion. We are also keen to see more customers actively participate and benefit from the competitive market. Therefore, we are looking at the information suppliers should be obliged to make available to customers so that customer friendly and reliable information is available to support informed and effective customer choice.

Ofgem's commitments for 2009

5.47. We will work with industry to establish a certification scheme, based on the requirements in the finalised Green Supply guidelines. This is expected to be in place in 2009.

5.48. The Probe has identified a number of measures to promote active customer participation and informed choices[56]. Ofgem is currently considering consultion responses to the proposals for:

- Clearer information on customer bills to make it easier to compare with alternative options;
- An annual prompt to customers on how to switch supplier;
- The development of an easy-to-understand price metric to help customers compare prices easily; and
- Strengthening the rules governing suppliers' sales and marketing activities.

[56] See pages 13 and 14 of Energy Supply Probe, October 2008 for more details. http://www.ofgem.gov.uk/Markets/RetMkts/ensuppro/Documents1/Energy%20Supply%20Probe%20-%20Initial%20Findings%20Report.pdf

6. Theme 5 - Supporting improved environmental performance

Chapter Summary

In this chapter we examine aspects of the local environmental footprint of the energy sector.

Introduction

6.1. In addition to its contribution to climate change and impact on the global environment, the energy sector has an impact on the local environment. For example, electricity generation from burning fossil fuels is one of the main sources of emissions of air quality pollutants, sulphur dioxide (SO_2) and nitrogen oxide (NOx). These pollutants may affect air quality, directly affect vegetation and lead to acidification as well as water pollution. Coal-fired stations produce large quantities of bottom and fly ash, the bulk of which has to be disposed of. Electricity generation can have an effect on waterways when used as a source of cooling water and a depository of liquid wastes. Most flue gas desulphurisation processes also produce liquid effluent.

Indicator 17: Impacts of electricity generation

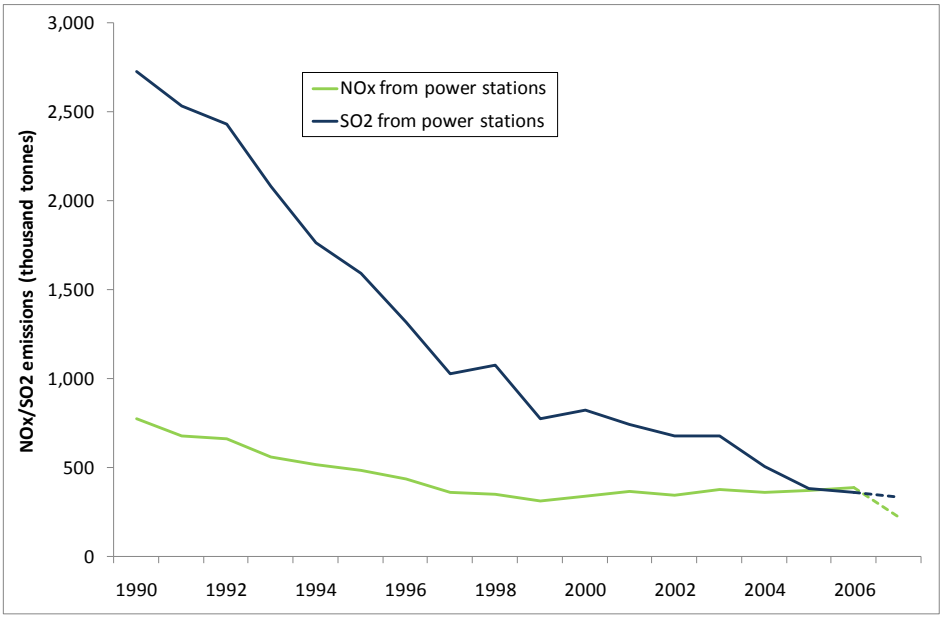
Trends in Indicator 17

6.2. Emissions of NOx and SO_2 from electricity generation are shown in figure 29. These emissions have dropped significantly from levels recorded in 1990, due to a combination of European directives regulating the installation of desulphurisation systems and the move away from coal to gas. In recent years NOx emissions have increased slightly.

