ofgem

Sustainable Development Report 2007

Context

Ofgem has a duty to "carry out its functions in the manner best calculated 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, which in turn are a major part of the economic, social and environmental fabric of the UK.

In recent years, tackling climate change has become a global priority. At an EU level, Member States have committed to targets to reduce significantly the overall level of greenhouse gas emissions and to increase significantly the contribution of renewable energy, both by 2020. There is also an important goal related to saving energy. The energy sector has an important role to play in meeting these challenges as this sector accounts for a large part of the UK's greenhouse gas emissions. We therefore have an important role to play in contributing to sustainable development balancing our principal and secondary duties based on rigorous analysis of the issues involved.

Table of Contents

Foreword

Welcome to Ofgem's Sustainable Development report for 2007.

Climate change and the associated detrimental impacts on society have clearly become a global priority. Since our last report we have also seen the publication of the Stern Review which provides a stronger case for action today. As the independent regulator that oversees the sector that is responsible for the majority of greenhouse gas emissions in Great Britain, it is clear that we have an important role to play.

There are a number of challenges that the industry faces including:

- in **electricity generation**, the industry will need to replace much of the existing generating fleet with new low carbon and renewable technologies;
- in **electricity transmission,** significant investment will be required to relieve capacity constraints on the system that are delaying new, lower carbon technologies (particularly renewable) from coming to market;
- in **electricity distribution,** networks may see a transformation with more local and small scale generation potentially exporting power to the grids; and
- in **energy supply,** customer confusion about 'green' supply offerings needs to be addressed and greater use of smart meters is needed to help customers to be more energy efficient.

We, I think, need to continue to focus hard on what sustainable development means for gas and electricity customers. This means that we must place environmental and social considerations at the heart of our activities and the analysis of the issues we face. Recent examples of this in action include:

- responding and trying to **influence the European Commission and the UK Government** on the EU Emissions Trading Scheme and their support mechanism for renewable generation;
- **setting new incentives** for National Grid to reduce emissions of greenhouse gases associated with its networks; proposing new incentives on the gas distribution networks to cut their emissions of greenhouse gases through gas that is lost in the process of transportation; possible extension of gas networks and improving Corporate Social Responsibility measures;
- **carrying out a joint review with Government of the access arrangements** to the transmission system to enable faster connection of lower carbon and renewable generation;
- **fully engaging** with both industry and Government on smart metering – which can help customers reduce their energy use, lower their bills and lower the cost of supplying prepayment customers. The **smart metering pilot we are running with industry began in August 2007** and is scheduled to run for two years. We are also **working with the industry** to set technical standards for smart meters to speed up their roll out by suppliers;
- developing together with industry **new guidelines** for both **renewable and low carbon tariffs** which we hope will help reduce customer confusion and result in a much larger take up of these products; and

- **shining a light on suppliers' social programmes** to recognise best practice and promote awareness of help available for more vulnerable energy customers.

In taking forward our work, we have to consider the impact our decisions will have on customers – particularly those in fuel poverty. This is why it is important that, as a broad strategic objective, we are working towards *sustainable* energy markets and networks. We must therefore consider not only the impacts on security of supply and competition but also the wider environmental and social effects that affect both present and future customers.

Over the last few years, as this report shows, we have increased our focus on sustainable development in this sector and aim to make an important contribution to the wider debate. This year we will continue to engage with stakeholders to explore their perspectives, which will help us when taking decisions or offering our advice to others, including the Government. And, of course, our Environmental Programmes team will continue to administer effectively the various Government schemes which aim to promote renewables, CHP and energy efficiency. We shall also provide advice to the Government on the future development of these schemes based on our practical experience in administering them.

As with last year's report, we welcome your feedback on what we are getting right as well as what we can work to improve. The importance of tackling climate change and contributing more widely to sustainable development in the energy sector has never been clearer. We know that we have an important role to play.

John Mogg
Chairman, Gas and Electricity Markets Authority

Conversation with Alistair Buchanan

Ofgem has had a sustainable development duty for three years now - what difference do you think it has made to Ofgem's work?

A number of factors drive our approach to sustainable development and I have seen them evolve over the time I have been Chief Executive. These include the new duty but also, the increasing scientific evidence, political consensus and customer awareness about global warming. Examples of our work show how our role varies depending on the issue in question - we don't have direct control over all aspects of the energy sector and so we can be advisor on one thing and administrator on another, talking about just two of our roles. This Report outlines many other examples where we are having a more direct impact such as helping to reduce the greenhouse gas emissions of the networks we directly regulate. We also have been taking internal action to reduce our own carbon footprint for some time now. I think that this multi-faceted role is reflected in our Report and shows that sustainable development is at the heart of our organisation.

What can Ofgem do to influence energy markets and make energy networks more sustainable?

All in all, we have a big part to play in helping to shape the energy systems for the future. As an economic regulator, it is important that we provide a stable framework for the significant capital investment that the energy companies need to maintain secure supplies and make them more sustainable. Having broadly consistent duties helps with this but I recognise that changes in public and Government priorities can properly be reflected in changes to our duties. Our work in Europe is very important as the climate change and sustainable development agenda are increasingly driven from there. Here in Britain, our price controls lead the way in ensuring that the network operators integrate sustainability into their management of the networks and the framework for the market ensures the same for the suppliers and generators. We also have a strong focus on social issues and the fuel poor and vulnerable customers. We also do important but often overlooked work in administering the Renewables Obligation and the Energy Efficiency Commitment - two of the Government's programmes to help it meet its sustainable development goals.

Climate change seems to be the main focus of this Report - is there a danger that other elements of sustainable development are being pushed into second place?

Clearly the energy sector doesn’t just affect the environment. One of our themes, eradicating fuel poverty and protecting vulnerable customers, focuses on these issues and explains the important work we do here. We are very committed to playing our part in significantly reducing the impact of the gas and electricity sectors on the environment. But we want to make sure that actions and policies to do this are well designed and don’t cost customers any more than they have to. We believe that we can make a real contribution through initiatives such as Consumer First which look to delve deeper into consumers' concerns about their energy use.

Climate change affects all sectors so why does the energy sector figure so much in the Government's plans to tackle this?

The energy sector is one of the largest sources of CO2 emissions and has an important role to play in meeting the climate change targets set by the Government. In this Report, we look at the potential role other sectors might play, but recognise the continued significant contribution that will be needed from the power sector. But given our duties we will always want to make sure that customers get the best deal possible and don't have to pay any more than is necessary to reduce emissions to help meet the challenge of climate change.

Alistair Buchanan
Chief Executive

Ofgem statement on sustainable development

The UK Government and Devolved Administrations launched a new strategy for sustainable development, *Securing The Future*, in 2005. Drawing on this framework and following the feedback received in response to our consultation on our first Sustainable Development Report, we continue to 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 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 that there are conflicts between seeking to tackle climate change and reducing fuel poverty but we aim to ensure that sustainable development mitigates these conflicts.

- **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 outlines the purpose and structure of this document. We introduce the themes examined in subsequent chapters, the indicators which structure our discussion and invite your views.

Purpose of the document

1.1. This is Ofgem's second publication of an annual Sustainable Development Report[1]. As a result of the Energy Act 2004, Ofgem has a duty to contribute to the achievement of sustainable development as part of its statutory duties.

1.2. This report reflects our ongoing commitment to this duty and is structured around a set of five themes and indicators we have developed to assess progress towards making the gas and electricity markets more sustainable. Fourteen of these indicators were developed for the first report. We have added indicators in the following areas:

- impact of carbon price on costs of generation;
- future UK fuel mix;
- product innovation in the supply market; and
- green tariffs.

1.3. Collectively these indicators capture what we think are the key measurable indicators of performance in sustainable development in the domain in which Ofgem operates. We have taken account of the feedback we received to last year's report in developing our report for 2007. A summary of responses is published on our web-site, as outlined in Appendix 1.

The themes and indicators

1.4. In this report we examine our five themes through eighteen indicators. A section is provided on each indicator. It includes a definition and description, a graphic presentation of the indicator and an analysis of current status and trends in the indicator. In addition we set out the contribution that Ofgem makes to improving performance under each indicator. This describes the extent to which Ofgem has a direct influence on it, and summarises the work that Ofgem has undertaken in directly affecting the indicator or related areas. It also identifies the actions that we

[1] This Report replaces the Social Action and Environmental Action Plans. Ofgem's five year Social Action Strategy, which was launched in October 2005 is an important complement to this Sustainable Development Report. We will continue to publish updates to the Social Action Strategy on an annual basis.

intend to take in the coming year and provides an update on the actions set out in last year's report.

1.5. For each indicator we also include a 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 the roles of the various parties, including energy companies, central Government and the Devolved Administrations, which have important environmental responsibilities, and European institutions.

1.6. 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 relating to the energy sector.

Your views

1.7. We would very much appreciate your feedback and views on this report and particularly on those indicators that are new. 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.

2. Why the energy sector has a key role to play

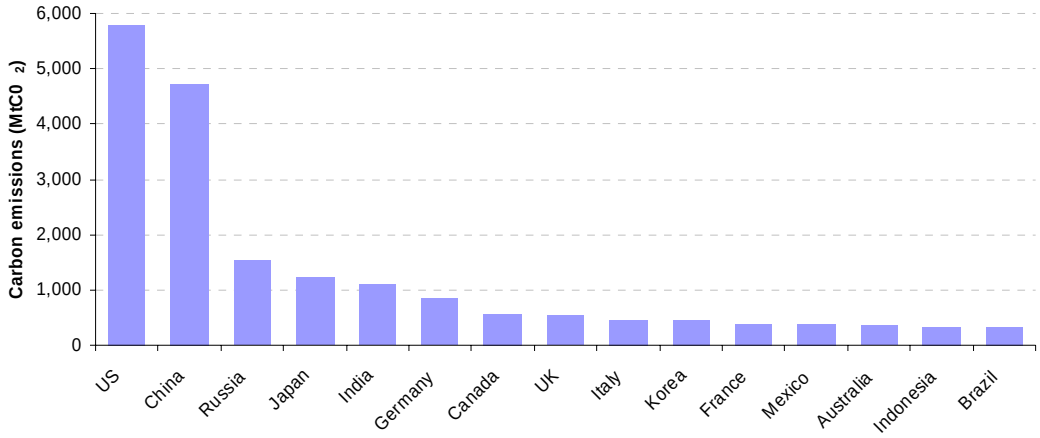
Chapter Summary

This chapter explains why the energy sector has such an important role to play in tackling climate change. It provides background information on emissions across the globe and then explains within GB the contribution that the energy sector makes.

Setting the UK in the context of the global challenge of climate change

2.1. Climate change is a global problem with significant implications for the UK. There is increasing scientific consensus that the Earth's atmosphere is experiencing unprecedented warming caused by rising levels of atmospheric greenhouse gases (GHG). Current levels of green-house gases are at their highest in at least 650,000 years and the growth in emissions levels has accelerated since 1950 in particular.

Figure 1: Top 15 world CO2 emitters[2]



2.2. Figure 1 shows the 15 largest carbon emitting nations and their overall contribution to global carbon emissions. The 560.6 Mt CO2[3] emitted by the UK in 2006 is about 2 percent of world-wide carbon emissions. Although the UK accounts for a relatively small fraction of global emissions, we are the eighth largest emitter of CO2 in the world and the second largest in the EU.

[2] CO_2 Emissions from fuel combustion only. Emissions are calculated using the latest available energy balances from the IEA. This refers to 2004 data from a 2006 publication. http://www.iea.org/textbase/nppdf/free/2006/key2006.pdf

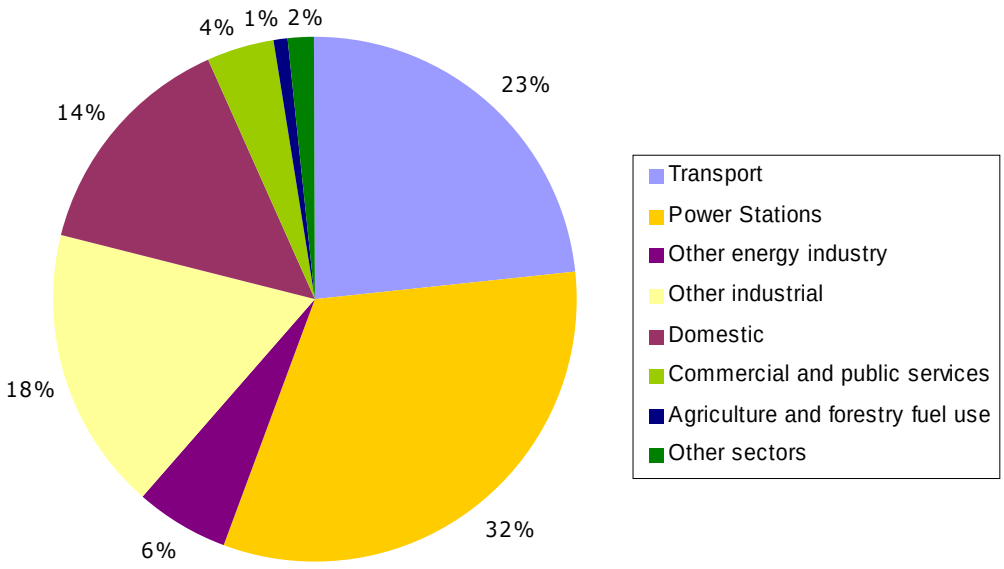
[3] http://www.defra.gov.uk/environment/statistics/globatmos/download/xls/gafg05.xls

Power generation and industrial fossil fuel combustion are major contributors to GHG emissions

2.3. The global emissions of CO2 through the combustion of fossil fuels for electricity generation and industrial purposes increased rapidly over the last century. CO2 emissions from fossil-fuel burning and industrial processes have continued to accelerate on a global scale between 1990 and 2004, with their growth rate increasing from 1.1 percent year-on-year for 1990–1999 to more than 3 percent year-on-year for 2000–2004.[4]

Within the UK, the gas and electricity sector is the single largest contributor to GHG and therefore CO2 emissions, as shown in Figure 2.

Figure 2: UK CO2 emissions per sector in 2006[5]



2.4. In 2006:

- 52 percent of total CO2 emissions (45 percent of total GHG emissions) in the UK were from the gas and electricity sector with 32 percent of CO2 emissions being from power stations;

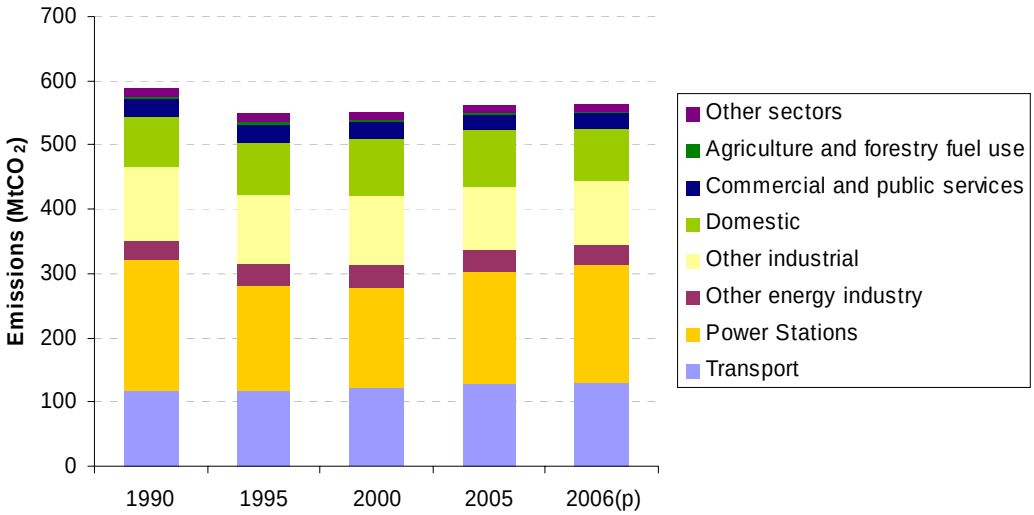
[4] *Global and regional drivers of accelerating CO_2 emissions*, Michael R. Raupach et al, PNAS, June 12, 2007, vol. 104, no. 24, pp. 10288-10293

[5] Source: Energy Trends - BERR March 2007. Note: Other 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. Carbon dioxide emissions appeared as a special feature in the March 2007 edition of Energy Trends and were not updated in the June 2007 edition.

- 23 percent of CO2 emissions were from transport (93 percent of this being from road transport);
- 18 percent from other industries; and
- 14 percent from domestic use.

2.5. Although CO2 emissions from power stations have decreased by 11.5 percent since 1990 they rose by 4.7 percent in the last year (2006) as high gas prices lead to a switch from gas to coal generation. The contribution of different sectors through time is illustrated in Figure 3 below.

Figure 3: CO2 emissions per sector[6]



[6] Source: Energy Trends - BERR March 2007. Note: Other energy industry includes gas and electricity activities other than power generation. Other industrial includes industry other than energy, transport and agriculture. Other sectors include waste and fugitive emissions from fuels. Carbon dioxide emissions appeared as a special feature in the March 2007 edition of Energy Trends and were not updated in the June 2007 edition.

3. 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

3.1. Great Britain (GB) is likely to meet its GHG emission reduction targets of 12.5 percent below base year (1990) levels by 2008-12 under the Kyoto Protocol. The overall emissions from the basket of GHGs covered by the Kyoto Protocol fell by 15.6 percent between the base year and 2005.[7] This has been largely driven by the switching from coal to gas fired electricity production over this period.

3.2. To meet the more stringent targets envisaged by the Draft Climate Change Bill (i.e. to reduce national CO2 emissions by 26-32 percent by 2020, equivalent to a reduction in all GHG emissions in the order of 32-37 percent[8]), it is clear that increased action will have to be taken to accelerate emission reductions across the economy. In this chapter we discuss developments against each of our key performance indicators to illustrate how GB is meeting this challenge of transitioning to a low carbon economy.

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

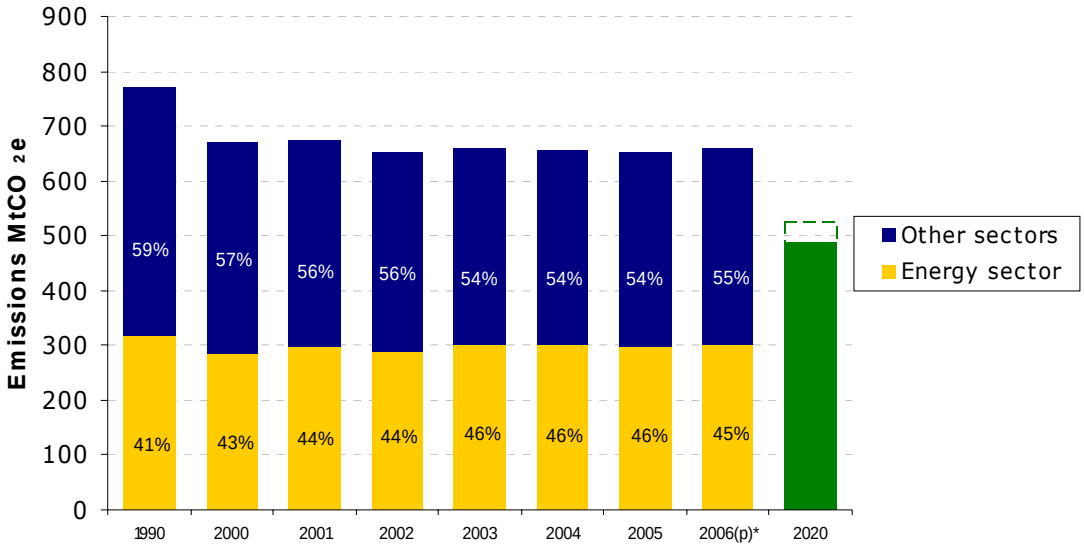
Trends in Indicator 1

3.3. As discussed in Chapter 2, the energy sector is a significant contributor to total national GHG emissions. Since 1990, the proportion of emissions from the gas and electricity sector has increased against a background of total emissions which fell initially and then stabilised. This is shown in Figure 4 below.

[7] This is down from 775.2 to 654.1 million tonnes carbon dioxide equivalent. *UK Climate Change Programme*, Annual Report to Parliament, Defra, July 2007

[8] Draft Climate Change Bill, p22 http://www.official-documents.gov.uk/document/cm70/7040/7040.pdf

Figure 4: Gas and electricity sector contributions to national GHG emissions 1990-2006[9]

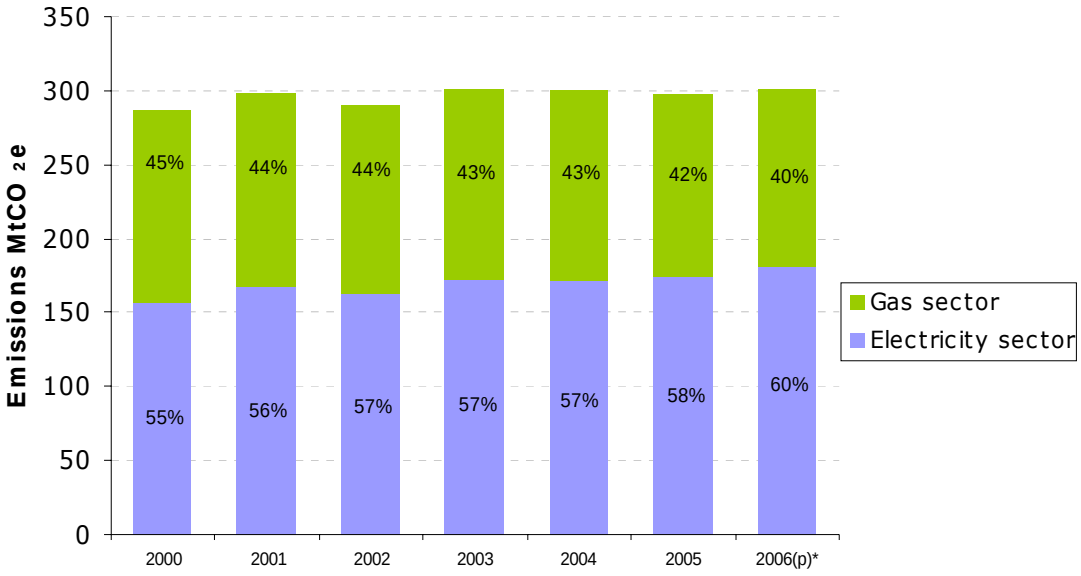


3.4. Year-on-year, GHG emissions from the combined gas and electricity sector emissions have risen slightly (by approximately 1 percent) over the last year. The majority of the sector emissions comprise CO2 arising from the combustion of fuels in power stations and from the direct combustion of gas by households and industry.[10] The emissions reductions from across the gas and electricity sectors since 2000 are illustrated in Figure 5.

[9] Source: Annual report to Parliament on the UK Climate Change Program - Defra 2007, NAEI 2007, Digest of Environmental Statistics – Defra 2007, DUKES – BERR 2007

[10] 1.5. Minor emissions of nitrous oxide from combustion, and fugitive emissions of methane from the gas transportation system and sulphur hexafluoride from the electricity network represent around 2 percent of total emissions (on a carbon equivalent basis).

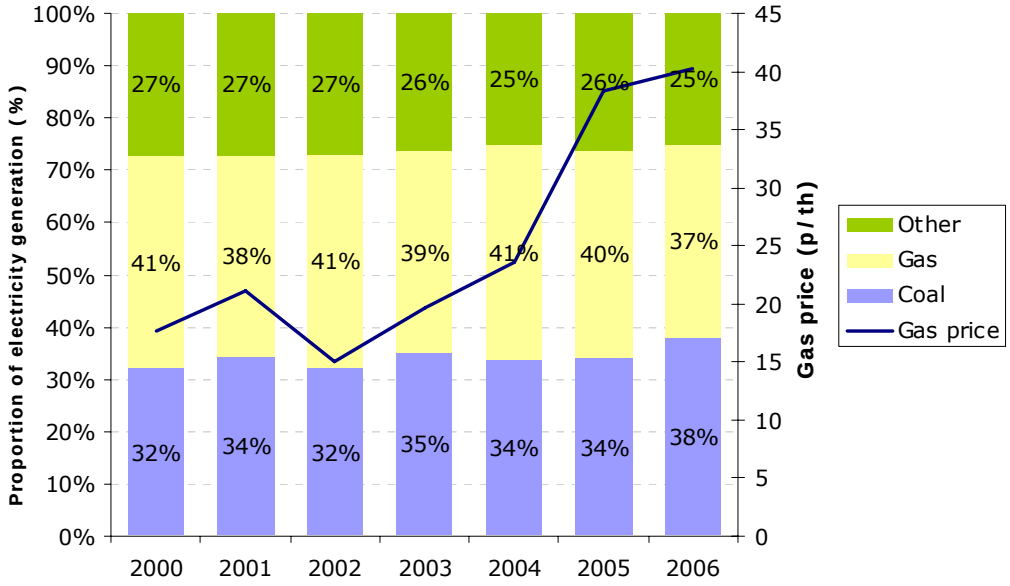
Figure 5: GHG emissions from the gas and electricity sectors 2000-2006[11]



3.5. While the contribution from both sectors has remained relatively stable since 2000, there has been a 2 percent increase in GHG emissions over the last year from the electricity sector. This increase has been driven largely by the greater use of coal fired generation relative to gas fired generation as higher gas prices have made coal fired generation cheaper than gas.

[11] Source: National Atmospheric Energy Inventory (NAEI) 2007, Digest of Environmental Statistics - Defra 2007, DUKES - BERR 2007

Figure 6: The relative use of coal and gas in electricity generation[12]



Meeting the challenge

2020 Generation-Demand Scenarios

3.6. In order to provide a better analytical basis for discussions surrounding the implications of the EU wide 2020 GHG emissions reduction and renewables targets we commissioned work to develop a range of scenarios to consider and illustrate how the electricity generation-demand profiles may look in 2020. As part of this, Sinclair Knight Merz (SKM) have put together a range of generation-demand scenarios to illustrate the potential system and carbon impact and cost of increasing the level of renewable generation alongside other energy efficiency measures (including microgeneration) as part of the GB system out to 2020.

3.7. The initial conclusions of this work suggest that with high renewable investment and high energy efficiency, significant carbon reductions can be achieved but at significant cost in terms of additional generation and network investment. Although carbon reductions in the two more 'aggressive' scenarios (i.e. using assumptions of reduced demand resulting from energy efficiency measures as well as significant increases in renewable generation) are very similar, the costs of achieving the same carbon reductions in the most 'ambitious' scenario are considerably higher. SKM's findings are reproduced in Table 1.

[12] Source: Energy Trends BERR 2007, Heren European Spot Gas Markets

Table 1: Costs associated with different carbon commitment scenarios[13]

Cost	Carbon Commitment	Current Commitments	Moderate Commitment	Fossil Fuel World
Average cost of generation in 2020 (£/MWh)	43.8	41.5	36.9	26.0
Marginal cost of generation in 2020 (£/MWh)	17.8	20.8	21.0	14.6
Grid costs for generation connections (£ bn)	7.2	4.5	3.5	2.8
Total new investment costs 2007-2020 (£ bn)	70.6	59.9	48.9	40.0
Incremental annual cost of new investments (2007-2020) per tonne CO_2 abated over *Fossil Fuel World* (£/avoided tonne CO_2)	29	17	21	0

3.8. We have published a copy of SKM's results alongside this Sustainable Development Report on our website.[14]

Update on Ofgem's commitments from 2006 Sustainable Development Report

3.9. **Consider an incentive to improve management of Sulphur Hexaflouride (SF6) as part of the Transmission Price Control Review (TPCR).** We have implemented new financial incentives on NGET to reduce their emissions of SF6 (a very potent greenhouse gas) from their network. We plan to put in place similar schemes for the Scottish transmission companies this year.

3.10. **Review the incentives to manage leakage of methane as part of the Gas Distribution Price Control Review (GDPCR).** We aim to introduce stronger incentives on gas DNOs to reduce their methane leakage (another potent greenhouse gas) as part of this year's price control settlement.

Ofgem's commitments for 2007/08

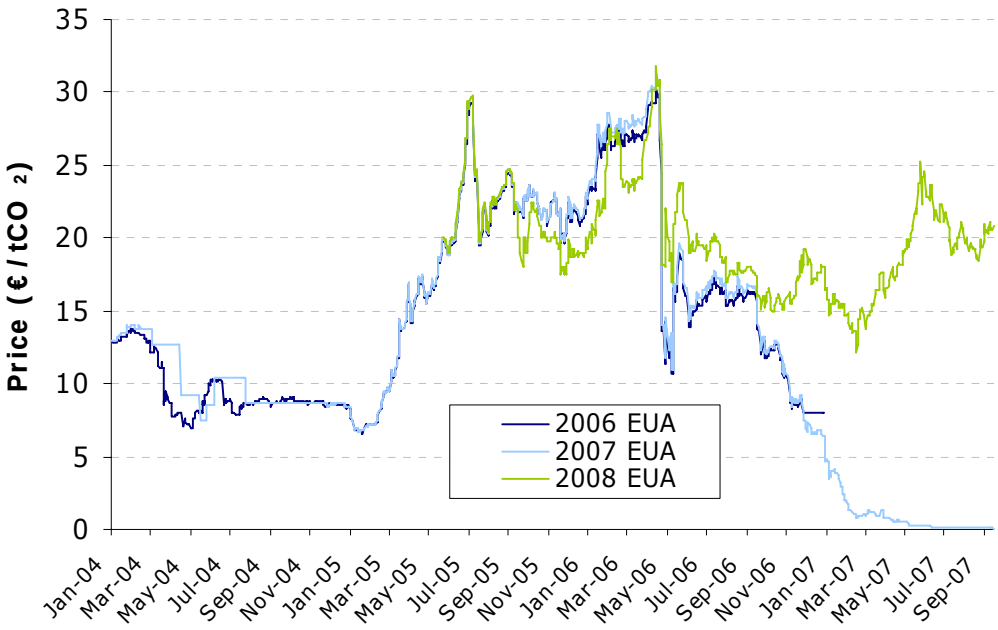
- We will continue to engage with Government as part of its work to implement the UK's share of the 2020 EU targets regarding renewables and GHG emissions. We will provide advice to Government on the most cost effective ways to meet its policy aims.

[13] Source: SKM.
[14] See the sustainability section of Ofgem's website: http://www.ofgem.gov.uk/Sustainability/Pages/Sustain.aspx

Indicator 2: Impact of carbon price on costs of generation

Trends in Indicator 2

Figure 7: Evolution of EU ETS forward prices[15]



3.11. The EU Emissions Trading Scheme (EU ETS) is the primary tool to reduce CO2 emissions on an EU wide basis. The EU ETS imposes a cap on CO2 emissions across Member States and allows energy-intensive industrial plants and electric utilities in EU Member States to trade permits to emit CO2. A market price for carbon has emerged through the trading scheme. Although there are improvements that could be made to the scheme for future Phases[16], since 2005 a carbon price has existed and is beginning to influence behaviour and provide incentives for investment in energy efficiency and lower carbon generation technologies.

3.12. At the moment, the price for carbon is driven in part by fuel price differentials, as increases in the cost of gas relative to coal can encourage electricity generators to switch from gas to coal if it becomes more profitable to do so. An increase in the use of coal is likely to put upward pressure on the carbon price as the higher carbon intensity of coal creates additional demand for carbon allowances. Other factors have also impacted on the carbon price, most notably the dramatic fall in prices in

[15] Source: European Climate Exchange

[16] For more details, please see Ofgem's response to the EU Commission's Review of the EU ETS, available on Ofgem's website: www.ofgem.gov.uk; *'Review of the EU Emissions Trading Directive: Ofgem's response, 30 May 2007'*

April 2006 in response to lower than expected verified 2005 emissions. At that time, prices for forward contracts of EU carbon allowances fell from an all time high of over €30/tCO2 to below €15/tCO2. This followed the release of information regarding verified 2005 emissions data from across the EU, where EU wide emissions were found to be lower than expected. This reduced the scarcity of allowances and prices fell sharply.

3.13. This led to the belief that most of the power sector would have excess allowances for the remainder of Phase I of the EU ETS scheme (i.e. out to the end of 2007). The National Allocation Plans (NAPs) in place across Member States for Phase II of the EU ETS scheme (i.e. from the start of 2008) appear to be tougher, which has led to much higher future prices for the carbon allowances for the second period; currently trading at around €20/tCO2.

Meeting the challenge

Allocation of carbon permits

3.14. For the EU ETS to be successful, the carbon price needs to be reflected in wholesale and retail prices so that the prices that all customers pay encourage a move to lower carbon electricity production and greater energy efficiency. If allowances are allocated freely (as is the case for at least 90 percent of the allowances under Phase I of the EU ETS scheme) generators profits will rise. This represents a direct transfer of money from customers to electricity producers.

3.15. Public debate about the impact of these transfers and the profits they generate in the power sector emerged during 2005 when the price for carbon rose. Forward prices suggest that higher carbon prices will be maintained throughout Phase II, resulting from tighter controls on allowance allocation at national level across Member States, and so the debate is likely to continue.

3.16. As we have made clear throughout the development of the EU ETS, our strong preference is for there to be full auctioning of carbon allowances. In our recent response to the Government's Energy White Paper (EWP) we suggested that some of the auction proceeds could be used to support further investment in emerging low carbon technologies and on measures to reduce fuel poverty.

European Commission reviews

3.17. In November 2006, the European Commission (EC) started a review of the EU ETS in order to set the framework for Phase III of the scheme. A European Climate Change Programme (ECCP) Working Group on the Review will be looking at how to improve the functioning, as well as the environmental and cost effectiveness of the scheme. Central themes that will be addressed are expanding the scope of the scheme, increasing harmonisation and predictability, ensuring robust compliance and enforcement, and the involvement of third countries. The Review will have

important implications for gas and electricity markets and customers in GB and across the EU.

3.18. Although establishing the EU ETS was a significant and important achievement, early experience has highlighted a number of problems in addition to free allocation. We consider that the EU ETS arrangements should also be improved to provide longer term carbon reduction targets and be broadened in scope to cover other sectors that are major carbon emitters (e.g. aviation). This would improve the long-term incentives for companies, including those in the gas and electricity sector, to invest in low carbon technologies and for customers to become more energy efficient. It would encourage the creation of a liquid, global carbon market that will help promote innovation and reduce the costs of tackling climate change. This should help build confidence in cap and trade schemes as the best way to tackle climate change and could ease the transition to the development of an international carbon emissions market. The review provides a good opportunity for the Commission to address these issues. We have provided feedback to the EC as part of its Review and will continue to engage with them on developing and improving the scheme.

3.19. The EC has also produced a Green Paper on market based instruments for environment and related policy purposes for discussion. It notes that more intensive use of such instruments has been advocated as part of the renewed EU Sustainable Development Strategy and looks at options for further application of these instruments in influencing energy use. We have engaged with the EC on this, outlining our preference for market based mechanisms to achieve the lowest cost abatement for emissions, and will continue to be involved in future dialogue.

Update on Ofgem's commitments from 2006 Sustainable Development Report

3.20. **Work with Government on the EU Emissions Trading Scheme (EU ETS), including development of the National Allocation Plan for Phase 2.** We have been involved in ongoing liaison with Government (BERR and Defra) and with the EC.

3.21. **Undertake research to contribute to discussions on the long-term future of the scheme in the UK and Europe more widely.** As well as responding to the Commission's review of Phase 1 of the EU ETS, we contributed to the CEER response to the review of the EU emissions trading directive as part of the work of the Environmental Task Force in June 2007. We have also commissioned work on development of scenarios to consider the impact of a range of generation-demand assumptions for 2020.

3.22. **Monitor the development of the allowance market.** Through the GB markets team we are conducting ongoing monitoring of the carbon market.

3.23. **Organise a seminar considering the impact of the EU ETS on the electricity generation sector and customers.** Robin Bidwell, Non-Executive

Director and Member of the Authority, will chair a 2020 Carbon Challenge Seminar in November 2007.

Ofgem's commitments for 2007/08

- We will continue to provide independent advice to the Government and the EC on aspects of the EU ETS that require improvement.
- We will continue to represent the UK as chair of the European Regulators Environment Taskforce. A key deliverable for this taskforce over 2007/08 will be the introduction of an EU wide Sustainable Development report, based on similar indicators to this report.

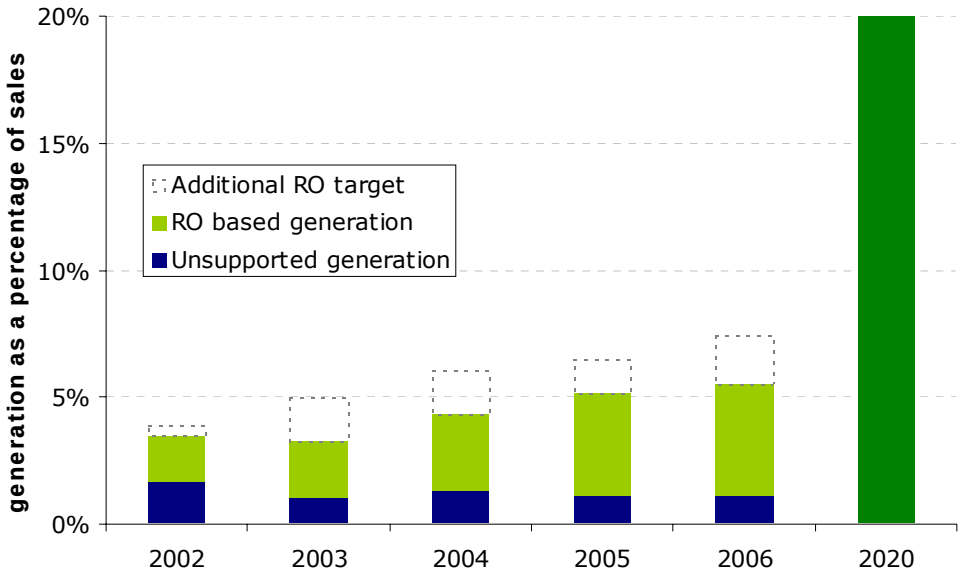
Indicator 3: Renewable electricity generation

Trends in Indicator 3

3.24. Since it started, the Renewables Obligation (RO) has supported the deployment of renewables. Over 2006, the RO has continued to see growth in renewables. However, as with previous years, this growth continues to fall short of Government targets for renewable generation capacity.[17] This is illustrated in Figure 8 below.

[17] 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. In 2006/7 suppliers must source 6.7 percent of their supply from eligible renewables and this percentage will rise to 15.4 percent by 2015/6 and remain at that percentage until 2027. See also paragraph 3.37 on related Government targets.

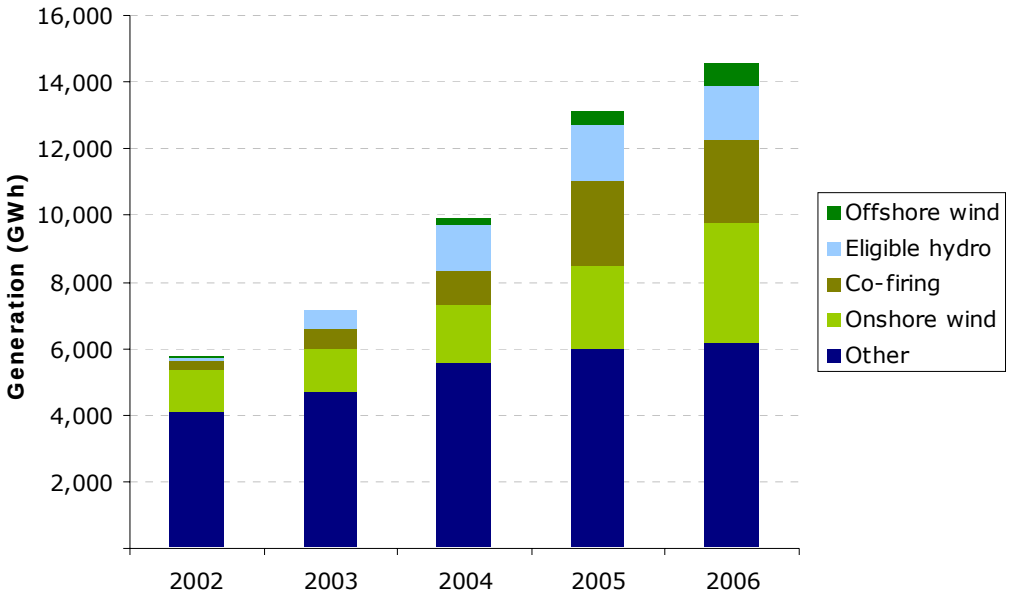
Figure 8: Electricity from renewable generation[18]



3.25. To date, most growth in renewable generation has been from onshore wind and co-firing generation as illustrated in Figure 9.

[18] Source: Energy Trends BERR 2007, Digest of UK Energy Statistics BERR 2007
Note that we have calculated RO targets on a calendar year basis for consistency within the document.

Figure 9: Generating technologies supported by the RO[19]



3.26. To meet the Government's target there will need to substantial investment in new renewable generation. A significant barrier to meeting the target is the speed of the planning process – more than double the current onshore wind capacity is waiting for planning approval.

3.27. Another barrier is getting access to the transmission system, and the planning system can also significantly delay the building of new transmission lines to increase capacity. The Beauly-Denny circuit, which is currently undergoing a planning enquiry, would provide up to an additional 1,000 MW of grid capacity, enabling more renewable generation to connect to the grid in Scotland. Over half of the Scottish renewable projects currently seeking planning approval require grid upgrades before they can connect to the grid and begin to generate. These issues are illustrated in Figure 10 and Figure 11 below.