6.3. Going forward we expect NOx emissions will decrease due to binding restrictions on operating plant without emission abatement equipment with the Large Combustion Plant Directive that came into force at the start of 2008. The LCPD aims to reduce acidification, ground level ozone and particles throughout Europe by controlling emissions of SO_2, NOx and particulates from large combustion plants including power stations.

6.4. The Large Combustion Plants (National Emissions Reduction Plan) Regulations 2007 provides for the operation of a register designed to facilitate emissions trading in NOx and SO_2. Participation in this trading platform is one option open to existing large combustion plants to comply with the LCPD.

Figure 29: NOx and SO_2 emissions from power stations[57]



6.5. The UK has accumulated a substantial legacy of radioactive waste from various civil and defence programmes. Nuclear electricity generation produces the majority of civil nuclear waste in the UK. This includes waste from the manufacture of nuclear fuel, nuclear power stations, reprocessing of spent nuclear fuel and R&D.

6.6. The Nuclear Decommissioning Authority (NDA) was set up in 2005 to take responsibility for the UK's public sector civil nuclear liabilities, and their subsequent management. Table 1 shows the latest data from the 2007 UK Radioactive Waste Inventory published by the NDA. The total volume of processed radioactive waste in stock has increased by since the last published inventory in 2004.

Table 1: Volume of radioactive wastes in stock (in cubic metres)

Level of Waste	2001 Inventory	2004 Inventory	2007 Inventory	Change
Low-level waste	14,700	20,900	196,000	175,100
Intermediate-level waste	75,400	82,500	92,500	10,000
High-level waste	1,960	1,890	1,730	-160
Total	**92,060**	**105,290**	**290,230**	**184,940**

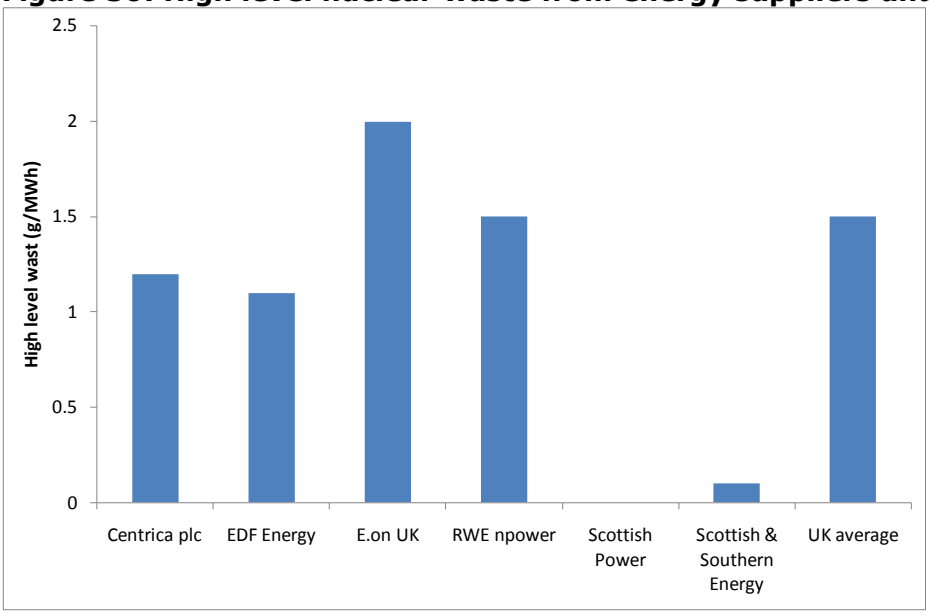
6.7. The total volume of radioactive waste that exists today or is forecast over the next century from existing facilities is about 3.4 million cubic metres. Most of the total radioactive waste has already been produced is contained within existing

[57] Source: E-Digest of Environmental Statistics – Defra 2007. Note: 2007 is extrapolated from the trend of the previous two years.

nuclear reactors and other nuclear facilities and will not be processed until these are shut down and dismantled.

6.8. Figure 30 shows the radioactive waste in grams per megawatt hour reported in the suppliers fuel mix disclosure information. Suppliers provide details of the mix of fuels used and the high-level nuclear waste associated with the electricity they purchase to supply customers. The data relates only to high-level waste, such as waste products of nuclear fuel, which is highly radioactive material and is extremely difficult to dispose of.