[19] Source: Digest of UK Energy Statistics BERR 2007

Figure 10: Onshore wind generation capacity in the planning process in the UK[20]

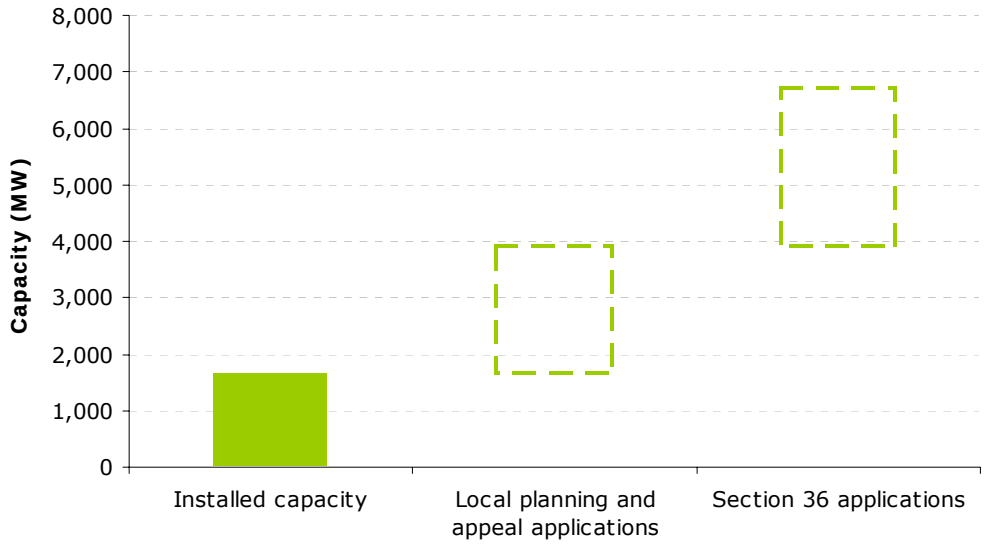
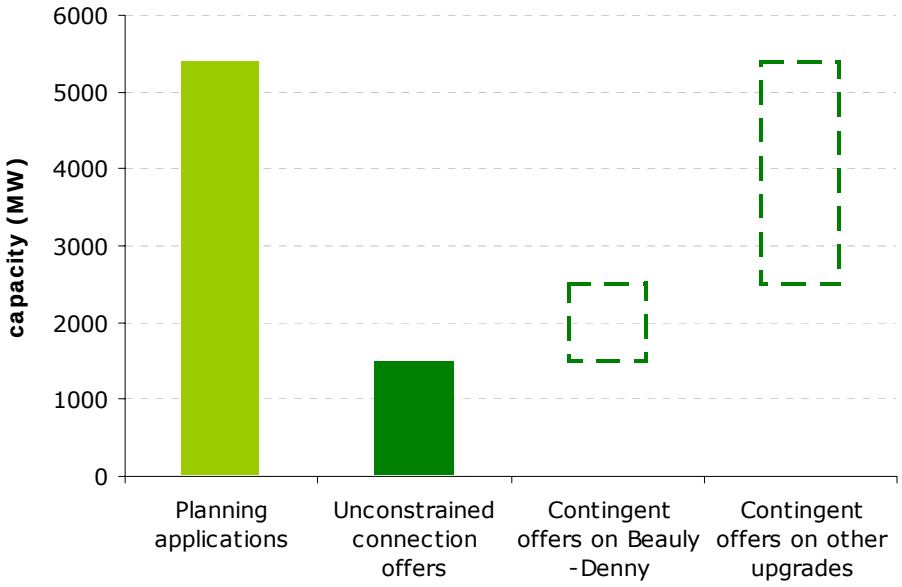


Figure 11: Required grid upgrades for onshore wind generation in Scotland[21]



[20] Source: DUKES- BERR 2007; Onshore Wind: Powering Ahead, BWEA 2006. Note: Planning figures include projects that could be built by 2010. Figures exclude 'forthcoming applications'.
[21] Note: Data is for Scotland only. Planning figures include projects that could be built before and after 2010. Source: Onshore Wind: Powering Ahead, BWEA 2006

Meeting the challenge

The Renewables Obligation

3.28. We fully support the Government's aims of reducing carbon emissions through promoting renewable generation (see paragraph 3.37 on related Government targets). We also applaud the Government's intention to address the existing deficiencies within the planning regime, which, if effective, would be likely to enable much quicker delivery of renewable and low carbon generation technologies and the transmission capacity required to use the energy produced.

3.29. But there is clear evidence that there are cheaper and better ways to meet the Government's renewables targets. The EC, for example, has compared the costs and associated effectiveness of feed in tariffs implemented in Europe with corresponding quota schemes, such as the RO. The analysis showed that across Europe, the RO was the most expensive yet least efficient method of support, with current estimates assessing the cost to both business and domestic customers at over £1.8 billion to date.[22]

3.30. In 2006/07, the cost of carbon abatement through the RO was in the range £65-140/tCO2 depending on the fuel that is assumed to be displaced. In contrast the price in the UK Emissions Trading Scheme is around £18/tCO2 and in the EU ETS it has fluctuated in a range between £0-22/tCO2 although this is unlikely to reflect long term abatement costs given the current flaws in the trading scheme identified earlier in this chapter. Other policies within the UK include the Climate Change Levy in which costs are around £5-11/tCO2, and the Energy Efficiency Commitment in which carbon abatement can be achieved at negative cost (due to the associated energy cost savings).

3.31. Given the present costs to customers of the scheme, which will increase under the Government's current proposals for reform, we think the Government should consider alternatives to the RO – particularly in light of EU targets to increase the percentage of generation from renewables out to 2020. We will continue to engage in the debate and would be happy to work with the Government on alternative support mechanisms that would meet the targets at lower costs to energy customers.

Access to the transmission system

Transmission Access Review

3.32. The EWP, published in May 2007, announced that Ofgem and the Department of Business, Energy and Regulatory Reform (BERR)[23] would be jointly undertaking a

[22] *Communication from the Commission: The support of electricity from renewable energy sources*, December 2005
[23] Previously known as the Department of Trade & Industry (DTI).

review of the transmission access arrangements in GB. The Government and Ofgem recognise the difficulties for GB transmission licensees in building connections to accommodate a substantial queue of generation as well as the difficulties for generators in acquiring connections to the electricity grid. There is currently 12GW of new, mainly renewable, generation waiting for connection to the transmission system in Scotland and other parts of the country. The review will look at what needs to be done to help more renewables get connected to the electricity grid to help meet the Government's target of 20 percent of the overall fuel mix being generated from renewable sources by 2020.

3.33. In August 2007, we published a joint consultation document with BERR. The document sought initial views on the issues to be considered during the Transmission Access Review and represented a first step in exploring the case for change to the existing transmission arrangements.[24]

Industry code modifications

3.34. There are a number of industry codes governing the operation of the electricity networks and the wholesale market arrangements. Companies and large customers can raise proposals to amend these rules. We cannot raise proposals ourselves but any proposals come to us for a final decision. If we think a proposal is important we are required to publish an Impact Assessment.

3.35. A proposal to the industry code that governs connection and access to the GB electricity grid[25] was raised by National Grid in October 2006. This proposal[26] aims to reduce the barriers that new generators (including renewables) face compared with existing generators when seeking access to the electricity grid. The proposal has been developed (and a number of alternatives) by the industry and is now with Ofgem for decision.

3.36. Another proposal was raised more recently[27] to change the rules to give priority access for renewable generators to the grid over non-renewable generators and is expected to come to Ofgem for final decision in late November 2007.

Government targets

3.37. At the meeting of EU Heads of State in March 2007, there was agreement to introduce a target to increase renewable energy to 20 percent of EU supply by 2020. The implementation of this target across Member States is now the focus of discussions and negotiations at an EU level. This could see the UK as a Member State take on a larger or smaller percentage share of the EU wide 20 percent renewable energy target.

[24] Transmission Access Review, A Call for Evidence for a Review of Transmission Access, 16 August 2007
[25] The Connection and Use of System Code (CUSC)
[26] *User Commitment for New and Existing Generators*, CAP131
[27] *Deemed access rights to the GB transmission system for renewable generators,* CAP148

3.38. The EC has started to discuss and consult Member States on how to improve existing support schemes and integrate them with the aim of enabling a successful and, in the long-term, stable deployment of electricity from renewable energy sources in Europe. Ofgem has been engaging with the EC as part of this project and it will be an important step in leading to the evolution of a single renewable electricity market across the European Union (EU).

Update on Ofgem's commitments from 2006 Sustainable Development Report

3.39. **Work with BERR on changes to Renewables Obligation (RO) and the Renewables Obligation Scotland (ROS).** We have engaged in the debate and worked with Government on the RO. In particular we: responded to the BERR's consultation on "Reform of the Renewables Obligation 2006"; contributed to the BERR consultation "Impact of banding the renewables obligation: costs of electricity production" published alongside the EWP; and, provided an independent response to the Government's follow up proposals in respect of 'banding' of ROCs in September 2007. We will continue to liaise with Government in this area.

3.40. **Publish revised 'green' supply guidelines**. Over the past year we have consulted with industry and stakeholders on the "Developing Guidelines for Green Supply" consultation document (June 2007) via workshops in London and Glasgow to develop proposals to amend the guidelines together with key stakeholders. Updated proposals will be published in October with a view to have a finalised set of guidelines this year. Ongoing work with industry and key stakeholders will establish an independent accreditation scheme for green supply for business and domestic customers.

3.41. **Monitor first year of fuel mix disclosure**. Over the past year we wrote to suppliers to understand how they are complying with their obligations regarding Fuel Mix Disclosure and we are presently reviewing responses received from suppliers.

3.42. **Ensure companies can make efficient investments in the transmission network to meet the demands of new renewable generation capacity as part of the TPCR.** Over the past year we have provided transmission companies with allowances to invest to connect significant volumes of renewable generation as part of the price control settlement. The price control also allows network companies' revenues to rise to fund more investment if demand for transmission capacity is higher than forecast at the time of the price control review.

3.43. **Work with Government on reviewing the current regulatory framework and its influence on Distributed Generation (DG).** In November we issued a joint Call for Evidence, together with BERR. Through bilateral meetings and two open workshops, we consulted widely with stakeholders in London and Glasgow. The conclusions were published jointly with BERR as a supporting document to the EWP, entitled "Review of Distributed Generation: Report". In addition, Ofgem jointly with BERR has formed a distributed energy (DE) working group. This group has a wide range of stakeholder members (suppliers, distributers, generators, consolidators,

London Climate Change Agency etc.) and is about to have its third meeting since the EWP was published. It is aiming to consult on measures in end of November. Its scope includes the market arrangements as well as licensing issues.

Ofgem's commitments for 2007/08

- We will use our extensive knowledge of the support schemes for renewables and low carbon technologies based on our experience of their administration to continue to work closely with the Government and the Devolved Administrations on the development of these programmes and new policies. We also aim to rebuild our IT systems and, through this increasing automation, reduce the administrative burden on us and the industry as well as seeking further efficiencies in the administration of the schemes.

- We will continue to work with BERR and the Devolved Administrations on changes to the RO and ROS proposed in the BERR's consultation, 'Reform of the Renewables Obligation'. This includes proposals on banding which will involve projects that use different technologies being awarded more or less than one ROC for each MWh of electricity produced. Several administrative changes are also proposed where we will also continue to work with Government to introduce.

- We will continue to provide independent advice to Government on the most cost-effective means of helping the UK meet its share of the 2020 renewables target.

- We will work with BERR under the Transmission Access Review on modifications to the overall framework for transmission access to better support the connection of renewable generation to the grid.

- We will carry out a detailed impact assessment on the merits of CUSC proposal CAP148, plus the working group alternatives, for industry consultation and review.

- We will continue to work with industry and key stakeholders to introduce updated guidelines for renewable and low carbon supply tariffs. We will also work alongside industry to introduce an independent scheme to accredit tariffs that meet the requirements as set out in the updated guidelines. These tariffs could be a useful tool in contributing to the development of renewable generation and in meeting our carbon emission targets.

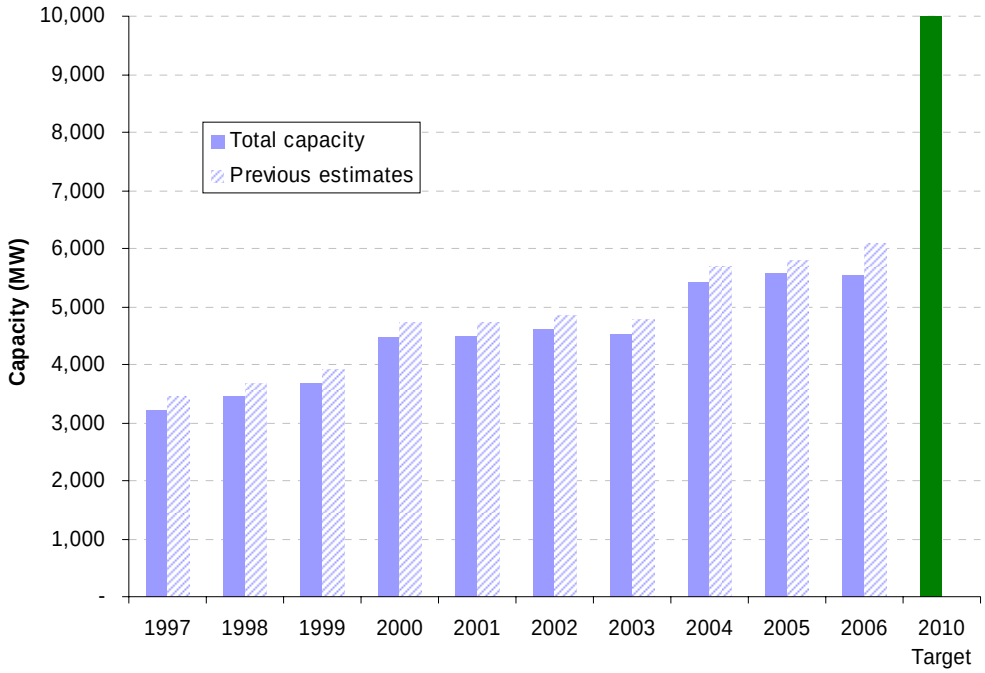
Indicator 4: Electrical capacity from combined heat and power

Trends in Indicator 4

3.44. Figure 12 illustrates that year-on-year there has been a slight decrease in the electrical capacity from Combined Heat and Power (CHP) schemes. The chart reflects revised estimates for 2006 and previous years, based on improved data

following the introduction of the CHP Quality Assurance (CHPQA) programme[28]. Most notably the reported capacity of three large CHP schemes was found to have been overstated. Figure 6 also shows the effect of excluding these adjustments on changes in annual capacity. This shows that there has been an increase in installed capacity from 2005 of around 254MW. However, the existing installed electricity capacity falls considerably short of the Government's target for 10GW of installed CHP electrical capacity by 2010.

Figure 12: CHP Capacity 1996-2006 (including 2010 target)[29]



3.45. In 2006, gas accounted for 70 percent of total fuel use by CHP plants, the same proportion as in 2005. However, new developments in CHP technology have opened up opportunities for using other fuels; in 2006, non-conventional fuels (liquid, solid or gas by-products, waste products or renewable fuels) contributed 23 percent of all fuels used in CHP.[30] Major new generation projects are also due to be constructed within the next 2-3 years. E.ON has announced a 1,275MW power station at Grain that will provide heat to the adjacent LNG import terminal and will be one of the world's largest CHP plants. ConocoPhillips is also due to expand its Immingham CHP plant by 450MW from 730MW to 1,180MW making it one of the world's largest and most efficient power plants.

[28] Digest of UK Energy Statistics (DUKES) – BERR July 2007
[29] Source: Digest of UK Energy Statistics (DUKES) – BERR July 2007
[30] Digest of UK Energy Statistics (DUKES) – BERR July 2007, page 150

3.46. The carbon emission savings from CHP in 2006 compared to the average UK fossil fuel carbon intensity was 15.4 MtCO2 (which equates to 2.8 MtCO2 per 1000 MWe installed capacity[31] and approximately 18.3TWh of generation of conventional generation).

Meeting the challenge

Government initiatives

3.47. We support the Government's establishment of a new Distributed Energy Unit within BERR to monitor the development of markets for Distributed Generation (including CHP). This will facilitate wider information provision to raise awareness of the benefits of these technologies. This is likely to lead to increased investment in smaller scale, more local CHP technologies, as higher energy prices factoring in a cost for carbon will mean that businesses, particularly those with large heat demands, will look for ways to be increasingly energy efficient.

3.48. The Government's consultation on changes to the RO also proposes support for energy from waste with CHP using biomass, which is in addition to other investment incentives such as the Climate Change Levy (CCL) exemption and Business Rates exemption. Incentives for CHP have been further improved by fully rewarding its carbon saving in the EU ETS Phase II, which begins on 1 January 2008.

3.49. The Climate Change and Sustainable Energy Act 2006 requires the Government to promote the use of renewable heat. The Office of Climate Change (OCC)[32] is carrying out work to assess the policy options available to reduce the carbon impact of heat and its use in order to determine a strategy for implementing the most viable and effective options. The work is looking at the full range of policy options, including the range of existing policy mechanisms such as the EU ETS.

Update on Ofgem's commitments from 2006 Sustainable Development Report

3.50. **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. In addition, our work on DG has involved the introduction of a number of measures designed to incentivise DNOs to minimise connection costs for new DG including CHP, to reduce losses (thus indirectly boosting DG) and to innovate.

3.51. **Publish decision document on microgeneration and set up an industry forum.** The "Next Steps" document was published October 2006. Over this year we held three microgeneration forums and continue to assist BERR with their

[31] Digest of UK Energy Statistics (DUKES) – BERR July 2007, page 154
[32] A body set up in 2006 to support Ministers as they decide future UK strategy and policy on domestic and international climate change.

microgeneration strategy. We have established the Microgeneration Forum, which promotes work by the industry to continue the development of distribution use of system charges, monitors the DNOs' Long Term Development Statements and will publish a proposal to enhance the level of competition in the provision of new connections. We initiated and chaired the Transmission Arrangements for DG Group (TADG) which has reviewed and developed high level options for change to the existing arrangements with respect to DG. The BSC and the transmission charging methodologies have also been modified under the modification process to ease participation in the market for smaller generators.

3.52. **Work with Government on policy developments from the Climate Change and Sustainable Energy Act.** We have had ongoing involvement with the BERR Microgeneration Steering Group and are also examining the implications of export reward as a result of announcements made in the Budget.

Ofgem's commitments for 2007/08

- Following the Chancellor's announcement in the 2007 Budget, we are conducting a review to ensure that the market for residential scale exported electricity is working effectively and to identify whether microgenerators are being fairly rewarded is being conducted by Ofgem. This is in parallel with our DG work.

- Continue to administer the exemption from the CCL for CHP generation efficiently and effectively.

- We will continue our joint work with BERR on the package of proposals put forward to address barriers specific to DG which are not currently being addressed through other activity by the Government or Ofgem. These proposals - more flexible market and licensing arrangements, clearer terms for export reward, improved information and advice, and the provision of DG connection services - are detailed in the joint Government/Ofgem Review of Distributed Generation published in May 2007. A workgroup comprising stakeholders including CHP and DG representatives has been formed and this will explore adjustments that will allow DG to do better within current arrangements before looking to see if it is necessary to create parallel arrangements especially for DG. With BERR, we have a joint plan of work which will lead to a consultation document by the end of the year.

- We will continue with our microgeneration work to remove barriers to the participation of CHP generators in the energy markets.

- Smart meters have the potential to allow more sophisticated tariffs to be employed for both the import and export of electricity for the domestic market with the potential to reward DG for its exports on the basis of time of export as well as the volume. We are running a trial of smart meters with industry on behalf of Government, discussed further in Theme 3.

4. 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 Government meet its targets for eradicating fuel poverty. It shows the number of households estimated to be living in fuel poverty in 2006 has risen as a result of higher energy prices. However all customer groups, including vulnerable customers, are participating in the competitive market and the overall number of customers disconnected for debt remains low. This chapter sets out the detail of further work planned in this area for the coming year in the following indicators:

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

Introduction

4.1. One of the Government's key principles for sustainable development is the need to ensure a 'strong, healthy and just society' where issues of social exclusion are addressed, personal wellbeing is promoted and where there is equal opportunity for all. Ofgem also has specific statutory obligations in relation to vulnerable customers.

4.2. 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. Ofgem works, through implementing its Social Action Strategy[33], to meet its social objectives and to 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.

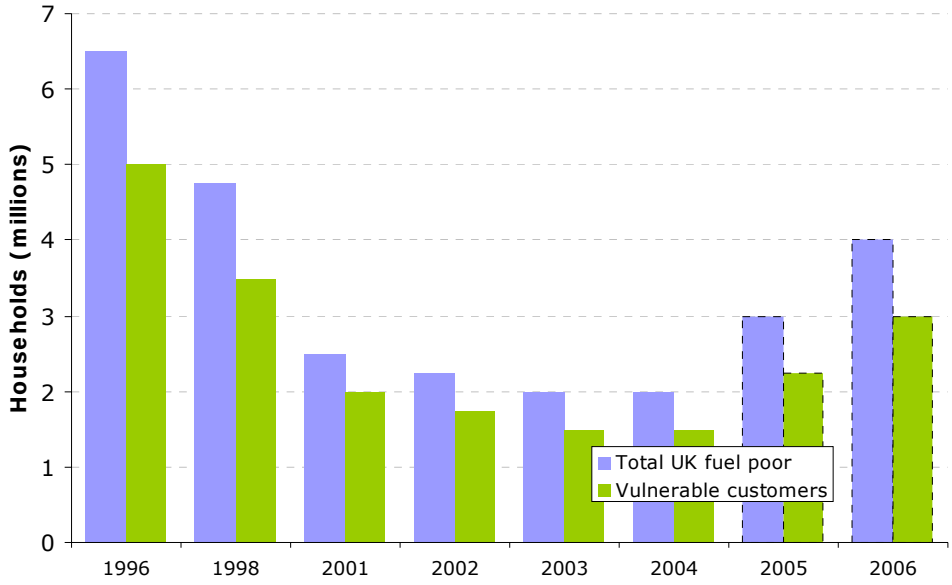
[33] Ofgem's Social Action Strategy was launched in October 2005. Each year we publish an update to our Social Action Strategy which provides an overview of our progress over the previous year and sets out our key deliverables for the coming year: http://www.ofgem.gov.uk/Sustainability/SocAction/Documents1/sapstrategbroA5June07.pdf

Indicator 5: Total number of households in fuel poverty

Trends in Indicator 5

4.3. The Government defines fuel poverty as the situation where a household needs to spend more than 10 percent of its income on energy to maintain a satisfactorily warm home. The Government and the Devolved Administrations have committed to eliminating fuel poverty and have set targets to achieve this goal[34].