Figure 30: High level nuclear waste from energy suppliers and UK average[58]



Indicator 18: Impacts of electricity and gas networks

Trends in Indicator 18

6.9. Networks have environmental impacts on the land where they are sited. These can include effects on visual amenity through the intrusion of overhead lines in designated areas and the use of fluid-filled cables which can contaminate ground water if they leak. SF_6 is widely used (and is likely to be increasingly so) in transmission and distribution equipment as the best available technology for insulation. The systems can also have impacts on wildlife.

[58] Source: www.electricityinfo.org

Table 2: Length of overhead electricity power lines in national parks and areas of outstanding natural beauty 2007/2008[59]

Network Type	Total km of overhead lines in national parks and AONB 2007/2008	2006/2007	2005/2006
Distribution	42,639	42,673	42,687
Transmission	1,132	1,129	1,129
Total	43,771	43,802	43,816

6.10. Ofgem introduced an allowance in the last distribution price control for network undergounding in national parks and areas of outstanding natural beauty. The scheme has been positive for the gradual removal of existing overhead lines as shown in table 2.

6.11. Table 3 shows there was a reduction in the use of fluid-filled cables in 2007.

Table 3: Use of insulating oil in fluid-filled cables 2007/2008[60]

Network Type	Year	Fluid-filled cables in use (km)	Volume of fluid used to top-up cables (l)	Number of reportable incidents
Distribution	2005/2006	6,640	409,329	87
	2006/2007	6,600	451,939	70
	2007/2008	6,495	452,353	72
Transmission	2005/2006	979	50,000	32
	2006/2007	982	43,132	22
	2007/2008	972	27,528	32
Total	2005/2006	7,619	459,329	119
	2006/2007	7,582	495,071	92
	2007/2008	7,467	479,881	104

Update on Ofgem's commitments from the 2007/08 Sustainable Development Report for indicators 17 and 18

6.12. **Consider developing a model for measuring the impacts of electricity generation on local environment over time.** Owing to resource constraints it has not been feasible to progress this proposal.

6.13. **Implement measures to take account of pollutants to meet environmental objectives.** As part of Ofgem's review of the governance of gas and electricity industry codes (see Theme 1 2009 commitments) we are considering whether we should be amending licences to require code panels to take into account broader environmental costs over and above GHG impacts.

6.14. **Respond to the Government's consultation on the future of nuclear power.** We have engaged in aspects related to the development of the

[59] Source: Ofgem
[60] Source: Ofgem

Government's policy on nuclear power around the site selection criteria and advice to National Grid on the treatment of costs to accommodate new nuclear power stations.

6.15. **Review how suppliers report on nuclear waste in line with the Fuel Mix Disclosure (FMD) requirements**. We surveyed suppliers in order to understand how they fulfil their FMD requirements. We were satisfied that suppliers' responses were fulfilling their obligations.

6.16. **Assess applications to underground sections of transmission network.** Policy on undergrounding was implemented at the same time as the fourth Transmission Price Control Review (TPCR4). Projects in the price control period to 2012 are unlikely to be relevant unless they need to be redesigned, for example because of planning consents requirements. This may be the case with the Beauly-Denny line which is still in the planning inquiry stage, and does not form part of TPCR4. Potentially, this could be a significant test case of our policy.

Meeting the challenge for Theme 5

6.17. All forms of energy generation have some adverse environmental effects. The Government's consultation on the UK's Renewable Energy Strategy gives increased emphasis to the development of renewable sources of energy because of the need to reduce GHG emissions. This does not mean that the adverse local effects of all proposals for renewable energy will be acceptable. There is a balance to be struck, and there will be some proposals that are unacceptable.

6.18. The task of local decision makers in balancing the tensions between local concerns and wider national policy and needs is difficult. The development of stronger National Policy Statements for renewables and electricity networks will help local planning authorities by promoting a nationally consistent approach to balancing the competing values associated with the development of renewable energy resources and infrastructure and will provide greater certainty to decision-makers, applicants and the wider community.

6.19. The most significant environmental challenge of nuclear energy is in the management of radioactive waste produced by nuclear power stations. The challenge in managing these wastes is to isolate their radioactivity from people and the environment for thousands of years. The Government has decided to permit the building of new nuclear power facilities (see theme 4) and also concluded that geological disposal is the best long-term solution to managing the UK's higher activity radioactive waste. The Government's White Paper on Managing Radioactive Waste Safely (MRWS) sets out the framework for implementing geological disposal, including technical preparation, regulation, and community engagement on siting disposal facilities[61].

6.20. Crafting a robust, fiscally prudent and effective regulatory regime to support the development and deployment of CCS is a challenge similar to that for new

[61] http://www.defra.gov.uk/environment/radioactivity/mrws/pdf/white-paper-final.pdf

nuclear build. The need to integrate with EU legislation compounds the complexities. The Government is progressing a regulatory framework for CCS with the objective of reducing uncertainty for both industry and regulators and to ensure the environmental integrity of CCS. The Energy Act 2008 includes enabling provisions for regulating CO_2 storage in the offshore area.

Ofgem's commitments for 2009

6.21. We are considering introducing some flexibility to the capped incentives for DNOs to lay cables underground in national parks and AONB within our DPCR5 policy consultation paper[62].

[62]See our DPCR5 policy paper, released 5 December 2008: http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=132&refer=Networks/ElecDist/PriceCntrls/DPCR5

7. Increasing openness, transparency and accountability

Chapter Summary

This chapter provides an overview of the work, as well as new initiatives, that Ofgem has taken forward over the past year to embed sustainable development considerations in our policy and operational activities. This includes details of the impact assessments that we undertake in our development of policy and to assist our thinking sustainability issues. It also sets out details of the various working groups and fora we have established to discuss social and environmental issues.

Introduction

7.1. This chapter describes a number of the activities Ofgem has undertaken over the past year to further promote understanding of the environmental and social agenda relating to energy, to build relationships with other organisations and to improve our internal practices. We are committed to improving openness and transparency in all areas of our work. For example, minutes of Authority meetings are published on Ofgem's website and since February 2006, the Authority has held three annual public meetings[63].

7.2. The Authority has a standing committee to advise it on the delivery of its environmental and sustainable development issues[64]. This committee is chaired by Robin Bidwell and includes Sarah Harrison, Judith Hanratty, George Yarrow, Andrew Wright and John Wybrew.

Review of Impact Assessments

7.3. We reviewed the structure of our IAs, with the aim of assessing both environmental and wider impacts that our policy proposals may have on sustainable development. Our revised guidance, issued in March 2008, commits us to quantifying the environmental impacts of proposals by using the shadow price of carbon wherever appropriate. The guidance was published on our website[65].

Consumer First Project

7.4. Ofgem's Consumer First Project has used both internal and external work to understand the views of consumers in advance of the formulation of policy so that consumer views and preferences can be built into this process. This work has been driven by the recognition that consumer issues have become more complex with rise of the sustainability agenda.

[63] The minutes of Authority meetings can be found at the link below: http://www.ofgem.gov.uk/About us/Authority/AuthorityMinutes/Pages/AuthorityMinutes.aspx
[64] The Sustainable Development committee was established in 2005.
[65] http://www.ofgem.gov.uk/About us/BetterReg/IA/Documents1/GUIDANCE ON IMPACT ASSESSMENTS.pdf

7.5. In 2008 Ofgem expanded its Consumer First programme to include a Challenge Group and a Consumer First Panel. This group of everyday customers will meet to discuss key topics such as the balance consumers would like between prices on the one hand and delivering environmental measures on the other.

Environmental Advisory Group

7.6. The Environmental Advisory Group (EAG) is an independent panel of environmental experts and senior industry figures that help Ofgem to develop its green agenda. The group is chaired by Lord Mogg and is made up of policy experts from Government, industry and the green groups who advise Ofgem and the Authority on the priorities for its work in relation to the environment. Members of the Group participate as individuals and not as representatives of organisations.

7.7. The scope of the Group covers all the environmental aspects of Ofgem's work, consistent with our statutory responsibilities. Further details of the EAG, including minutes of meetings and a list of members, are published on Ofgem's website[66].

Internal Environmental Management

ISO 14001

7.8. Ofgem has again passed the annual audit of its ISO 14001 environmental management system making it the sixth year that we have successfully held certification under this scheme. The system ensures that Ofgem considers the environmental impact of its actions when dealing with:

- building management;
- information technology;
- procurement;
- recycling; and
- other issues including travel.