Figure 13: Estimated number of UK households living in fuel poverty 1996-2006[35]



4.4. The number of customers living in fuel poverty declined steadily between 1996 and 2003, with little movement in overall figures in 2004. These reductions resulted from a combination of improvements to income (such as the new pension credit arrangements), improved energy efficiency (primarily through the EEC and Government funded fuel poverty schemes such as the Warm Front which operates in England) and through reductions in energy prices. The Government estimates that

[34] In England, the Government's target is to eliminate fuel poverty for vulnerable households by 2010 and 2016 for all households. For the Devolved Administrations the target is for overall elimination, for Scotland by 2016, and for Wales by 2018.
[35] Source: 4th Annual Report on the Fuel Poverty Strategy - May 2006 (actual figures for 1996 - 2004), Ofgem estimates based on Government's Energy Review Report - July 2006 (projected figures for 2005 and 2006)

over 60 percent of past reductions in fuel poverty numbers were as a result of improvements to incomes[36].

4.5. The number of households in fuel poverty has risen in the last 2 years as a result of electricity and gas price increases. Current estimates suggest that there were over 3 million vulnerable[37] households in fuel poverty in the UK (4 million households overall) in 2006. Although prices have now reduced (due to the fall in wholesale prices) the higher prices at the start of 2007 mean that overall levels of fuel poverty will remain high this year.

Meeting the challenge

4.6. Fuel poverty is part of a wider problem of poverty and social exclusion caused by a combination of high energy prices, low incomes and poor housing conditions. There is an important and continuing role for Ofgem and industry to help ensure prices are no higher than necessary and to also promote energy efficiency measures that will help to reduce customer demand. However there are limits to the role the market will play in addressing these wider social issues and the focus should be on raising incomes and improving housing - a role primarily for the Government. It is important that the technical definition of fuel poverty does not get in the way of Government delivering practical help in terms of targeted income support.

4.7. One of the main challenges faced by everyone involved in tackling fuel poverty is to identify the fuel poor and then to deliver comprehensive solutions. There is a clear role for the Department of Work and Pensions, and other Government agencies with front-line staff, in helping to identify and target the fuel poor. The commitment to a joined up approach to delivery of messages this winter is a welcome step. Government, scheme managers and suppliers should continue to look to bring together available help such as Warm Front and EEC so that comprehensive solutions can be delivered where fuel poor customers are identified.

4.8. Even when short term supply issues are addressed, reducing GHG emissions will continue to put upward pressure on prices. Therefore, efforts to tackle fuel poverty need to continue to focus on increasing incomes and improving housing. In developing new environmental programmes it is important that the implications for fuel poverty are factored in at the design stage. Auctioning of EU ETS allowances would, for example, provide a revenue stream which the Government could use part of to provide assistance to the fuel poor.

[36] 4th Annual Report on fuel poverty, May 2006
http://www.defra.gov.uk/environment/energy/fuelpov/index.htm
[37] A vulnerable household in this context is one containing children, or those who are elderly, sick or disabled.

Update on Ofgem's commitments from 2006 Sustainable Development Report

4.9. **Support the initiative to improve targeting of support for older customers for winter 2006/07.** Through the Social Action Strategy Review Group, we facilitated a pilot mail-out to 100,000 pensioners using DWP data. The EWP notes the success of the pilot and BERR is looking to build on it with a further mail-out this winter and through legislation to facilitate data-sharing going forward. A formal report on this pilot was submitted to Government in February 2007.

4.10. **Work with suppliers to look at how they can effectively target help at those most in need of assistance**. We published the results of research into customer awareness of suppliers' Corporate Social Responsibility in August 2007. We also published a review of suppliers' voluntary initiatives to help fuel poor and vulnerable customers in August 2007.

4.11. **Remove regulatory barriers to the development of smarter metering**. The Energy Demand Research Project was initiated to trial better billing and a range of smart meter technologies to assess how they might help customers be more energy efficient and reduce the cost of supplying prepayment customers. Ofgem is running this initiative for the Government. Work is also being undertaken to assess barriers to smart metering by the Interoperability Steering Group.

4.12. **Work with other Government Departments and key stakeholders on the design and development of the third phase of Energy Efficiency Commitment (EEC)**. We are currently working with Defra on a flexible option to allow some EEC resources to be focussed on hard to treat fuel poor homes. We will also respond to the Defra consultation regarding the supplier obligation and other options for EEC (or Carbon Emissions Reduction Target (CERT)) post 2011.

4.13. **Work with Government as part of its financial inclusion agenda to promote wider choice in payment.** Partnership work was undertaken on the financial inclusion agenda. The final report has now been published on the Factor Four project. We are continuing to monitor Prepayment Meter (PPM) regulations.

4.14. **Look at barriers to the further expansion of gas networks.** As part of the gas distribution price control review we are proposing to make it easier to connect domestic customers to the mains gas network which together with investment in gas fired heating could help to reduce fuel poverty.

Ofgem's commitments for 2007/08

- We will support BERR's follow-up initiative to improve targeting of support for older customers this winter and their proposed legislation.

- We will continue our best practice work with suppliers, through the development of the Corporate Social Responsibility reporting framework.

- We will continue our work to remove regulatory barriers to the development of smarter metering, which could help tackle fuel poverty through increased energy efficiency and lower cost prepayment meters.

- We will continue to work with other Government Departments and key stakeholders on the design and development of the next phase of the EEC, to try to ensure that resources are targeted effectively.

- We will also continue to work with Government, as part of its financial inclusion agenda, to promote wider choice in payment methods which can help vulnerable customers access better energy deals. Ofgem's new Prepayment Meter (PPM) Regulations[38] help to deliver against this objective, by allowing greater flexibility in the payments that suppliers can collect through a prepayment meter.

- We will also be progressing our proposals as part of the gas distribution price control review (GDPCR) to make it easier to expand the gas network which could help to reduce energy charges for fuel poor households who cannot currently use gas fired heating.

- We will continue to run the Energy Demand Research Project on smart metering with industry on behalf of Government.

- We will be publishing an update to our review of suppliers' Corporate Social Responsibility efforts to ensure Government has as up to date picture as possible on suppliers' initiatives in this area to inform their decisions on the need for powers on social initiatives in the Energy Bill.

Indicator 6: Competition and vulnerable customers

Trends in Indicator 6

4.15. This indicator shows the proportion of customers who have changed electricity and gas suppliers in 2006 across different customer groups, including more vulnerable customers[39]. The levels of switching within these groups, and their comparison to the national average, are a good indication of the extent to which all customer groups including vulnerable customers are taking up the benefits of competition.

4.16. The information published under this indicator covers those customers who switched supplier in 2006. This differs from the data published last year which covered all customers who had ever switched supplier since the introduction of

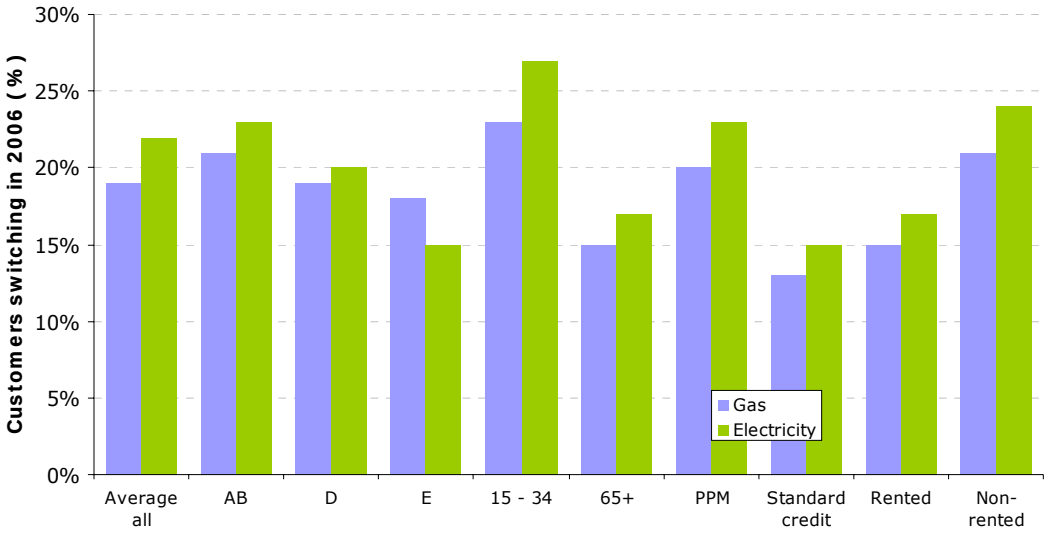
[38] The Electricity (Prepayment Meter) Regulations 2006 (SI No. 2010) and The Gas (Prepayment Meter) Regulations 2006 (SI No. 2011).
[39] Part of an omnibus survey carried out by Ipsos Mori in 2007. http://www.ofgem.gov.uk/SUSTAINABILITY/SOCACTION/PUBLICATIONS/Documents1/Switching%20Rates%20for%20Vulnerable%20Customers%20Report.pdf

competition and included customers who may have changed supplier more than once over the period. We intend to collect switching rates annually so we are able to review trends in switching amongst vulnerable customers on a year-on-year basis.

4.17. All customer segments are participating in the competitive market; however some vulnerable customer groups do not appear to be accessing the benefits of competition to quite the same extent as other customer groups, with rates below the overall national average. Switching was most prevalent among higher social groups (AB), younger customers and PPM customers. The higher level of switching among PPM customers is a new trend and is a welcome indication of more active competition in this part of the market.

4.18. Some of the groups least likely to switch were social group E, those aged over 65 years, standard credit customers and those in rented accommodation. However, even among these groups there was still a significant level of switching. For example, among those over 65 the proportion was 15 percent in gas and 17 percent in electricity.

Figure 14: Number of customers who switched their energy supplier in 2006[40]



Meeting the challenge

4.19. While competition is working well within the retail market, research shows that some categories of vulnerable customers are less likely to have changed supplier. Customers who are socially and financially excluded are less likely to be in a position to take advantage of competitive tariffs and alternative payment methods, such as direct debit. In addition to wider Government work on social and financial inclusion,

[40] Source: Ipsos MORI, March 2007

focus needs to be given to improving awareness of, and confidence in, the benefits of competition among more vulnerable customers, as signalled by the Government in the EWP. Ofgem, energy suppliers and key stakeholders such as energywatch all have a role to play in this area.

Update on Ofgem's commitments from 2006 Sustainable Development Report

4.20. **Carry out research into levels of switching among more vulnerable customer groups**. We commissioned a MORI survey of switching by vulnerable customers, which was published in July 2007.

4.21. **Identify and tackle barriers to switching**. We commissioned and published in July 2007 research into the attitudes of PPM customers.

4.22. **Promote choice and encourage customers to take advantage of the benefits of competition.** We ran a "Switch and Save" campaign in July 2007 targeted at PPM customers. The Domestic Retail Market Report published in July 2007 examined the effectiveness of competition in the PPM market and highlighted the savings available through switching.

Ofgem's commitments for 2007/08

- We will carry out further research into levels of switching among more vulnerable customer groups, including research into year-on-year variances in switching amongst vulnerable customer groups.
- We will continue to identify and tackle barriers to switching including debt blocking and the role of switching sites. We will also look more closely at how we can help customers to take advantage of better energy deals through switching their payment method.
- Under the EnergySmart campaign, we will continue to promote choice and encourage customers to take advantage of the benefits of competition.

Indicator 7: Disconnection for debt

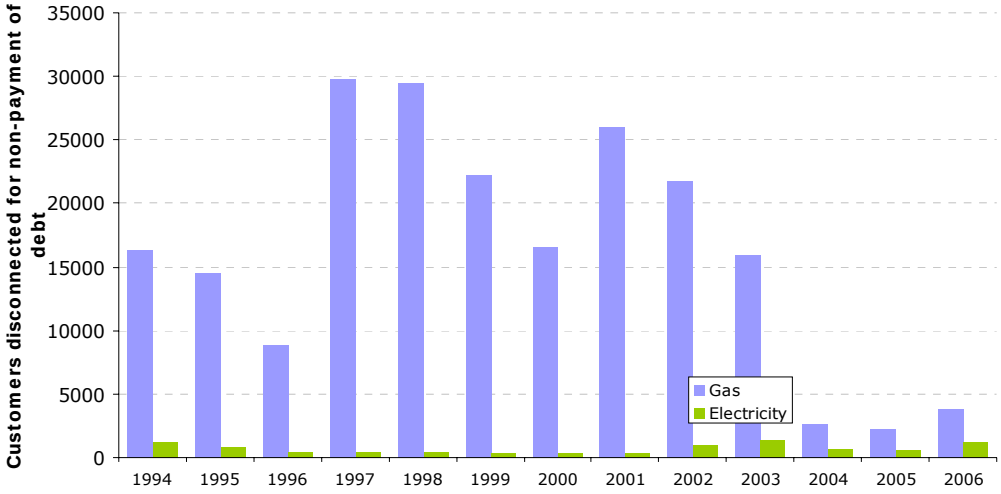
Trends in Indicator 7

4.23. 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.

4.24. While the overall number of customers disconnected for debt is small and remains significantly below the levels seen in recent years, 2006 has seen an increase in the number of customers disconnected for non-payment of debt.

4.25. Improved self-regulation, through the introduction, in 2004, of the Energy Retailers Association (ERA) safety net has made an important contribution to the reduction of vulnerable customers bring disconnected[41]. In 2004, Centrica adopted a more proactive policy of installing gas PPMs instead of withdrawing customers' supplies which led to a marked reduction in disconnections at that point.

Figure 15: Total number of customers disconnected for non payment of debt: 1994-2006[42]



4.26. These reductions in disconnection occurred against a backdrop of stable average debt levels, increasing repayment rates and increases in the number of PPMs installed as a means of recovering debt. We may now be seeing a small rise in the total number of disconnections because suppliers are more confident now that they are only disconnecting people who refuse to pay bills after all attempts to resolve a debt issue have been made and who are not vulnerable.

Meeting the challenge

4.27. In the current climate of rising energy costs it is especially important that customers who are struggling to meet these costs are given appropriate support and protection. Debt and fuel poverty are intrinsically linked. Measures designed to tackle fuel poverty can help customers manage their finances and reduce the risk of debt and disconnection. Action under the Government's financial inclusion agenda

[41] The six main suppliers have committed to not disconnecting vulnerable customers and the safety net establishes processes designed to ensure that such disconnections do not occur.
[42] Source: Ofgem annual monitoring of supplier performance

has a key part to play, for example by helping improve access to cheaper tariffs and through improved debt advice and management services.

4.28. The installation of PPMs is widely recognised as being preferable to disconnection. However increased use of PPMs raises concerns about the extent of self-disconnection due to inability to pay. While we have not identified specific actions for this year we remain committed to working with suppliers, consumer organisations and others to keep this issue under review.

Update on Ofgem's commitments from 2006 Sustainable Development Report

4.29. **Monitor suppliers' compliance with regulatory and voluntary obligations.** Following the supply licence review, obligations on suppliers to provide energy efficiency advice will be simpler and clearer.

4.30. **Promote customer awareness and best practice in debt management and prevention.** A comprehensive review regarding debt and disconnection is currently being undertaken.

4.31. **Drive forward supplier progress in preventing debt accumulation.** Following the supply licence review, obligations were put in place to require that PPMs are recalibrated on a timely basis after price changes, to ensure better protection for the fuel poor. Ofgem requires that, where possible, suppliers install PPMs as an alternative to disconnection. While we recognise that pre-payment is a more expensive form of payment, we consider this preferable to disconnection and we are working to help reduce the costs. Recent customer research we have published suggests that many customers see other benefits to PPM meters.

4.32. **Review the supply and licence obligations which relate to debt and disconnection with a view to introducing revised licences.** The key licence conditions relating to these issues were retained as part of the final proposals for the supply licence review, published in June 2007. The bar on disconnection of pensioners in winter was extended to cover electricity as well as gas customers.

Ofgem's commitments for 2007/08

- We will continue to monitor suppliers' compliance with regulatory and voluntary obligations (including the ERA safety net) and work to promote customer awareness and best practice in debt management and prevention.
- We aim to drive forward supplier progress in preventing debt accumulation.

5. Theme 3 - Promoting energy savings

Chapter Summary

In this chapter we examine indicators of energy intensity across the UK economy that show it continues to decline in all sectors, 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 that they are likely to exceed their EEC targets.

Electricity transmission and distribution losses have continued to be broadly stable. Methane emissions from the gas network have reduced.

Introduction

5.1. Energy efficiency can deliver reductions in emissions as well as contributing to security of supply by reducing demand. Although efficiency has improved throughout the supply chain – from generation to transmission and distribution and final customer demand – there remains considerable scope for further improvements.

5.2. Saving energy has taken on new impetus in the last year with the target to increase efficiency by 20 percent by 2020 and the focus given to it in the EWP, in particular, on carbon reductions to be achieved by efficiency measures.

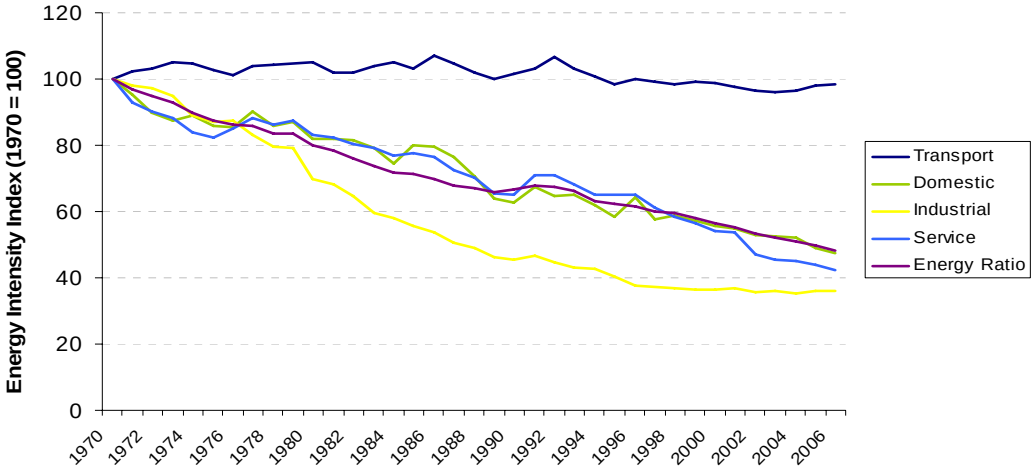
Indicator 8: Energy Intensity

Trends in Indicator 8

5.3. Developments in energy intensity provide an indication of the relative energy efficiency of different sectors of the economy. This indicator is based on BERR data on energy consumption and shows energy consumption per unit of output relative to 1970 for the transport, industrial and service sectors and per household for the domestic sector.

5.4. Figure 16 shows that the overall trend is downwards although transport remains relatively energy intensive. The decrease in the domestic sector has been quite gradual and is in line with the energy ratio. Existing Government policies such as the EEC and Warm Front account for about half of all homes benefiting from some form of energy efficiency intervention. Industrial reductions continue to remain fairly flat.

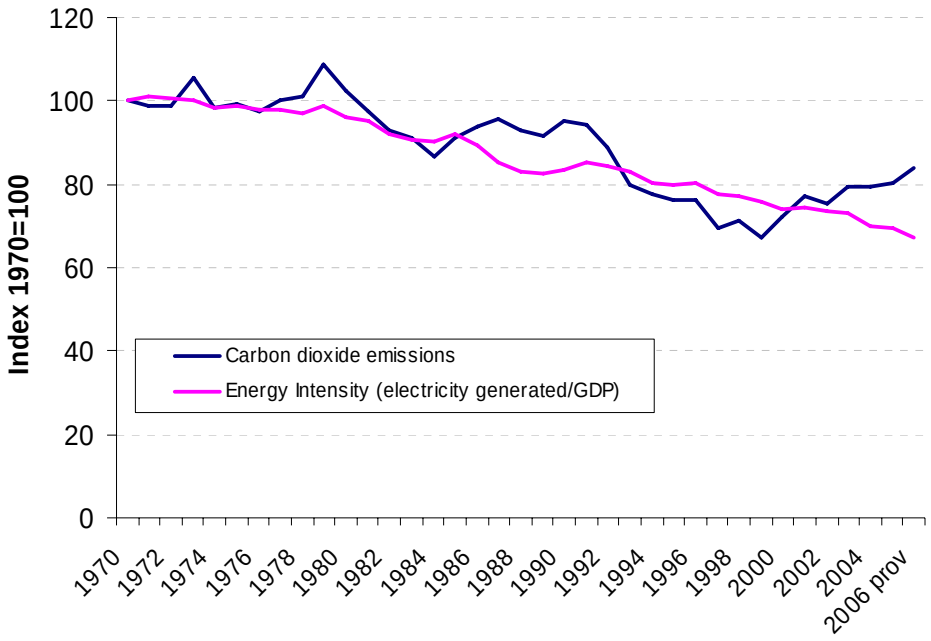
Figure 16: Energy intensity by sector[43]



5.5. Figure 17 charts the energy intensity of the electricity generation sector with CO2 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). It can be influenced by various factors such as changes in energy demand, income and extreme weather conditions. The chart shows the improvement in energy intensity since 1970. This reflects the significant improvements in the efficiency of the generation sector since it was opened to competition in 1990. In the last four years rising gas prices have seen a reversal in the long CO2 emission decline from the power sector, as coal-fired generation has increased at the expense of gas.