7.9. Ofgem's internal Sustainable Development Team, and the Environment Management team, are together responsible for defining and reviewing internal objectives and targets, and performance against Government requirements. This year, in conjunction with environmental consultancy Global Action Plan, the Sustainable Development Team has established an Environmental Champions scheme, recruiting volunteers from across Ofgem. The Environmental Champions have organised awareness-raising campaigns to drive down our resource usage including energy, water and stationary. A copy of our internal Sustainable Development Action Plan is available on our website[67].

[66] http://www.ofgem.gov.uk/Sustainability/Environmnt/Policy/EnvAdvGrp/Pages/EAG.aspx
[67] http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=309&refer=About%20us/CorpPlan

Appendix 1 - Consultation responses

1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document (in particular, we would like to hear from suppliers, consumers and environmental bodies).

2. Responses should be received by 1 February 2009 and should be sent to:

European Strategy and Environment
Ofgem
9 Millbank, London, SW1P 3GE
020 7901 7089 or 020 7901 7444
ES&SMarkets@ofgem.gov.uk

3. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

4. Respondents who wish to have their responses remain confidential should clearly mark document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

5. If you have any further queries, please contact:

Anna Kulhavy
Senior Economist
European Strategy and Environment
Ofgem
9 Millbank, London, SW1P 3GE
020 7901 7390

Appendix 2 – The Authority's powers and duties

1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority ("the Authority"), the regulator of the gas and electricity industries in Great Britain. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002, the Energy Act 2004 and the Energy Act 2008, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts[68].

3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly[69].

4. The Authority's principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of consumers, present and future, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

5. The Authority must when carrying out those functions have regard to:

- The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- The need to secure that all reasonable demands for electricity are met;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them[70]; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[71]

[68] Entitled "Gas Supply" and "Electricity Supply" respectively.
[69] However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.
[70] Under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.
[71] The Authority may have regard to other descriptions of consumers.

6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

- Promote efficiency and economy on the part of those licensed[72] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- Protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity;
- Contribute to the achievement of sustainable development; and
- Secure a diverse and viable long-term energy supply.

7. In carrying out the functions referred to, the Authority must also have regard, to:

- The effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- The principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- Certain statutory guidance on social and environmental matters issued by the Secretary of State.

8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation[73] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

9. The Energy Act 2008 contains provisions which, once commenced, will modify the general duties of the Authority in carrying out its functions under the Gas Act and the Electricity Act. In particular, those changes will mean that, when carrying out its functions in the manner which it considers is best calculated to further its principal objective, the Authority must do so by having regard to the need to contribute to the achievement of sustainable development equally with the need to have regard to the

[72] Or persons authorised by exemptions to carry on any activity.
[73] Council Regulation (EC) 1/2003

need to secure that all reasonable demands for electricity and gas are met and that licensees are able to finance their regulated activities.

10. It has also been highlighted within the text of the principal objective that the Authority's consideration of the interests of consumers includes both future as well as existing consumers.

11. The Energy Act 2008 received Royal Assent on 26 November 2008 but these provisions do not have legal force until they are commenced. We do not yet have a commencement date for the new provisions but it is likely to be early in 2009.

12. During the period between the Energy Act 2008 having received Royal Assent and commencement of the provisions which affect its duties, the Authority must continue to apply the principal objective and its statutory duties in accordance with the Gas Act and the Electricity Act as they currently stand (i.e. prior to the Energy Act 2008 amendments taking effect), although it will be mindful of the changes that are forthcoming. The Authority already takes account of sustainable development in its decisions but with the change in duties the weight that is attached to such considerations will be increased.

Appendix 3 - Glossary

A

Areas of Outstanding Natural Beauty (AONB[74])

An AONB is an area of countryside with significant landscape value that has been designated by the Countryside Agency. The purpose of the designation is to conserve and enhance the natural beauty of the landscape; AONBs rely on planning controls and practical countryside management.

B

Balancing and Settlement Code (BSC)

The legal document setting out the rules and governance arrangements for electricity and settlement in Great Britain. All licensed electricity generators and suppliers must sign up to the BSC and other interested parties may also choose to do so. The BSC is overseen by ELEXON.

Bottom Ash

The ash and unburnt coal left in the furnace after combustion of the coal in a coal-fired power station.

C

Carbon Capture and Storage (CCS)

CCS is an integrated process that involves the capture of CO_2 from combustion plants (typically a fossil fuel power station); the compression of the CO_2 to a form where it is suitable for transport; the transport of the captured CO_2 to a storage site; and the permanent storage of the CO_2 in deep geological sites. New power stations can be built as 'carbon capture ready' (CCR) to connect to future geological storage if/when this becomes viable.

Carbon Emissions Reduction Target (CERT)

The CERT is an obligation on energy suppliers to achieve targets for promoting reductions in carbon emissions in the household sector, administered by Ofgem.

Carbon Reduction Commitment (CRC)

The CRC is a new emissions trading scheme for large non-energy intensive commercial and public sector organisations, to be administered by the Environment Agency.

[74] Include Scottish definitions as appropriate

Carbon Trust

The Carbon Trust is an independent company funded by Government. Its role is to help the UK move to a low carbon economy by helping business and the public sector reduce carbon emissions and capture the commercial opportunities of low carbon technologies.

Cash out arrangements

Arrangements whereby generators and suppliers pay or are paid for imbalances i.e. shortages and surpluses of power relative to their contracted commitments.

Climate Change Levy (CCL)

The Climate Change Levy (CCL) was introduced on 1 April 2001 with the aim of encouraging improvements in energy efficiency and reductions in greenhouse emissions. It applies to energy used in the domestic sector (industry, commerce and the public sector). Electricity from renewable sources is exempt from the CCL.

Climate Change Agreements (CCA)

CCAs provide an 80 percent discount from the Climate Change Levy for those sectors that agree challenging targets for improving their energy efficiency or reducing carbon emissions.

Combined Cycle Gas Turbine (CCGT)

A CCGT uses both gas and steam turbine cycles in a single plant to produce electricity with high conversion efficiencies and low emissions.

Combined Heat and Power (CHP)

The simultaneous generation of useful heat and power in a single process.

Customer Interruptions (CIs)

CIs are a standard measure of network reliability and quality of service. It is the number of interruptions per 100 customers and is calculated as: (total customers affected / total customers connected to the network) *100.

Council of European Energy Regulators (CEER)

CEER brings together the independent national energy regulators from EU Member States and the European Economic Area (EEA). CEER acts as a focal point for contacts between national energy regulators and is their primary interface at a European level. Its overall aim is to facilitate the creation of a single competitive, efficient and sustainable internal market for gas and electricity in Europe.

D

Department of Energy and Climate Change (DECC)

The Department brings together much of the Climate Change Group, previously housed within the Department for Environment, Food and Rural Affairs (Defra), with the Energy Group from the Department for Business, Enterprise and Regulatory Reform (BERR).

Distribution Network Operators (DNOs)

DNOs are ex–Public Electricity Suppliers who came into existence on 1 October 2001. There are 14 DNOs each covering a discrete geographical region of Great Britain. The 14 DNOs are owned by seven companies – CE Electric UK Ltd (CE), E.on Central Networks (CN) Electricity North West Limited (ENW) EDF Energy (EDF) Scottish Power (SP), Scottish and Southern (SSE) and Western Power Distribution (WPD). DPCR5 will cover the period 2010 – 2015. They take electricity off the high voltage transmission system and distribute this over low voltage networks to industrial complexes, offices and homes. DNOs must hold a licence and comply with all distribution licence conditions for networks which they own and operate within their own distribution services area.

Distribution Price Control Review Five (DPCR5)

The fifth electricity distribution price control, which will limit the amount of revenue each DNO can recover from consumers, and determine associated measures, for the 2010-15 period.

E

ELEXON

ELEXON is the Balancing and Settlement Code Company (BSCCo) defined and created by the BSC. The BSC places obligations on ELEXON, who consequently manages the balancing and settlement arrangements, in conjunction with the BSC Panel. ELEXON therefore procures, manages and operates services and systems, which enable the balancing and imbalance settlement of the wholesale electricity market and retails competition in electricity supply.

EMO

The Energy Market Outlook is an annual report prepared by the Government to provide forward-looking energy market information relating to security of supply. It supersedes work previously undertaken by the Joint Energy Security of Supply working group. The EMO looks over a longer time horizon and covers other important energy sources as well as gas and electricity.