[43] Source: UK Energy Consumption - BERR 2007

Figure 17: Energy intensity and CO2 emissions of the power generation sector[44]



Meeting the challenge

5.6. The EU ETS is starting to provide incentives for businesses to consider saving energy. As the allowance price becomes established in energy prices, customers will consider investing more in energy efficiency measures. The Government has proposed a Carbon Reduction Commitment (CRC), to encourage more energy efficiency from business and public sector organisations. It is important that the cost and complexity of the scheme are not disproportionate to the potential benefits. Ofgem is engaging with Defra on these issues as part of its development of the CRC.

5.7. More radical interventions may be considered by the Government: the Supplier Obligation is one proposal and is discussed in more detail in the next section. Personal carbon trading has also been identified as a possible measure to reduce domestic GHG emissions although this represents a more long term solution and requires political and public commitment as well as wider considerations regarding the feasibility and costs of such a scheme. Any proposals will require rigorous analysis; both of existing measures and any future measures.

[44] Source: UK Energy Sector Indicators - BERR 2007

Update on Ofgem's commitments from 2006 Sustainable Development Report

5.8. **Work with Government to support initiatives to reduce energy intensity through work in network regulation and supply markets.** We have worked with Defra to produce a call for evidence on the Supply Obligation that was released with the EWP.

5.9. **Support innovation and choice in the market so a range of energy service offerings to both domestic and non business customers can be expanded, and contribute to implementing the EU Energy End-Use Efficiency and Energy Services Directive**. Progress has been made through the Supply Licence Review to address, for example, the 28-day rule and termination payments.

5.10. **Establish with industry a framework for the interoperability of smart meters**. An Interoperability Working Group was formed and provides a good avenue for all industry stakeholders to consider the ERA work on interoperability.

5.11. **Work with and advise Government on development of new regulatory schemes to reduce energy intensity.** We prepared a submission to Government on the Energy Performance Commitment and liaised with Government through Steering Group meetings.

5.12. **Remove barriers to deployment of technologies.** The Transmission Pricing Control Review implemented an innovation funding incentive for electricity and gas networks.

Ofgem's commitments for 2007/08

- We will continue working with the Government to support initiatives looking to reduce the energy intensity of the economy most notably those launched in the EWP (see next section for further detail).
- In the context of the EU Directive on Energy End-use Efficiency and Energy Services, we will work with the Government on developing and implementing instruments to improve the efficiency of energy use.

Indicator 9: Energy Savings from the Energy Efficiency Commitment

Trends in Indicator 9

5.13. This indicator shows the performance of the EEC which sets a legal obligation on energy suppliers to achieve improvements in energy efficiency by promoting energy efficiency measures to households across GB. These measures tend to be

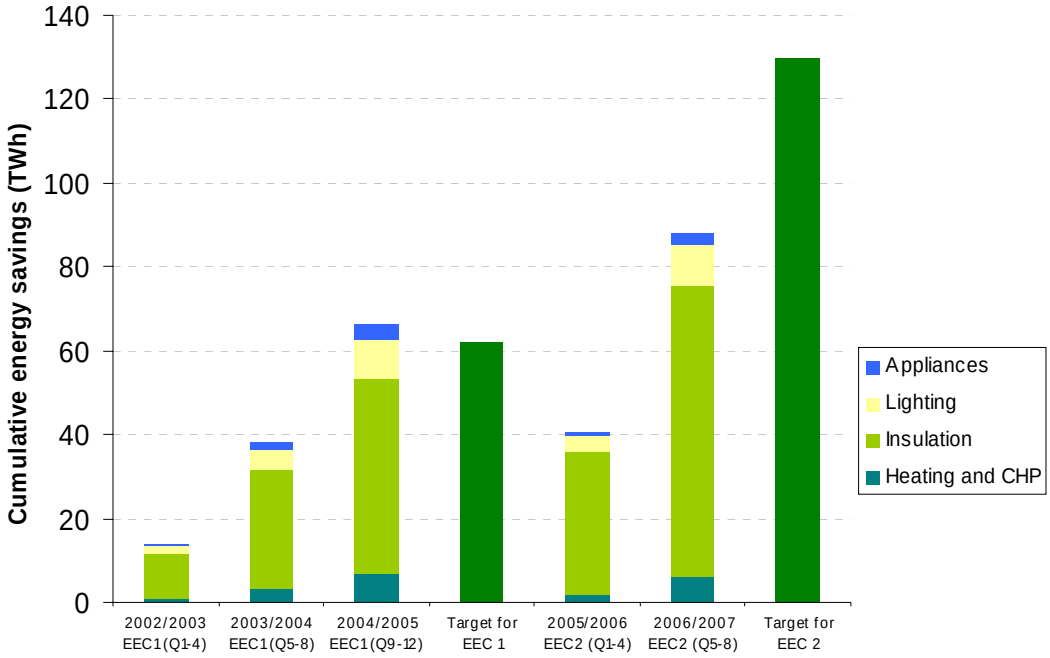
insulation, efficient heating, lighting or appliances. Phase 1 of the EEC (EEC1) ran from 2002-2005 with EEC2 running until 2008 and having a more stringent target.

5.14. To ensure that low-income customers who pay a larger proportion of their income on energy get a larger share of the benefits, at least half of suppliers' energy savings must be in Priority Group households[45]. The EEC therefore also contributes to the Government's Fuel Poverty Strategy. Figure 18 shows cumulative savings achieved and indicates that that over 50 percent of the EEC2 target has been met.

5.15. EEC1 required suppliers to achieve an energy saving of 62TWh, which represents approximately 1 percent of carbon emissions from domestic sources. Suppliers exceeded this target by 40 percent. The target for EEC2 is 130TWh, roughly double the previous EEC target. At the end of the second year of EEC2, 120 TWh or 93 percent of the suppliers' target had been achieved. 45 percent of energy savings achieved so far has been in the Priority Group. This accounts for 55 TWh. The annual carbon saving is expected to be about 1.2 MtCO2 and about 2.0 MtCO2 by 2010[46], respectively from EEC1 and EEC2.

[45] Households in receipt of certain income-related benefits or tax credits.
[46] Source: p3. http://www.defra.gov.uk/corporate/consult/cert2008-11/consultation.pdf

Figure 18: Energy savings, by measure type, achieved annually from the EEC[47]



5.16. Suppliers are likely to achieve significantly more than their EEC2 targets. These additional savings will be able to be carried over into the Carbon Emissions Reduction Target (CERT), the replacement for EEC which will run from 2008 to 2011. The CERT target will be set in carbon savings, which is a change from the EEC target which is set in terms of energy savings. Ofgem will therefore need to convert the value of these carried forward energy savings into carbon, to be consistent with the CERT target. Evidence-to-date suggests that suppliers will have considerably more to carry over in the non-priority Group.

5.17. Under EEC2, innovative measures which were not used under EEC1 are awarded a 50 percent additional 'uplift' in savings, to encourage and support innovation in energy saving measures through the programme. These measures have included: ground source heat pumps, CHP, efficient consumer electronics, solar water heating and intelligent mains panels (these switch off multiple sockets at once to avoid appliances being left in standby mode). Suppliers may achieve up to 10 percent of their target through innovative action. So far levels of take-up have been much lower than this.

[47] Source: Ofgem, Note: Savings calculation methodology for EEC1 has been adjusted to be comparable with EEC2

Meeting the challenge

5.18. Although there have been steady improvements in energy efficiency, overall energy consumption continues to increase in absolute terms, so the challenge remains to attempt to reverse this trend despite the increase in wealth and the dramatic increase in the number of energy using products in the home. Ofgem does not have direct influence in this respect and so Government policies that address energy use rather than just energy production will need to be developed or enhanced. These could include:

- provision of better information on energy consumption;
- education;
- awareness and promotional campaigns;
- regulatory measures such as building regulation and minimum efficiency standards for electronic products;
- price signals through fiscal incentives such as the CCL or the EU ETS;
- specifically targeted programmes which create obligations on certain market participants; and
- innovative market initiatives including energy services aimed at reducing energy consumption.

5.19. Suppliers are showing signs of beginning to compete in the provision of energy services rather than just selling more energy. In the business market, existing suppliers are running national advertising campaigns themed around energy services rather than supply. All suppliers offer products and services such as free home energy surveys through the EEC, discounted insulation and energy saving appliances. In the domestic market two suppliers now offer contracts that offer a reward to customers for saving energy. We expect suppliers to increasingly develop product offerings that as the EU ETS develops, metering technology evolves and customer awareness increases.

5.20. Defra published the statutory consultation on the CERT in May 2007. The target for this phase of the programme will be set in tonnes of carbon, to better reflect the benefits of the programme in combating climate change. In its proposed form, the CERT will equate to an annual saving of about 4.3 MtCO2 at the end of the programme. The scale of activity under CERT is likely to be double that of EEC2. Over the past year, we have been working with the Government to develop the policy and draft legislation for CERT.

5.21. The Government announced in the 2006 Energy Review that a supplier obligation in the domestic sector would continue in some form until 2020 and has published a Call for Evidence on proposals that will ensure that the domestic sector has a significant role in helping meet the 2020 targets. It is proposed that the obligation be more ambitious than EEC2, delivering annual savings of 11.7-15.6 MtCO2. We will contribute to the development of this policy.

Update on Ofgem's commitments from 2006 Sustainable Development Report

5.22. **Administer the EEC and work with Defra on future approaches to energy efficiency in domestic and non-domestic sectors.** The administration of the EEC is an on-going role of the Environmental Programmes team. The EnergySmart campaign (see Theme 2) focuses on energy efficiency to help customers, particularly those vulnerable to fuel poverty, to reduce their bills through reduction of energy demand.

5.23. **Work on the development of the next phase of the EEC including options for microgeneration and changes required under the CC and SE Act.** We responded to EEC consultation 2006 and will respond to the EEC consultation published in conjunction with the EWP.

5.24. **Manage energy demand reduction pilot.** We are managing an energy demand research project on behalf of the Government which will run for two years and which will provide firmer evidence on how customers respond to improved information on energy consumption through a variety of measures. There will be a progress report in October and a full report in 2008.

5.25. **Continue work with suppliers on testing and evaluation of consumption information and smart metering and consider qualification for EEC accreditation.** We continue to liaise with suppliers with specific trials (e.g. Powergen) as well as support the Warm Plan evaluation and assessment. We have also formed an industry-wide group to agree minimum standards for smart meters and look at what industry rules need to be changed to allow for wider use. We are also separately supporting the independent monitoring and evaluation of a small scale trial of 200 smart meters.

5.26. **Work with Government on developing and implementing instruments to improve efficiency in use in the context of the EU Energy End-Use Efficiency and Energy Services.** We have provided advice to the Government regarding the Directive and have also discussed our role in energy services in our response to the Metering and Billing consultation.

5.27. **On-going work with BERR and Defra on implementation of the Energy Services Directive.** In conjunction with the EWP two consultations were launched, which were:

- A consultation on possible additional measures needed to comply with the Energy Services Directive 2006/32/EC Article 6 in relation to the promotion of energy efficiency by energy suppliers; and,
- A consultation on the EWP proposal that energy suppliers should provide all but the smallest business users with advanced metering services within the next 5 years and everyone (including households) to have a smart meter within 10 years.

The EWP also announced a new requirement for new meters to come with a real-time display from 2008 and a short term offer of free displays from energy suppliers for households to 2010. There is a metering and billing consultation document out at the moment to invite views on these proposals. Responses are due on 31 October 2007.

Ofgem's commitments for 2007/08

- We will continue to administer the EEC efficiently and effectively.
- We will participate in the development of the CERT and will work with the Government on exploring options for including microgeneration, including ensuring that this interfaces appropriately with other renewables programmes. Ofgem will develop and consult upon administrative procedures for the CERT following the Government's statutory consultation on this issue.
- Ofgem is liaising with Defra regarding the Carbon Reduction Commitment and providing feedback in response to their consultation document this year.

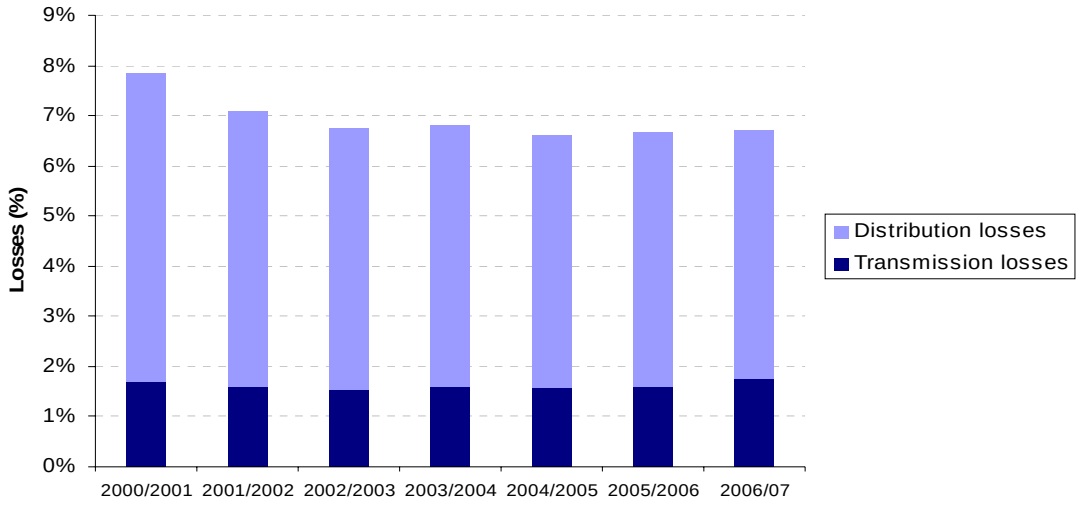
Indicator 10: Gas and electricity losses

Trends in Indicator 10

5.28. 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 cost as well as financial cost. Electricity losses increase emissions of greenhouse gases and other pollutants. Gas network losses result in methane, the principal component of natural gas, being emitted and this is much more potent than CO2 as a greenhouse gas.

5.29. 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 and quality which is regulated by Ofgem. Figure 19 shows the losses from both transmission and distribution.

Figure 19: Electricity losses as a percentage of units purchased[48]



5.30. Figure 20 shows a reduction in methane emissions from the gas network overall with the main reduction occurring in the low pressure gas network. Leakage of gas from the distribution system amounted to about 185Kt of methane in 2006/07. This is equivalent to 3.9 MtCO2 compared to total UK emissions of GHG in 2006 of 658 MtCO2. In the last 4 years emissions have varied by around 5 percent year-on-year and there is no strong trend in the level of emissions.

[48] Source: Ofgem

Figure 20: Methane emitted from medium and low pressure pipelines due to leakage

Meeting the challenge

5.31. We have more direct influence over network management through the price controls we set. So we will continue to develop stronger incentives on companies to manage and reduce losses from the networks.

Update on Ofgem's commitments from 2006 Sustainable Development Report

5.32. **Enhance incentives for reduction of gas and electricity losses.** We have introduced and will monitor through the Transmission Price Control Review (TPCR) an incentive for transmission companies to reduce the leakage rate of SF6. We set the structure for electricity distribution charges and this provides incentives for the reduction of losses DNO networks. We will enhance the incentives on gas DNOs to reduce methane losses from the gas network as part of GDPCR.

5.33. **Consider treatment of losses from all the gas network and review the impact of the continuing mains replacement programme on leakage.** We will improve the incentives on gas network companies to reduce losses in their networks as part of GDPCR.

5.34. **Consider proposed changes to the way electricity transmission system users are charged to cover losses**. Earlier this year the Authority considered proposals to modify the BSC such that variable transmission losses would be

allocated to parties on a locational basis[49]. In June 2007, Ofgem issued a consultation which set out the reasons why the Authority was minded to approve P203 and to reject the other proposals[50]. It is currently expected that the Authority will reach its final decisions in the spring of 2008.

Ofgem's commitments for 2007/08

- We review the price controls to see if further incentives should be placed on the network operators and carry out analysis looking at environmental considerations. This will be in the light of experience of the SF6 scheme, which we will keep under review.

- As part of the GDPCR, we will consider whether a GHG incentive should be set to reduce emissions and allow additional revenue to allow specific investment in GHG reduction projects. A new environmental incentive is being considered in the GDPCR updated proposals.

- The majority of methane emissions on the gas distribution networks occur from the low pressure mechanically jointed iron mains. The transmission systems, operating at higher pressure tiers, are constructed from welded steel and do not leak or fail in the same manner as iron pipes. We will consider the issue of methane emissions from the gas transmission system as part of the System Operator incentives relating to transmission losses.

[49] These were P198, P200, P203 and P204 as well as two alternative proposals (P198A and P200A).
[50] This consultation noted that, based on the evidence put to it, the Authority considered that the introduction of locational losses charges would promote efficiency by reducing losses and would benefit the environment by reducing carbon emissions with no material adverse impact on the development of renewable generation.

6. 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

6.1. Security of supply and tackling climate change are recognised as the two long term energy challenges facing the UK and many developed/developing countries. An important aspect of security of supply is the reliability of supply, i.e. the likelihood and duration of interruptions, due to problems with network performance, and the quality of service customers receive should problems occur. Another aspect of security of supply we focus on in this chapter is the diversity of supply, both in terms of the UK's generation base and its gas supply sources.

Indicator 11: Reliability of supply – network performance

Trends in Indicator 11

6.2. This indicator looks at the overall reliability of the gas and electricity network by tracking the number of interruptions to supply to customers as a result of network issues. The following sections look at the performance of distribution and transmission networks.

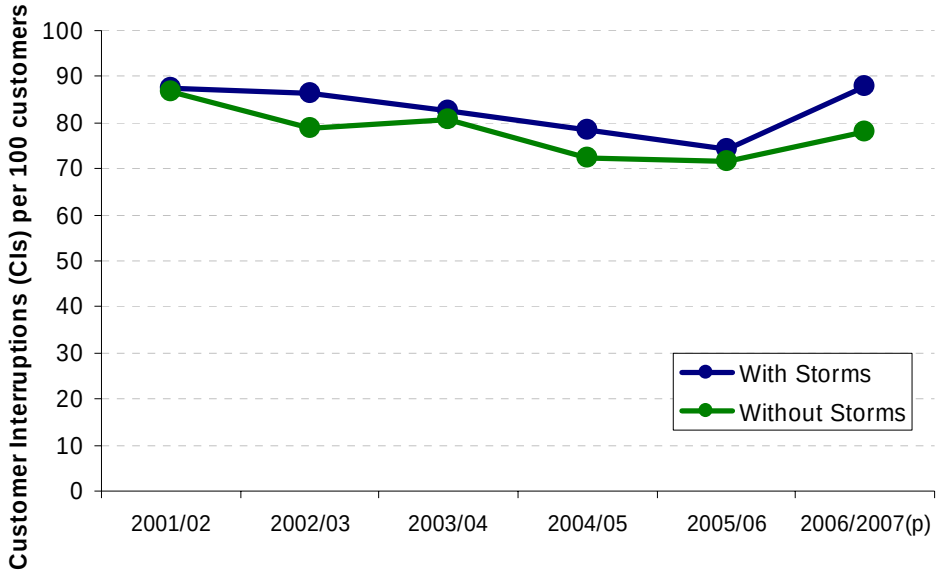
Electricity distribution and transmission

6.3. The performance of Britain's electricity networks has generally improved significantly since the introduction of the quality of service incentives in 2002. The data for electricity distribution as shown in Figure 21 includes power cuts that last longer than three minutes and covers planned and unplanned interruptions.

6.4. The average number of customer interruptions provides an indication of the average performance for Britain's distribution networks from 2001 to date. The average number and length of power cuts both fell by 16 percent up to 2006 although storms in October 2002 and January 2005 had an impact on the duration of interruptions in 2002/03 and 2004/05 respectively. The general downwards trend indicates network operators are responding to the incentives to restore customers' supplies promptly and efficiently. However, in early 2007 this trend reversed due to severe weather in January 2007 which caused widespread damage to power lines in

England and Wales with over 1.2m customers being affected.[51] Figure 21 illustrates these trends.