Energy Efficiency Commitment (EEC)

The EEC places an obligation on electricity and gas suppliers to install measures in customers' homes to improve energy efficiency.

Energy Networks Association (ENA)

The ENA is the trade association for the electricity and gas network operators.

Energy Retailers Association (ERA)

The ERA is a trade association for the major UK energy suppliers: British Gas, Scottish & Southern Energy, RWE, npower, E.ON Powergen, EDF Energy and ScottishPower.

Energy Supply Ombudsman

An independent body that resolves disputes between a customer and their energy supplier associated with billing and transfer issues. The Ombudsman is an independent and impartial means of resolving disputes outside the courts.

Energy Saving Trust (EST)

The EST is a Government-fundud non-profit organisation that provides free advice to homes and businesses to help them to save money and fight climate change by reducing CO_2 emissions.

EU ETS (EU Emissions Trading Scheme)

A cap and trade scheme in which EU Member State governments are required to set emissions limits for all installations in their country covered by the scheme. It is an administrative approach used to reduce the cost of pollution control by providing economic incentives for achieving reductions in the emissions of GHGs.

F

Fly Ash

A by-product after combustion of coal on a coal-fired power station, it consists of primarily silicon, aluminium and calcium oxides.

Flue gas desulphurisation (FGD)

FGD is one of the post-combustion sulphur controls (removing sulphur after burning). In FGD processes, waste gases are scrubbed with a chemical absorbent such as limestone to remove sulphur dioxide.

Fuel Mix Disclosure (FMD)

On 18 March 2005 a new standard licence condition was introduced into electricity supply licences by The Electricity (Fuel Mix Disclosure) Regulations 2005 (SI No. 391). The new licence condition obliges electricity suppliers to provide customers with details of the mix of fuels used to produce the electricity supplied to them along with certain environmental information on or with their bills.

G

Greenhouse gases (GHGs)

GHGs, such as carbon dioxide (CO_2), Sulphur hexafluoride (SF_6 – widely used in distribution and transmission equipment) and methane (CH_4) have been linked with the rise in global atmospheric temperatures (global warming). Control of GHG emissions can therefore help to limit the extent of climate change.

Gas Balancing Alert (GBA)

The purpose of the Gas Balancing Alert (GBA) is to indicate a potential requirement for demand response. It is based on a combination of the absolute Supply & Demand level and the impact of a potential breach of a Safety Storage Monitor.

Gas Distribution Networks (GDNs)

Gas is piped from the gas transmission network into each of the eight regional gas distribution networks, which in turn distribute gas to customers. The eight gas distribution networks are owned by four companies - National Grid Gas (NGG), Northern Gas Networks, Scotia Gas Networks, and Wales and West Utilities.

Gas Distribution Price Control Review (GDPCR)

The GDPCR limits the amount of revenue that a gas DNO can collect from customers in the 2007-13 period. This encourages companies to look for efficiency gains in order to improve profits and customers benefit from these improvements in subsequent reviews. Price controls are set every five years following a review; the GDPCR 2007-13 included a one year extension of previous arrangements from April 2007 – April 2008.

Global Warming Potentials (GWP)

The warming influence of a gas over a set period of time relative to that of CO_2, the GWP values used are the "1995 IPPC GWP values" from the IPCC's Second Assessment Report.

Gigawatt hour (GWh)

See MWh.

I

Impact Assessments (IA)

IAs are studies of the potential future effects of resource development on other resources and on social, economic and/or environmental conditions.

InterGovernmental Panel on Climate Change (IPCC)

The role of the IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation.

ISO 14001

ISO 14001 is an internationally recognised standard for Environmental Management Systems. An Environmental Management System provides a framework for managing environmental responsibilities so they become more efficient and more integrated into overall business operations.

K

KVAr and KVArh

Kilovolt-ampere reactive is the rate of consumption the reactive power. A kVArh is a measure of that consumption within an hour. Kilovolt-ampere (kVA) is the rate of total energy consumption, real and reactive, and a kVAh is a measure of that consumption within an hour.

L

Large Combustion Plant Directive (LCPD)

The LCPD aims to reduce acidification, ground level ozone and particles throughout Europe by controlling emissions of sulphur dioxide (SO_2), nitrogen oxides (NOx) and dust (particulate matter (PM)) from large combustion plants (LCPs). These include plants in power stations, petroleum refineries, steelworks and other industrial processes running on solid, liquid or gaseous fuel.

Levy Exemption Certificates (LECS)

Electricity from specified renewable generation is exempt from the CCL, and LECs are the electronic certificates which are issued to accredited generating stations for each MWh of electricity from a renewable source.

Liquefied Natural Gas (LNG)

LNG is natural gas that has been condensed into a liquid at atmospheric pressure by cooling it to approximately -163 degrees Celsius. LNG is transported by specifically designed vessels and stored in specially designed tanks. LNG is about 1/600th the volume of natural gas, making it much more cost-efficient to transport over long distances where pipelines do not exist.

M

Megawatt hour (MWh)

A MWh (million watt-hours) is a rate of consumption of energy equivalent to an hour of electricity consumption at a constant rate of one megawatt (MW). A GWh is equivalent to 1000 MWhs, and a TWh is equivalent to 1000 GWhs.

Microgeneration

The small-scale generation of heat and/or electricity from a low carbon source, for example solar panels, micro-wind, micro combined heat and power and heat pumps.

Million tonnes of CO_2 equivalent ($MtCO_2e$)

The equivalent amount of CO_2 required for the same impact.

N

National Grid Company (NGC)

National Grid owns and maintains the high-voltage electricity transmission system in England and Wales, together with operating the system across Great Britain, balancing supply with demand on a minute by minute basis.

Non-Fossil Fuel Obligation (NFFO)/Scottish Renewable Obligation (SRO)

Before the introduction of the Renewables Obligation NFFO contracts were the primary means used by the Government to implement its renewable energy policy. They required the purchase of electricity from renewable generators and provided for this electricity to be purchased at fixed prices for long term contract periods (typically for 15 years). The last NFFO/SRO contracts will expire in 2019.

P

Prepayment meters (PPM)

With this type of meter you pay for the electricity as you use it; they currently use electronic, keys or cards. The customer therefore needs to be provided with a network of outlets where tokens cab be purchased, or cards or keys can be charged up. This network of outlets needs to be linked to a payment settlement system for suppliers.

R

Registered Power Zones

RPZs are focused specifically on the connection of generation to distribution systems. They are intended to encourage DNOs to develop and demonstrate new, more cost-effective ways of connecting and operating generation that will deliver specific benefits to new distributed generators and broader benefits to consumers generally.

Renewables Obligation (RO) and Renewables Obligation Scotland (ROS)

The RO places an obligation on licensed electricity suppliers in the UK to source an increasing proportion of electricity from renewable sources. Suppliers meet their obligations by presenting Renewables Obligation Certificates (ROCs) or paying into the buy-out fund.

Renewables Obligation Certificates (ROCs)

A transferable certificate received by eligible renewable generators for each MWh of electricity generated. ROCs are traded separately from power and are used by suppliers to fulfil their Renewables Obligations under the section 32 of the Electricity Act 1989.

S

Self Disconnection

Self-disconnection occurs where a prepayment customer does not have sufficient credit on their meter which results in their energy supply being discontinued.

Smart Metering

Advanced gas and electricity metering technology that offers customers more information about, and control over, their energy use (such as providing information on total energy consumption in terms if value, not only volume), or allows automated and remote measurement.

Supercomplaint

Section 11 of the Enterprise Act 2002 enables designated consumer bodies such as energywatch to make a compliant to the Office of fair Trading or a relevant economic regulator that any feature, or combination of features, of a market in the UK for goods and services is or appears to be significantly harming the interests of consumers. These complaints are called supercompliants.

System Operator (SO)

National Grid is the electricity and gas system operator, responsible for managing the operation of the electricity transmission system and the gas transmission network. The SO balances supply and demand, in gas maintaining satisfactory system pressures and ensuring gas quality standards are met, and for electricity ensuring the stability and security of the power system and the maintenance of satisfactory voltage and frequency.

T

Terawatt hour (TWh)

See MWh.

W

Warm Front

Warm Front is the Government's grant-funded programme in England for tackling fuel poverty. The scheme was launched in June 2000 and before its name changed to Warm Front it was called the Home Efficiency Scheme. Equivalent schemes operate in Scotland and in Wales which are funded by the respective Devolved Administrations.