Figure 21: Average electricity customer interruptions (CI) per 100 customers[52]

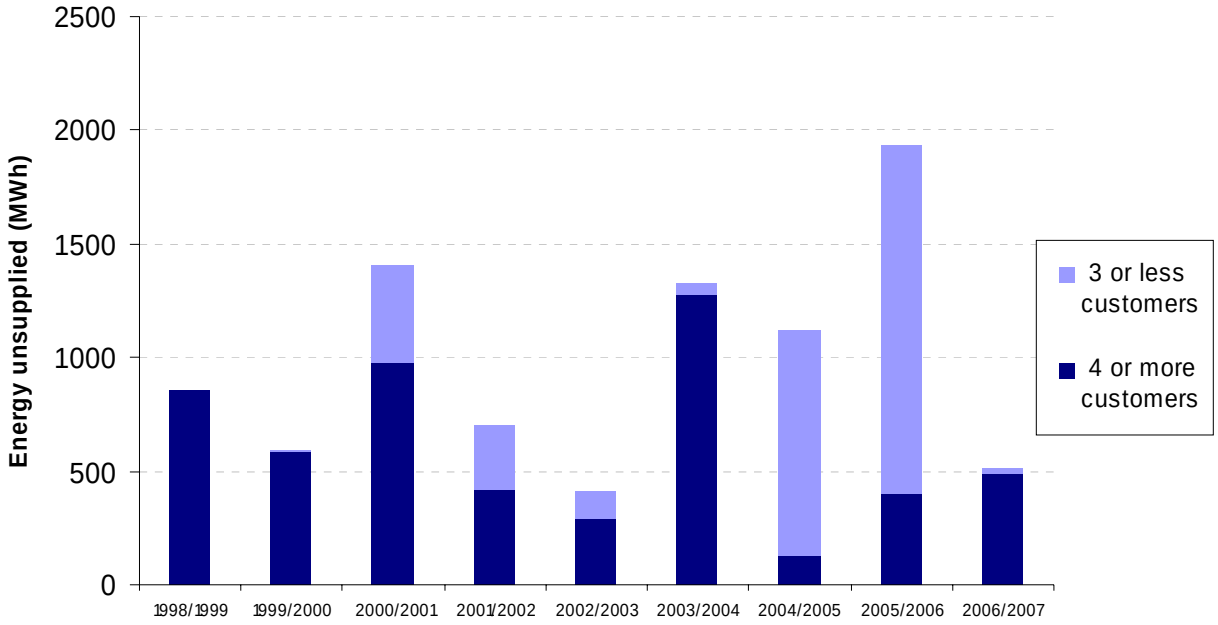


6.5. The amount of energy unsupplied due to transmission network faults provides an indication of the reliability of the transmission network. Figure 22 looks at the energy unsupplied for electricity transmission with the data being for unplanned interruptions only. The reliability incentive was specifically implemented after the London/Birmingham blackouts in 2004.

[51] The exceptional weather mechanism only excludes big storms from the 'without storms' figure. Smaller adverse weather events, of which numerous occurred during 06/07 will still be influencing the 'without storms' figure, providing the increase in this value after a particularly benign 05/06.

[52] Interruptions arising from the electricity distribution network per 100 customers. Source: Ofgem

Figure 22: Energy unsupplied due to transmission network faults[53]



Gas distribution and transmission

6.6. GDNs are required to report on the number and duration of both planned (replacement) and unplanned (emergency and repair) gas supply interruptions. Table 2 shows the reported number of interruptions per 100 customers arising from the GDN.

Table 2: Reported number of non-contractual interruptions of gas supply arising from the gas distribution network[54]

	Reported number of interruptions per 100 customers		
Type of interruption	**2003/04**	**2004/05**	**2005/06**
Planned interruptions	0.79	1.04	1.37
Unplanned interruptions	0.14	0.25	0.24
Total	**0.92**	**1.29**	**1.61**

[53] Source: Ofgem
[54] Source: Ofgem

6.7. The majority of reported interruptions are accounted for by planned work, as shown in Table 2. The majority of these interruptions are due to the mains replacement 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. In addition to removing the risk associated with iron mains, the replacement programme also has additional benefits of reducing the leakage by replacing the iron mains with polyethylene pipes.

6.8. Improvements in reporting data in relation to unplanned interruptions are still feeding into this year's data.

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

Meeting the challenge

6.10. 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 also the development of DG. The networks will require investment to address these challenges and to replace ageing network equipment. There are also technical challenges facing the networks such as dealing with intermittent renewable forms of generation, the potential growth of DG and new gas supplies.

6.11. We remain committed to incentive-based regulation as the best means of ensuring that the network regulatory regime remains fit for purpose and that network investment is timely, efficient and meets customers needs and expectations. We encourage the development of cost reflective charging methodologies because this is the best means of promoting more sustainable, efficient investment in networks over the longer term.

6.12. We will continue to monitor the performance of the network operators and ensure that the appropriate incentives are in place. We will consider the lessons from the last set of reviews and take these into account in our next cycle of price controls. The new scenario work mentioned above will be important in influencing future decisions. Our aim is to continue to develop a clear, predictable approach to the conduct of price control reviews in order to reduce uncertainty and provide a stable framework for long term decisions by network companies.

Update on Ofgem's commitments from 2006 Sustainable Development Report (Indicator 11 (previously Indicator 10))

Action – electricity distribution

6.13. Work with electricity DNOs to promote best practice in dealing with vulnerable customers where electricity supply is interrupted. This work is ongoing. The 2005/06 Electricity Distribution Customer Service Reward Scheme gave particular

consideration to inclusion of other vulnerable customer groups on the priority register in addition to the distribution companies' licence requirements and the provision of services to vulnerable customers above and beyond the core minimum. The report for this scheme was published July 2007.

Action – gas distribution

6.14. **GDPCR will review the regulatory arrangements on gas quality of service including interruptions**, including:

- Scope and coverage of arrangements;
- Gaps or room for improvement in existing arrangements; and
- Measurement, auditing and incentivising outputs.

GDPCR's Initial Proposal's document published in May 2007 proposes a number of changes which simplify quality of service arrangements, provide improved protection for customers, improve accuracy and reliability of data reported and enhance comparative competition between the GDNs. The quality of service arrangements include interruptions reporting 90 percent accuracy and a 95 percent completeness minimum performance.

Action - transmission

6.15. **As part of the TPCR, consult on the issues surrounding electricity transmission system reliability and performance reporting.** We consulted on these issues in the final TPCR proposal (December 2006). Nearly £5bn of investment to renew Britain's electricity and gas infrastructure to meet new demands from gas imports and renewable connections was approved through the TPCR. We also adopted the approach initiated in the DPCR4 and are introducing an annual regulatory reporting pack.

6.16. **Consider the buyback regime as part of the gas TPCR process and look to introduce a similar regime for holders of gas exit capacity.** The TPCR considered the buyback regime and introduced a similar mechanism for the exit regime, which will be implemented when the enduring offtake arrangements are implemented.

Ofgem's commitments for 2007/08 for electricity distribution

- We expect to launch the first full consultation on the next electricity DPCR in early 2008. We issued a scoping letter on this review in May 2007 and this includes consideration of issues such as how we can move the focus away from five year allowances; how we can simplify and recast the incentive framework in terms of sustainable development; and what changes are appropriate to the roles and responsibilities of the companies.

- A key priority will be to complete outstanding policy reviews in charging, connections and losses. The charging review is a key issue in delivering efficient and sustainable network development. Some of the distribution companies have begun to deliver charging models to reflect their costs, for example by crediting distributed generators where they provide system benefits. We look to distributors to take leadership in this area going forward.

- For the third year of the customer service reward scheme (2007/08), we will continue to monitor examples of best practice. The key areas considered will be corporate social responsibility and wider communication with particular focus on serving vulnerable customers.

Ofgem's commitments for 2007/08 for gas distribution

- We have published final proposals for GDPCR. These include developing a set of incentives to reward distribution companies for investing efficiently in their networks and proposals to encourage extensions to the gas network that are consistent with our responsibilities to all gas customers, present and future. We also aim to develop proposals to incentivise interruption arrangements and to create a new framework for gas distribution businesses to make informed trade-offs between interruptions, network capacity and storage investments and NTS offtake capacity to meet their security of supply licence obligations.

- We are proposing to publish interruptions performance on a disaggregated basis for each GDN, this will result in further benefits for customers through enhanced comparative competition as it will allow GDNs' performance to be assessed relative to one another and over time.

- We are proposing to introduce minimum performance levels for completeness and accuracy of GDNs interruptions data from April 2009. This is to ensure GDNs have in place appropriate systems and procedures to monitor, record and report interruptions on their networks and ensure the data produced is reliable and robust. GDNs will also be required to develop appropriate auditing and governance procedures to demonstrate to Ofgem that they have satisfied the requirements for the completeness and accuracy of the data.

Ofgem's commitments for 2007/08 for electricity transmission

- We need to try to ensure that the regulatory arrangements are "future proof", and so in our Energy Review response we recommended that we work with network operators to publish long term scenario analysis in order to help inform the investment decisions of network users and allow us to set price control decisions in a longer term context. We have published a scoping letter for the development of long term scenarios for electricity networks. We intend to produce scenarios for 2050 in early 2008 based on our assessment of electricity supply and demand outcomes. We intend to publish a report on the issues that these pose for the development and regulation of electricity networks in mid-2008.

- We plan to conduct a full review of the role of the system operators looking at the efficiency of the incentive arrangements. The aim of the review will be to introduce new longer term incentives from April 2008 onwards. We will work with transmission companies and other stakeholders to develop better output measures that also allow comparative analysis (including international comparisons). These should help the licensees to demonstrate any efficiency achieved, or potential increased need for investment.

- We will, together with BERR, publish detailed arrangements for the offshore electricity transmission regime. Offshore networks will be increasingly important as they will transfer electricity from offshore generators such as wind farms and potential emerging technologies such as wave and tidal to the onshore network. These technologies have the potential therefore to strengthen security of supply and contribute to a lower carbon energy system. The offshore networks will be subject to price controls, which will be set and reviewed by Ofgem. In a joint project with BERR, we are now developing that price control regime. The new regulatory arrangements are expected to be in place by 2008. These networks are expensive and we are seeking to ensure they are developed as efficiently as possible to avoid customers paying excessive charges.

Indicator 12: Security and diversity of supply – market response

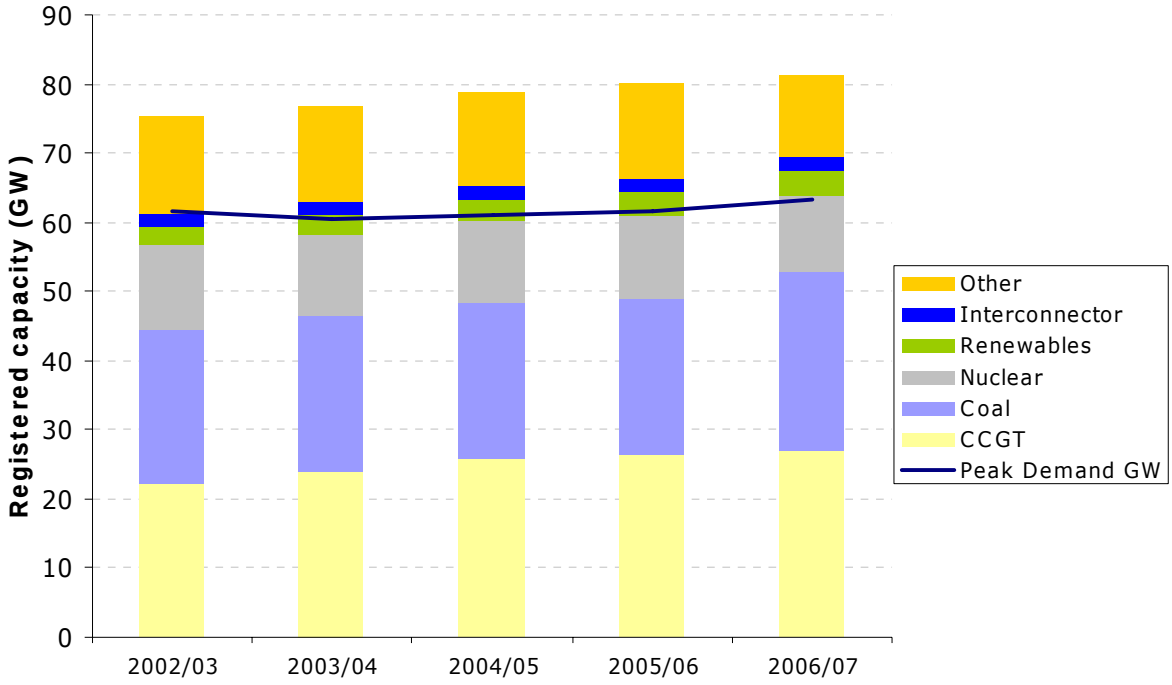
Trends in Indicator 12

6.17. Competition in the energy markets has considerable benefits to industrial, commercial and domestic customers. Effective competition helps keep the pressure on costs, to the benefit of customers. As well as promoting a greater choice of tariffs and services, it has also helped to promote more diversity in gas supplies, as indigenous production has declined, and electricity supplies.

UK electricity generation mix

6.18. Figure 23 shows the proportion of electricity generation from declared fuels and the potential UK gas supply source, against annual demand. Having a secure and diverse fuel mix is crucial to ensure security of supply.

Figure 23: The UK electricity generation mix[55]



6.19. Over the period there has been a substantial increase in the capacity of gas–fired generation (CCGT including CHP). This has increased the diversity of the fuel mix since 1996. However in 2005 there was a switch towards more coal generation due to higher gas prices and restricted supplies of gas. This was continued in 2006. Renewables have seen more limited growth so far, as discussed earlier in this report.

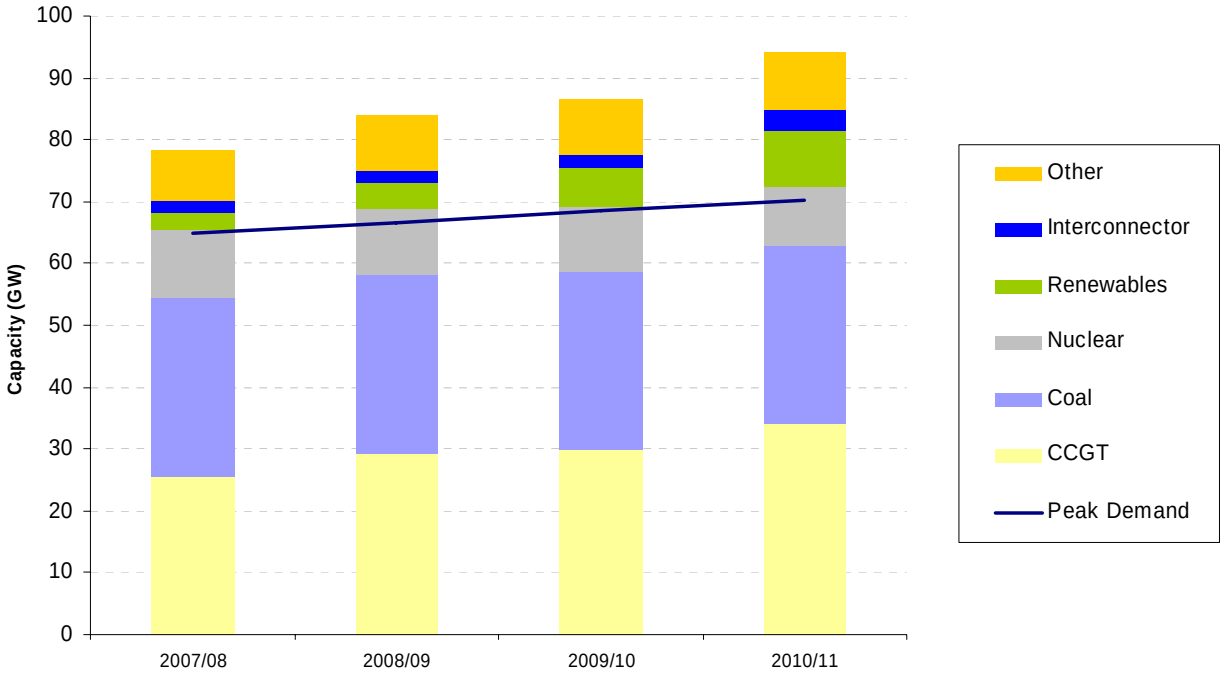
Indicator 13: Future electricity generation mix

Trends in Indicator 13

6.20. Figure 24 shows some of the potential future generation mix based on NG's seven year statement. The Large Combustion Plant Directive (LCPD) and age of plant will start to have an effect from 2008, forcing the closure of some existing coal fired power stations. The likely closure of almost all existing nuclear generation plant by 2020 (or later, depending on whether any life extensions are granted) will also affect the generation mix in the long term, especially since it is unlikely that new nuclear power stations can be operational by that date. Around 17.2 GW of new electricity generating capacity may be constructed by 2010. 1.5 GW is under construction.

[55] Source: BERR- DUKES 2007. Note: Data is at December of each year, which is assumed to reflect that at March

Figure 24: Projected UK electricity generation mix[56]

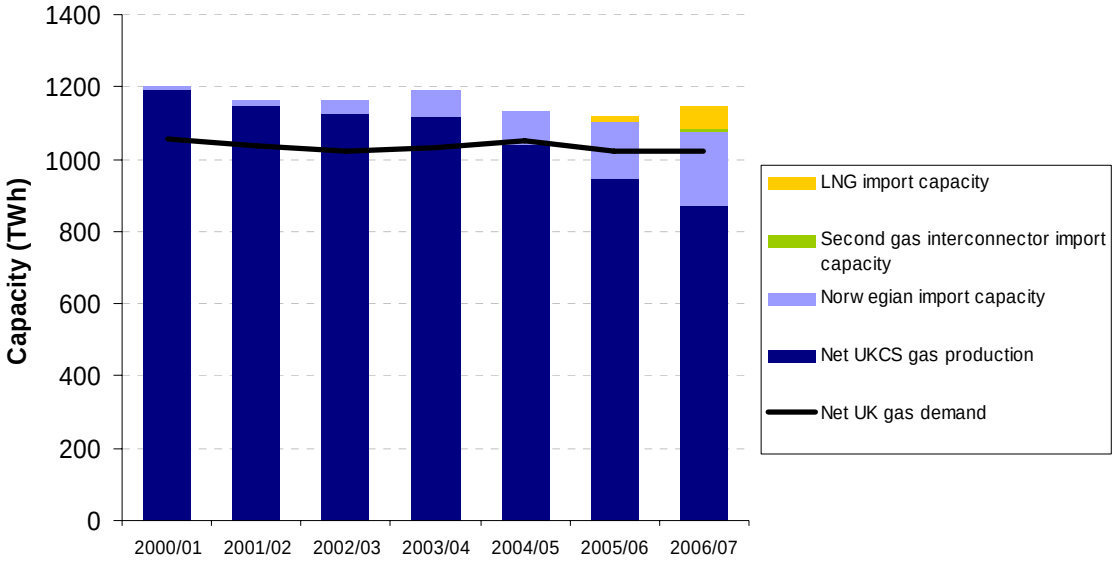


6.21. A major development driving future gas supply sources in the UK is growing investment in LNG reception facilities, as illustrated by Figure 25.

6.22. LNG terminals will allow GB to import gas from many different areas around the world, including the Middle East, Central Asia, Africa and South America. In addition, the gas market is responding to our growing import dependency by investing £10 billion in gas import and storage projects. If all these projects are completed, enough import capacity will be ready by 2009 to meet 90 percent of UK gas demand, and storage capacity could double by 2010. In addition, our gas supplies are set to come from a more diverse range of sources.[57]

[56] Source: NG Seven year Statement 2007
Note that some of NGCs projections for 2007/08 already lie below the actual data for 2006/07 reported by BERR- DUKES 2007. Hence we would expect that NGC projects overall to be on the low side. However the NGC projections still provide useful information regarding the likely future generation mix.
[57] Source: *Meeting the challenge of Britain's rapidly changing energy networks,* Ofgem press release, 30.03.06

Figure 25: Gas supply capacity in the UK[58]



Meeting the challenge

6.23. The diversity of the fuel mix particularly with the growth of renewables and other low carbon technologies will be important in tackling some of the issues arising from climate change. It is likely that this will become increasingly significant for the UK as a result of the issues associated with reducing emissions, the reduction in indigenous gas production and increased reliance on imports from overseas. As these factors will also affect other countries in the long term, there could be increased competition or increasingly scarce resources although global fossil fuel sources are still plentiful and alternative technologies such as clean coal and carbon capture and storage (CCS) are likely to become more important.

6.24. Liberalisation of European energy markets is crucial to the UK and Ofgem is pushing for this through its work in CEER and ERGEG. A single market should promote diversity along with common reliability and security standards.

6.25. The Government's energy policy is based on markets and independent regulation. Ofgem's direct role in effective market oversight will be important to allow markets to deliver secure and sustainable energy in the most cost effective way to energy customers.

[58] Source: Joint Energy Security of Supply Working Group (JESS), BERR 2006
Note: Data is at December of each year, which is assumed to reflect that at March.

Update on Ofgem's commitments from 2006 Sustainable Development Report for Indicators 12 and 13 (previously Indicator 11)

6.26. **Review incentives on National Grid as SO.** NG SO quality of information incentives were published December 2006 and new SO incentives have been agreed for 2007/08. Ofgem is working with the industry to review aspects of the cash out arrangements in electricity. As part of this we commissioned two industry experts to report on cash-out arrangements to drive forward industry debate on this issue.

6.27. **Participate in the Joint Energy Security of Supply (JESS) group.** The EMO project replaced the Joint Energy Security of Supply (JESS) working group. The seventh and final JESS report was published in December 2006. Timely, credible information about the outlook for supply and demand is very important for energy markets to work effectively. The EWP committed Government to work with Ofgem on a new information service called the Energy Markets Outlook (EMO) which is designed to provide the Government, companies, market participants and other interested parties with a clear assessment of the outlook for supply and demand and any emerging risks that could impact on supply, demand and security of supply. BERR and Ofgem have been working together on the first EMO report which will be published this autumn.

6.28. **Continue to work in Europe to achieve greater information transparency across Europe as a whole**. Since winter 2005, improvements in transparency in Europe include more information about French gas storage being made available to the market. The regional initiative is looking to bring forward transparency improvements in gas for the North-West region. So far, SSOs have confirmed that are implementing improvements in terms of inventory levels, available capacity and outage information - delivery is expected October-November 2007. The TSOs have now responded to a questionnaire asking them whether they meet the market requirements - these results were discussed at a workshop on 19 September 2007 - which provided an opportunity to identify some 'quick wins' where information could be made available to the market. Ofgem has also made on-going contributions to work in ERGEG and CEER and contributed to EU Commission Strategic Energy Review that was published in January 2007. On 28 September 2006 we also hosted a Powering the Energy Debate on a single European energy market which was attended by Neelie Kroes.

6.29. **Facilitate the debate on the demand side in contributing to security of supply.** This is on-going work for the GB Markets team that is being taken forward through the Demand Side Working Group[59] and work with customers and key stakeholders as part of our series of industry seminars. We have held two seminars this year to help customers and market participants better understand the emergency arrangements. We also approved industry code changes to help improve the commercial incentives on gas shippers to avoid a gas deficit emergency. Ofgem has held three seminars in support of the Winter Outlook 2007/08 consultation

[59] The Demand Side Working Group (DSWG) was set up by Ofgem in order to identify and address any practical and/or commercial obstacles to demand side participation in the wholesale gas or electricity trading arrangements.

process. This process provides stakeholders, including users, with information about the outlook and risks for energy supply and demand in the upcoming winter. As well as attending and presenting at the seminars, users are able to provide input into the process by responding to the two consultation documents. The final report in the process for this year will be published in late September.

Ofgem's commitments for 2007/08

- We will assess the impact of the introduced measures to improve transparency in the gas market.
- We will be continuing to work with the EC and energy companies to achieve greater transparency and liberalisation in continental gas markets.
- We will continue our work with customers and industry stakeholders to make sure that they are aware of the risks, opportunities and options they have to manage periods of tighter suppliers and higher prices.
- We will work with BERR to develop and improve EMO. We will maintain and improve the effectiveness of the contingency arrangements that underpin the gas and electricity markets in the event of an emergency.
- We will continue to work with BERR, Defra, HSE, and the Commission to develop new gas quality standards that are non-discriminatory and cost effective.
- We will also continue to act as a facilitator to try to identify the key issues surrounding gas quality and to assist the industry in developing effective solutions efficient solutions.

Indicator 14: Quality of service - supply market performance

Trends in Indicator 14

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

6.31. Assessing suppliers' quality of service has many dimensions. These may include consumer 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

6.32. The following charts show the total number of complaints made to energywatch per 1000 customers in 2005 and 2006, and the take up of the new innovative tariffs.

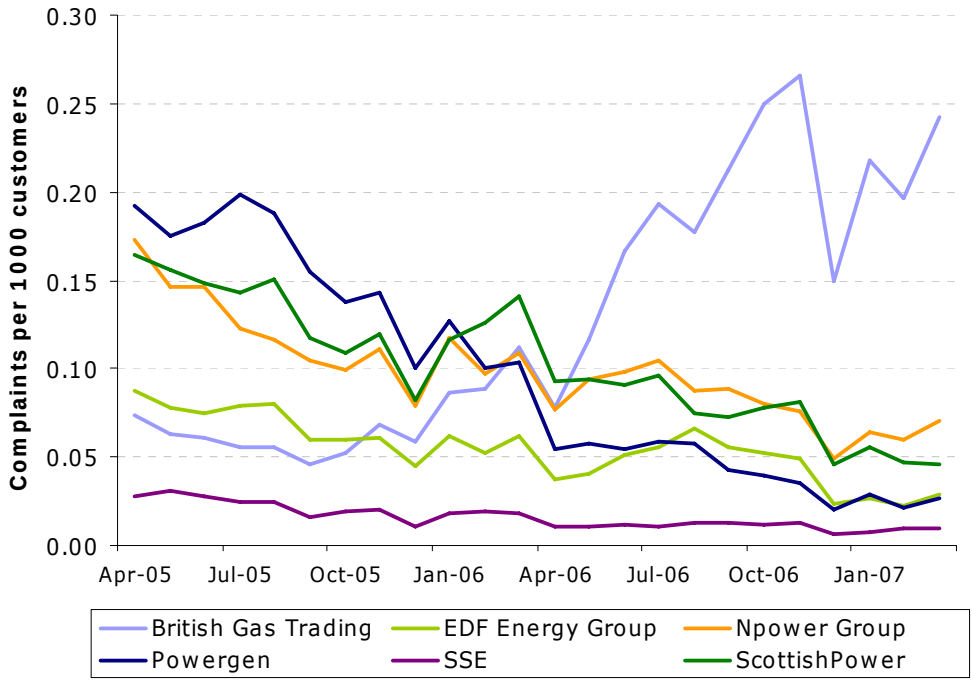
6.33. energywatch publish information on the number of complaints they receive from customers about domestic energy suppliers[60]. As Figure 26 shows the level of unresolved complaints has fallen for five of the big six suppliers over the last 2 years. The increase in complaints made about British Gas is reflects the well publicised problems they have had in transferring customers to a new billing system.[61] British Gas have stressed publicly that resolving these issues is their top priority and service level indicators are showing improvements, and it is likely this will be reflected in the data for 2007. But competition remains an important discipline on their performance and over this period they have started to offer much more competitive prices and have continued to sustain customer losses as customers have switched to suppliers offering better service and competitive prices.

6.34. Next year Ofgem will review this indicator in light of changes in the organisation of the consumer bodies and how they decide to report on complaints.

[60] energywatch introduced an empowerment process in September 2006. In this process a customer who has called with a straightforward supplier complaint is referred by direct transfer to dedicated teams within suppliers (provided the customer is not vulnerable). A complaint is then recorded only if the customer comes back to energywatch with the problem still unresolved. We note that empowerment records increased mainly during 2007. energywatch will in future be amending how they present complaints information on their websites.

[61] Domestic Retail Market Report, Ofgem, 2007, p17

Figure 26: Number of complaints made to energywatch per 1000 customers (by supplier)[62]



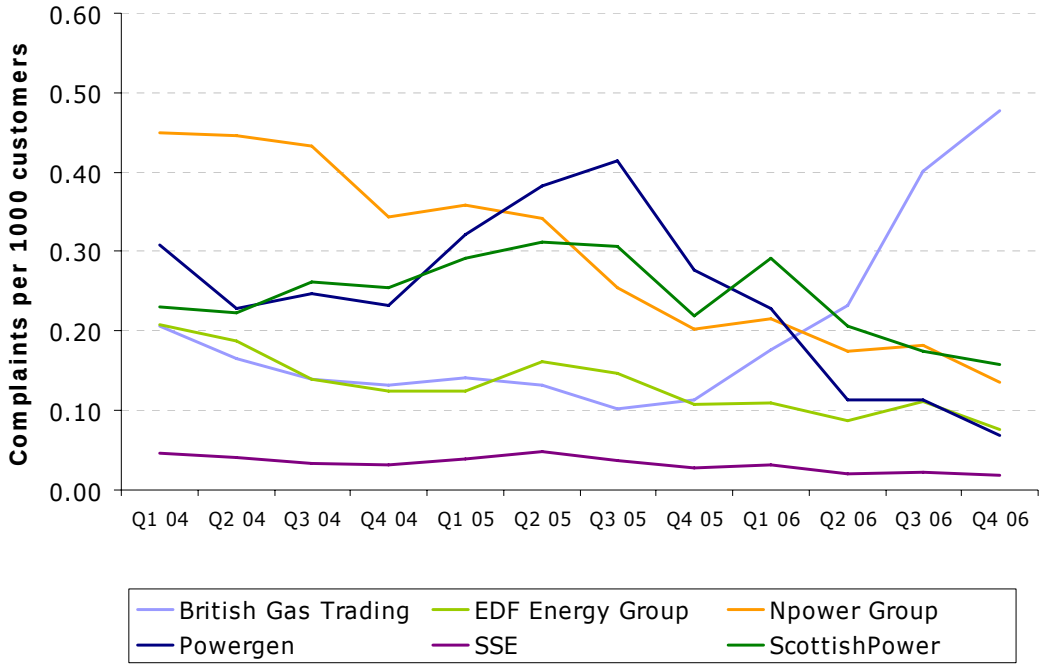
Quality and accuracy of billing

6.35. Ofgem has received indications that customers have difficulty in understanding their bills. During the last year over half of customers who contacted the Consumer Affairs team at Ofgem did so regarding billing-related disputes.

6.36. energywatch data suggests that in general the number of accounts and billing complaints fell during 2006. The average number of complaints made about the top 6 suppliers excluding British Gas decreased from 0.18 to 0.09 per 1,000 customers over the year. The increase in complaints about British gas reflects the difficulties they have faced transferring customers to a new billing system[63].

[62] Source: energywatch
[63] See Ofgem's Domestic Retail Market Report, June 2007 http://www.ofgem.gov.uk/Markets/RetMkts/Compet/Documents1/DRMR%20March%202007doc%20v9%20-%20FINAL.pdf

Figure 27: Account and billing complaints per 1,000 customers[64]



Indicator 15: Product Innovation

Trends in Indicator 15

6.37. Suppliers are offering a greater range of products to attract and keep customers. These have proved popular in the market: there are some 9 million gas and electricity accounts on 'green', fixed price and online deals, accounting for roughly 20 percent of all energy accounts.

6.38. Figure 28 shows the increasing popularity of price guarantee and online tariffs over time. As at March this year, around 6 million customer accounts (gas and electricity) - or around 13 percent of the market - were on price guarantee tariffs. We estimate there are about 2.5 million specifically online accounts with the biggest six suppliers. Savings average around £55 per year (6 percent of the average annual bill), and ranged from £15/year to £110/year, but these fluctuate frequently.

[64] Source: energywatch

Figure 28: Price guarantee and online tariffs[65]

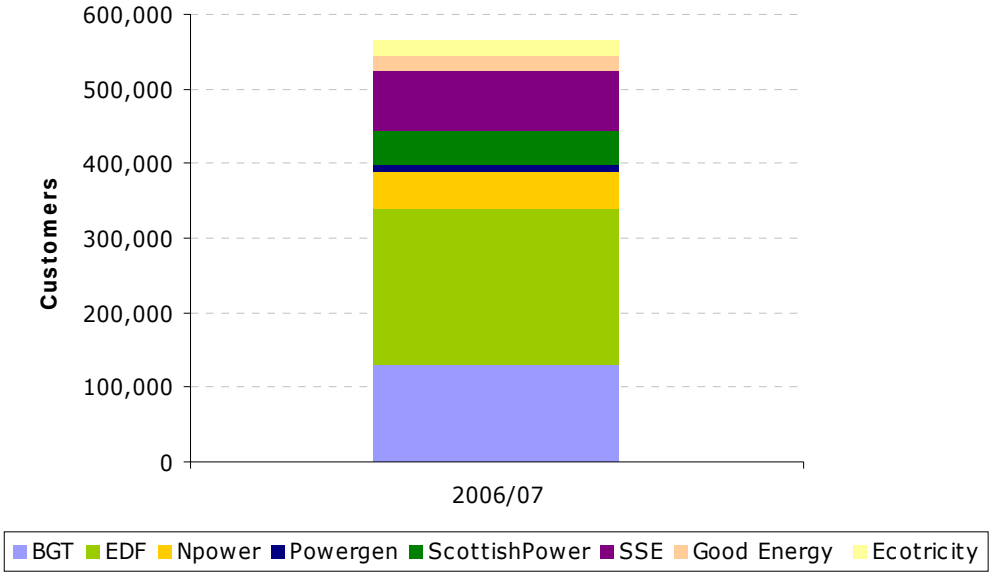
Indicator 16: 'Green' Tariffs

Trends in Indicator 16

6.39. '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. Two suppliers entered the domestic market specialising in green energy. The first tariffs appeared in 1998, however, it has been in the last two years as awareness of climate change has increased that there has been more interest in green tariffs, which is reflected in the wider range of tariffs available. Figure 29 shows total product/customer numbers to date.

[65] Source: Ofgem

Figure 29: Green tariff customer numbers[66]



Meeting the challenge

White Paper proposals

6.40. The EWP sets out a number of proposals and measures relating to the metering and billing practices of suppliers, looking to reduce demand which should assist with security of supply (see Theme 3). The proposals range from the rolling out of smart meters to the provision of visual display units and more detailed consumption information. The Energy End-Use Efficiency and Energy Services Directive also includes provisions on metering and billing. The Government will be consulting on these measures and Ofgem will feed into these consultations to ensure that decisions are taken on an informed basis according to the most cost effective measures for customers. Ofgem was a key player in the Joint Energy Security of Supply working group and will play a similarly important role in its successor, the new Energy Markets Outlook programme, run jointly by Ofgem and the Government and which will provide new information on.

Cutting the 'green' confusion

6.41. In response to concerns raised regarding customer confusion surrounding 'green' tariffs being offered by suppliers, Ofgem has this year undertaken an active consultation process together with key stakeholders and interested parties. This process has been focussed on updating the existing guidelines for green supply, with

[66] Source: Ofgem

a view to providing greater clarity and confidence for customers in respect of what it is they are actually buying when supporting a 'green' tariff. Proposals emerging from the Ofgem-run workshops have included two separate sets of guidelines – one in respect of renewable tariffs and one in respect of low carbon tariffs.

6.42. We are continuing to work with industry to develop finalised sets of guidelines, with a view to having these in place this year. We are also asking industry to establish an independent certification scheme, based on the requirements set out in the guidelines, that suppliers could sign up to and in so doing provide customers with greater clarity and certainty regarding these tariffs.

Update on Ofgem's commitments from 2006 Sustainable Development Report for Indicators 14, 15 and 16 (previously Indicator 12)

6.43. **Supply Licence Review will consider whether there are any barriers to the introduction of more innovative supply arrangements and seek to remove these barriers.** The "Supply Licence Review- Final proposals" document was published in June 2007 and new licence conditions were implemented in August 2007.

6.44. **Form an industry-wide group to set interoperability standards for smart meters and remove regulatory barriers to installation of smart meters in customers' homes.** An interoperability working group was established and met in October 2006. The Energy Demand Reduction Pilot has started in 2007 and a full report is expected in 2008.

6.45. **Work with Government in managing the trial of smart meters and other consumption feedback options.** Ofgem is managing the Government's trial for smart metering. The Energy Demand Reduction Pilot started in June 2007 and will run until mid-2010.

6.46. **Monitor the Ombudsman scheme to ensure it develops into an effective and well publicised scheme to resolve consumer complaints.** In July 2006, suppliers set up the Energy Supply Ombudsman (ESO), at the request of Ofgem following the super-complaint made by energywatch. The ESO provides a backstop for customers to achieve independent resolution of a complaint when they are unable to resolve the issue with their supplier. The ESO will be publishing its first annual report on 24 July 2007, including complaints statistics up to 31 March 2007.[67] Ofgem will undertake a review of the Energy Supply Ombudsman and has consulted stakeholders upon the appropriate scope and process for this review. The Consumers Agents and Redress Bill, if passed, will allow the Secretary of State to require energy providers (including suppliers and distributors) to be members of an approved redress scheme. In considering the energy schemes for this Bill, Ofgem will analyse the role of the Energy Supply Ombudsman in fulfilling this role.

[67] The ESO website is www.energy-ombudsman.org.uk.

Ofgem's commitments for 2007/08

- We will begin the work for the Distribution Price Control Review (DPCR5) with early scoping on the key issues including reviewing the new initiatives in relation to innovation, customer service and environmental matters introduced as part of DPCR4 and the first phase of a customer survey to inform our understanding of consumer interests including willingness to pay for environmental improvements (building on earlier surveys).

- We are conducting a review of the ESO, to be published in the autumn and have issued an open letter setting out the proposed scope of the review.

- The Consumers, Estate Agents and Redress Act places a statutory requirement on Ofgem to make regulations which set standards of performance for complaint handling for gas and electricity customers. We issued an open letter seeking initial views on the options and scope of the standards in July. The results of this will inform our formal consultation which will be published in early October.

- We will continue to work with industry and key stakeholders to finalise sets of renewable and low carbon guidelines. We will also work together with industry to develop an independent certification scheme to help improve customer certainty and confidence in the supply market.

7. Theme 5 - Supporting improved environmental performance

Chapter Summary

In this chapter we examine aspects of the environmental performance of the energy sector. This includes the GHG emissions as well as nuclear waste implications of electricity generation. Furthermore, electricity and gas networks themselves also have an environmental impact, as evidenced by the length of power lines in natural parks and areas of outstanding natural beauty or the use of insulating oil in fluid-filled cables.

Introduction

7.1. In addition to impacting upon climate change, the energy sector has other environmental impacts, such as on air quality. For example, the electricity generation sector is one of the main sources of emissions from the major air quality pollutants, sulphur dioxide (SO2) and oxides of nitrogen (NOx) due to the burning of fossil fuels. These pollutants affect air quality, may give rise to direct effects on vegetation and lead to acidification as well as eutrophication of the local and wider environment. Coal-fired stations produce large quantities of bottom and fly ash, the bulk of which has to be disposed of. Electricity generation can have a significant effect on rivers and estuaries which are used as a source of cooling water and a depository of certain liquid wastes. Most Flue Gas Desulphurisation (FGD) processes also produce liquid effluent.

7.2. There are also air quality impacts associated with methane emissions. Methane contributes to smog and ozone formation, therefore, a reduction in emissions could potentially have health and mortality benefits to the public.

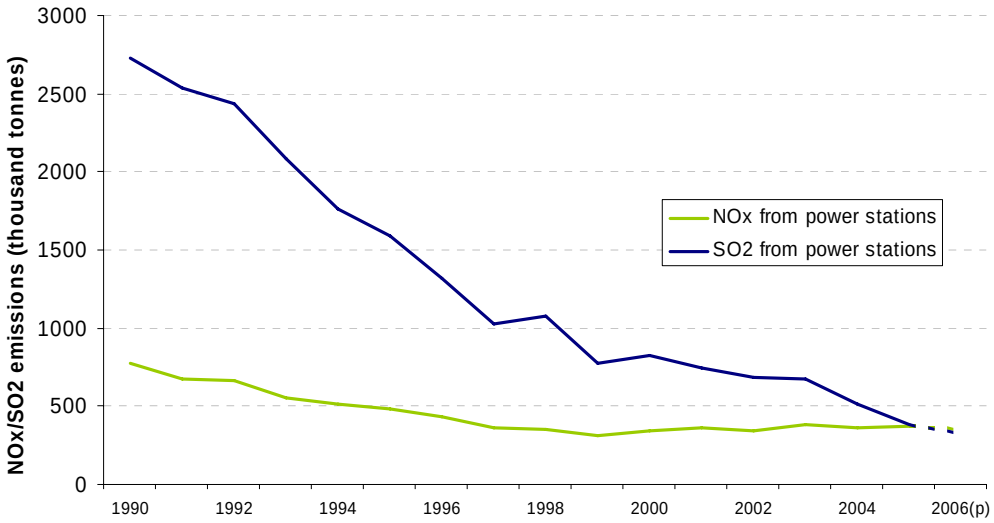
7.3. Nuclear generation produces the majority of civil nuclear waste in the UK, including waste from the enrichment of uranium, fabrication of nuclear fuel, reactor operations, spent fuel reprocessing and related research and development (R&D) activities. The Nuclear Decommissioning Authority (NDA) was set up in 2005 to take financial responsibility for the management of a large proportion of this waste.

Indicator 17: Impacts of electricity generation

Trends in Indicator 17

7.4. The historical trend of both NOx and SO2 emissions is shown in Figure 30. The 1990s saw these emissions drop substantially, due to a combination of European Directives forcing the installation of desulphurisation systems and the move away from coal as a fossil fuel. Although there was a slight increase in NOx emissions in 2005, likely due to the increase in coal generation in that period as a result of higher gas prices, 2006 provisional figures indicate a decrease back to pre-2003 levels.

Figure 30: NOx and SO2 emissions from power stations[68]



7.5. Table 3 shows the data from the published UK Radioactive Waste Inventory in 2001 and 2004 along with estimates for 2006. This shows an increase of 15,000m3 of radioactive stock in the UK since the last published Inventory.

Table 3: Volume of radioactive wastes in stock[69]

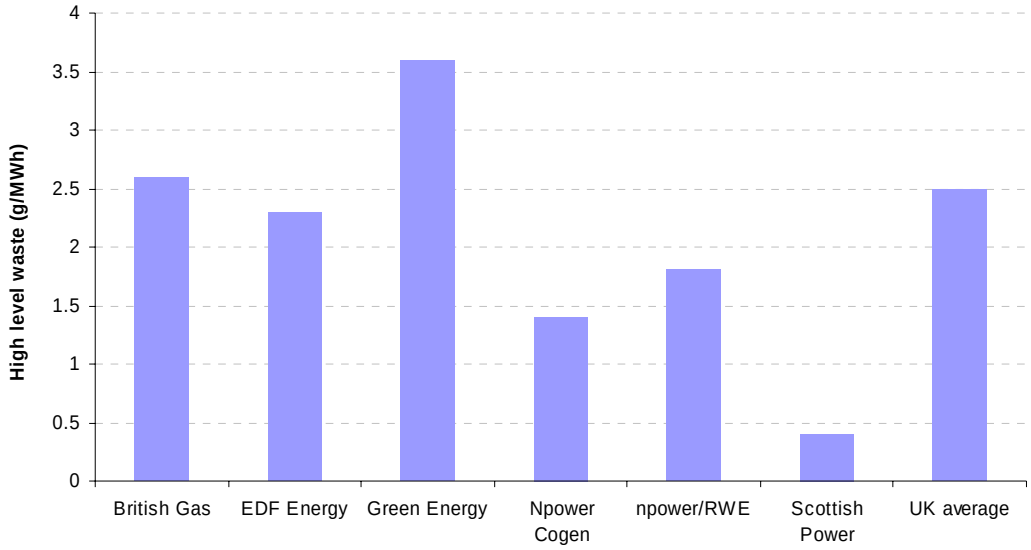
Level of Waste	2001 Inventory (volume m^3)	2004 Inventory (volume m^3)	2006 Inventory[70] (volume m^3)	Change on 2004 (volume m^3)
Low-level waste	14,700	20,900	28,200	7,300
Intermediate-level waste	75,400	82,500	90,200	7,700
High-level waste	1,960	1,890	1,890	0
Total	92,060	105,290	120,290	+15,000

7.6. In this year's report, we have added the fuel mix disclosure information where suppliers report on the radioactive waste generated in grams per kilowatt hour as part of the environmental impact of the electricity generated (see Figure 31). The data relates only to High-Level waste, which is highly radioactive material and is extremely difficult to dispose of. Other types of wastes are Low-Level waste and Intermediate-Level waste. The largest waste category in terms of volume at the

[68] Source: E-Digest of Environmental Statistics – Defra 2007
Note: 2006 is extrapolated from the trend of the previous two years
[69] Source: CORWRM/NDA
[70] Estimated data from NDA based on 2004 Inventory

moment is Intermediate-Level waste, as it includes very broad category of waste and is easier to dispose then High-Level waste. The ratio of High-Level waste to Intermediate- and Low-Level waste by volume, held in CoRWM (Committee on Radioactive Waste Management) inventory is 1:175:75 i.e. there is 175 times more Intermediate-Level waste than High-Level waste, and 75 times more Low-Level waste than High-Level waste in the inventory.

Figure 31: Nuclear waste level among energy companies and UK average[71]



Meeting the challenge

7.7. Many new legislative requirements will affect fossil-fuelled generating stations during the period 2005 to 2015. These include the EU ETS, Pollution Prevention and Control (PPC) in 2006, LCPD from 2008 and the National Emissions Ceiling Directive (NECD) which sets targets on NOx and SO2 for the UK in 2010. Assessments under the Habitats Directive will also be required and may lead to tighter limitations on releases of SO2 and NOx at specific stations to protect Natura 2000 sites. The Environment Agency has developed a Framework for the application of this legislation to large coal- and oil-fired generating stations. This Framework provides guidance on Best Available Technique to deliver significant reductions in these emissions from large stations through to 2015. The approach sets long-term goals and uses market mechanisms such as cap and trade sector limits on total annual emissions of SO2 and NOx as far as allowed under the legislation. Regulation is under PPC with some major constraints imposed by the revised LCPD. The Framework should allow coal- and oil-fired stations to play a full role in meeting electricity demand in the run up to 2015 and Ofgem will feed into any revision of the Framework as the need arises.

[71] Source: electricityinfo.org

7.8. If the Government does decide to permit the building of new nuclear power facilities, important issues such as the treatment of new radioactive waste and how it will be managed and decommissioning of stations need to be resolved. The current consultation sets out a strategy for dealing with such issues.

7.9. The EWP set out a Government sponsored competition, to be launched in November, to demonstrate commercial scale Carbon Capture and Storage with power generation. Several companies are planning to take part. A taskforce, including Ofgem, has been set up to examine the regulatory framework to ensure facilitation of CCS. A consultation on the options for regulation of the chain of CCS technologies will be published next year. One key issue that will require consideration is the development of the network to ensure that stations are "capture ready". This will require examining the CO2 transport/pipeline side including the costs, who pays, the definition and the distance involved.

Update on Ofgem's commitments from 2006 Sustainable Development Report for Indicator 17 (previously Indicator 13)

7.10. **Work with Defra on the implementation of the European Large Combustion Plant Directive (LCPD) and other air quality pollutants.** This work is largely complete, however, there is some on-going work with the Environment Agency on implementation.

7.11. **Support actions by Defra, the Devolved Administrations, and the environmental regulators to design and implement economic instruments for SO2 and NOx.** We are carrying out on-going liaison with Defra on this.

7.12. **Monitor progress on the implementation of the LCPD to assess the impact on the energy system and security of supply.** We are involved in ad-hoc work with the Environment Agency on winter arrangements and also on implementation.

7.13. **Following the Government's energy review, participate in the development of a regulatory framework surrounding any new arrangements for the development of new nuclear facilities.** BERR is currently consulting on "The Future of Nuclear Power" - the development of a regulatory framework for new nuclear facilities will depend upon the outcomes of this consultation.

7.14. **Consider whether we should report on fly ash and water issues in future editions of this report.** Under consideration for 2007/08 report. If you have any views on this, please indicate them in your response to this report.

Ofgem's commitments for 2007/08

- Ofgem and the Environment Agency are considering whether, through joint working, a model could be developed that would look at the impacts of electricity generation on wildlife and habitats and ways that these impacts could be measured over time. This work, if it is feasible to produce such a model, will consider which types of power station to include, which wildlife sites, the measure of the effect, e.g. cooling water discharged from stations may contain biocides such as chlorine and may have a thermal impact while waste water discharges from FGD may include a number of heavy metals which have been removed from flue gas and could potentially lead to effects on the environment, and whether to include the contribution from other sources as the significance of the power station sources of pollutants will be dependent on other sources. Part of the work will consider whether any model that can be developed should be re-run annually with updated sector emissions and whether it would need to be re-run for previous years if there were developments that would change the model inputs. The intention is to be able to develop something that would add more substance to this indicator in terms of relating emissions changes from the power stations to actual impacts on the local air and water environment. The model would allow this to be done on an aggregate level as well as by power station so allowing us to compare the pollutants and impacts from different types of power station;

- We will continue to work with Defra and the environmental regulators on the LCPD and will monitor progress on this when it takes effect. We will also work with them on the implementation of other measures to regulate the emissions of pollutants. This will include support for the design of economic instruments to meet environmental objectives;

- The Government has published its consultation on the future of nuclear power and we will be responding to that. Depending on the outcome of that consultation, we will also participate in the development of the regulatory framework for any new nuclear facilities; and

- We have provided guidance on the Fuel Mix Disclosure requirements which requires suppliers to report on radioactive waste. We have requested sample information from suppliers in order to assess the consistency of the information being provided to customers. We are going to review the information received and consider the form in which it might be presented to customers in the future, e.g. as part of their supplier tariff information.

Indicator 18: Impacts of electricity and gas networks

Trends in Indicator 18

7.15. Networks have environmental impacts on the land where they are sited. These 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. SF6 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.

Table 4: Length of overhead electricity power lines in national parks and areas of outstanding natural beauty 2006/2007[72]

Network Type	Total km of overhead lines in national parks and AONB 2006/2007	2005/2006
Distribution	42,673	42,687
Transmission	1129	440
Total	43,802	43,127

Table 5: Use of insulating oil in fluid-filled cables 2006/2007[73]

Network Type	Fluid-filled cables in use (km)	Volume of fluid used to top-up cables (l)	Number of Reportable incidents
Distribution	6,600	451,939	70
Transmission	766	48,513	8
Total	7,366	500,452	78

Table 6: Use of insulating oil in fluid-filled cables 2005/2006[74]

Network Type	Fluid-filled cables in use (km)	Volume of fluid used to top-up cables (l)	Number of Reportable incidents
Distribution	6,640	409,329	87
Transmission	1,140	50,000	-
Total	7,780	459,329	87

7.16. This is only the second year that Ofgem has been collecting information on overhead power lines in environmentally sensitive areas and management of fluid-filled cables and so it is too early to assess trends in performance although we can compare the two years in question.

7.17. The DNOs are required to report on environmental issues as part of the Quality of Service submission covering emerging trends and trade-offs in performance, details of any reportable incidents or prosecutions and of any Environmental Management System accredited under ISO or other recognised accreditation scheme.

Meeting the challenge

7.18. Access to the electricity network is important for all types of new generating stations. Action is taking place in this area as described in other sections, and the proposed changes to the planning regime will be important. Appropriate and timely investment should occur as a result of consistency and transparency in both the

[72] Source: Ofgem
[73] Source: Ofgem/ NGET/SHETL/SPTL
[74] Source: Ofgem/ NG

regulatory regime and planning regime with Ofgem having a direct influence on the former through the price controls. More underground networks would result in customers paying significantly more for their electricity.

7.19. The development of the new offshore network to accommodate offshore wind will also have environmental impacts which will require full consideration.

7.20. Customers are becoming increasingly aware of environmental issues like visual amenity, as evidenced also by the results of our Consumer First Programme (see paragraph 8.6).

Update on Ofgem's commitments from 2006 Sustainable Development Report for Indicator 18 (previously Indicator 14)

7.21. **As part of the TPCR, we will consider whether it is appropriate for transmission companies to receive an allowance for undergrounding.** This issue was addressed in the TPCR which found such allowances would be considered on a case-by-case basis.

7.22. **Consider whether the transmission companies should receive an allowance which could be used for research and development projects.** The TPCR implemented an innovation funding incentive for both gas and electricity under price control. It ring-fences an allowance for innovative projects equal to the greater of £500,000 or 0.2 percent of the regulated revenue (plus TIRG assets for Scotland).

7.23. **Commission research to evaluate how we could report on wildlife impacts in future publications of this report.** Under consideration for 2007/08 report. If you have any views on this, please indicate them in your response to this report.

Ofgem's commitments for 2007/08

- The transmission system is planned and developed to deliver appropriate infrastructure at an efficient cost. Historically this has meant that transmission circuits are largely comprised of overhead lines, rather than underground cabling, due to the significantly lower cost of building an overhead route. However, there have been cases where a particular need for an underground route has been identified and proposed by the transmission licensees. Proposals to underground a route may be necessary for obtaining planning consent due to, for example, overhead routes being unfeasible in specific urban areas. However, due to the nature of the additional costs involved in undergrounding transmission lines, the efficiency of such proposals needs to be carefully justified. Our position on this issue, as set out in our transmission price control review 2007-12 consultation documents, is that consideration of proposals to underground parts of the transmission system should be assessed on a case-by-case basis.

8. Increasing openness, transparency and accountability

Chapter Summary

This chapter provides an overview of the ongoing work, as well as new initiatives, that Ofgem has taken forward over the last year to ensure that there is transparency in the work that we carry out with respect to sustainability. It outlines details of the impact assessments that we undertake to facilitate transparency regarding the development of internal policy and assist our thinking on issues of sustainability. It also sets out details of the various working groups and forums in which we participate that have been established to discuss social and environmental issues.

Introduction

8.1. 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[75]. 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 two annual public meetings.

8.2. The Authority will continue to utilise the sub-committee that it established in 2005 to advise it on delivery of its environmental and sustainable development issues. This sub-committee is chaired by Robin Bidwell and includes Sarah Harrison, Judith Hanratty, George Yarrow, Steve Smith and John Wybrew.

8.3. A significant internal change that has taken place this year, in recognition of the major role Ofgem will need to play in contributing to sustainable development, has been the restructuring of our Markets division. As part of this restructure a new European Strategy and Environment team has been created, bringing together expertise on both environmental and European policy areas. This restructure also recognises the increasing interactions between the European and climate change policy agendas and further demonstrates our organisational commitment to working with industry towards meeting the 2020 challenges.

8.4. We anticipate the development of this team will further increase our expertise in these policy areas, and together with its strong links with the Consumer and Social Affairs team, ensure that sustainable development policy considerations are a central part of decision making across Ofgem.

[75] For further details of groups that Ofgem facilitates or is represented on as part of our work engaging on sustainable development issues, please also refer to our 2006 Sustainable Development Report. This can be found on Ofgem's website: www.ofgem.gov.uk.

Review of Impact Assessments

8.5. In our Corporate Strategy, we highlighted the current obligation that we have, under the Utilities Act 2000, to undertake IAs in respect of those proposals that we consider to be 'important', and also outlined that we had developed a best practice approach to these assessments. However, in light of increased focus upon environmental issues we committed to look at the structure of our IAs in regard to how we can bring together an assessment of both environmental and wider impacts that proposals may have to provide a fuller picture of their impact on sustainable development. We committed to publish revised guidance on our approach to IAs in 2007.

Consumer First Project

8.6. Ofgem has been taking forward work to actively engage with customers on various policy issues including sustainability. The Consumer First Project has involved both internal and external work to understand the views of customers in advance of the formulation of policy in order that consumer views and preferences can be built into this process. One of the key drivers behind this work is the recognition that issues have become more complex with rise of the sustainability agenda and that there may be less consumer representation once energywatch is disbanded.

8.7. As part of this work, we have sought to improve our awareness of customer understanding on various environmental issues as well as increasing our understanding of their views on these issues. The overall objective was to help us in our decision-making so that we properly take into account customers' views and concerns on sustainability issues.

8.8. A key piece of work that we have undertaken as part of this project in respect of the environment was to hold two deliberative fora. These took place in two stages. At the first stage, the focus was upon getting customers spontaneous perception and knowledge of environmental factors. In the second stage, customers had been provided with an information pack regarding energy and the environment in advance of the session to inform them of key issues in order that they could arrive at more considered conclusions about these issues.

The key conclusions of these deliberative forums were published in June. The main results from both stage 1 and 2 forums are outlined in

8.9. Table 7 below.[76]

[76] http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=166&refer=Sustainability/Environmnt/Policy

Table 7: Key conclusions from stage 1 and 2 of the deliberative forums undertaken on energy and environment as part of the consumer first project

Stage 1	Stage 2
Industry was seen as the primary cause of pollution and global warming although there was growing emphasis on energy saving in the home.	There was a heightened awareness of customers' role in creating emissions and that industry is not the main polluter.
There was no knowledge of Government or supplier schemes to implement energy efficiency measures.	There was surprise and relief that Government and industry were implementing energy policies but a strong sense of distrust that the public had not been adequately informed of these measures.
Participants felt responsibility for energy efficiency measures should rest on Government's shoulders.	Participants felt customers should take more responsibility for measures and continue to be mindful of not wasting resources.
Cost emerged as a major theme, with participants being very concerned about costs to customers and who would pay for energy efficiency measures.	The issue of cost and payment aroused passion with participants feeling a sense of victimisation and considering that they already contributed quite a lot through billing but their sense of fairness meant they were willing to pay their share.

8.10. The result of these deliberative forums assisted the development of a number of recommendations regarding the way that Government should develop policies of this nature in the future. As such, we envisage that the results of this research will assist us in advising the Government on issues associated with the progression of environmental policies and any further initiatives of this nature that are implemented. The research has also been used to inform the work we have been taking forward with respect to green supply tariffs and shows the growing influence on customers of sustainability issues.

Environmental Advisory Group

8.11. The Environmental Advisory Group (EAG) is an independent panel of environmental experts that help guide Ofgem's green agenda. The group is chaired by Sir John Mogg and is made up of personally appointed 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.

8.12. The scope of the Group covers all the environmental aspects of Ofgem's work, consistent with our statutory responsibilities, in particular:

- developing our work on the environment;
- reviewing achievements under the Environmental Action Plan;
- identifying areas of future research on environmental issues; and
- considering the role that Ofgem's executive functions play in meeting the Government's environmental targets.

8.13. Further details of the EAG, including minutes of meetings and a list of members, are published on Ofgem's website.

Internal Environmental Management

ISO 14001

8.14. Ofgem has again passed the annual audit of its ISO 14001 environmental management system making it the fifth year that Ofgem has 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.

8.15. Ofgem has also recently set up an internal Sustainable Development team which the Environment Management team complements. Combined, they are responsible for defining and reviewing internal objectives and targets, and performance against Government requirements. A copy of our internal Sustainable Development Action Plan is available on our website.

Appendix 1 - Responses to last year's consultation

In its consultation document Sustainable Development Report 2006[77], Ofgem sought the views of interested parties in relation to any of the issues set out in that document.

List of Respondents

List	Name
1	Carbon Resource Management
2	CE Electric
3	EdF Energy
4	Environment Agency
5	E.ON
6	Friends of the Lake District
7	NEA
8	Northern Gas Networks
9	ScottishPower
10	SSE
11	SEPA

Summary of Responses

Responses received by Ofgem which were not marked as being confidential have been published on Ofgem's website www.ofgem.gov.uk. Copies of non-confidential responses are also available from Ofgem's library. Responses were received from 11 organisations, including six energy companies and two environmental regulators.

[77] See http://www.ofgem.gov.uk/Sustainability/Documents1/15938-susdevbro06.pdf

Appendix 2 - Consultation responses

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, customers and environmental bodies)

We would especially welcome comments on the additions to the indicators that have been included in this year's report.

Responses should be received by 1 February 2008 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

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.

Respondents who wish to have their responses remain confidential should clearly mark the 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.

If you have any further queries, please contact:

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Appendix 3 – The Authority's powers and duties

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).

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 and the Energy Act 2004, 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.[78]

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[79].

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.

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[80]; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[81]

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:

[78] Entitled "Gas Supply" and "Electricity Supply" respectively.
[79] 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.
[80] 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.
[81] The Authority may have regard to other descriptions of consumers.

- Promote efficiency and economy on the part of those licensed[82] 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.

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.

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[83] 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.

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

Appendix 4 - Glossary

A

Areas of Outstanding Natural Beauty (AONB[84])

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 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.

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). Reneable source electricity 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.

[84] Include Scottish definitions as appropriate

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

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. 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.

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 manage 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.

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 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.

EnergySmart

EnergySmart is a joint Ofgem and energywatch campaign which highlights the benefits of switching supplier, changing to a cheaper payment method and being more energy efficient. The campaign is aimed at all customers, but there has been a strong focus on vulnerable customers.

Energy Supply Ombudsman

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

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 greenhouse gases.

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.

Fossil Fuel Levy (FFL)

The FFL is a tax charged on domestic and industrial bills, the levy effectively funds the difference between the contract prices payable to the renewable generators and the market price of electricity.

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

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)

A price control limits the amount of revenue that a gas DNO can collect from customers. This encourages companies to look for efficiency gains in order to improve profits and customers benefit from these improvements in subsequent reviews. DNO price controls are set every five years following a review.

Global Warming Potentials (GWP)

The warming influence of a gas over a set period of time relative to that of CO2, the GWP values used are the "1995 IPPC GWP values" from the IPCC's Second Assessment Report.

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.

J

Joint Energy Security of Supply group (JESS)

In July 2001, the BERR and Ofgem agreed to set up a joint Working Group to assess risks to the UK's future gas and electricity supplies.

K

KVAr and KVAh

Kilovolt-ampere reactive is a measure of the reactive power. Kilovolt-ampere hour is a measure of total energy (real and reactive).

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 (SO2), 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 Mega Watt/hour (MWh) of renewable source electricity.

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

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 carbon equivalent (MtC)

The equivalent amount of CO2 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.

National Grid Gas (NGG)

The licensed gas transported responsible for the gas transmission system and for four of the regional gas distribution companies.

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. RPZs 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 United Kingdom to source an increasing proportion of electricity from renewable sources. Suppliers meet their obligations by presenting Renewables Obligation Certificates (ROCs) or payment 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 Utilities Act 2000.

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.

Sulphur hexafluoride (SF6)

One of the most potent greenhouse gases and is widely used in transmission and distribution equipment.

Super-complaint

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. They balance 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

Tonnes of Carbon Equivalent (tC)

The mass of CO2 measured in tonnes which has the same global warming potential as the gas emissions.

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.

Appendix 5 - Feedback Questionnaire

Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

- Does the report adequately reflect your views? If not, why not?
- Does the report offer a clear explanation as to why not all the views offered had been taken forward?
- Did the report offer a clear explanation and justification for the decision? If not, how could this information have been better presented?
- Do you have any comments about the overall tone and content of the report?
- Was the report easy to read and understand, could it have been better written?
- Please add any further comments.

Please send your comments to:

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