Environmental Action Plan

Annual review 2002/03

June 2003 36/03

Summary

This document is Ofgem's second Annual Review of its Environmental Action Plan (EAP), published in August 2001. This document reviews Ofgem's work over the past year in the light of significant developments, the most important of which is the publication in February 2003 of the Government's Energy White Paper which defines a strategic vision for the UK's energy policy over the next 20 years and beyond.

Ofgem is committed to working with Government to meet the challenge of achieving a low carbon economy, at least cost to consumers. Ofgem contributes to this by seeking to minimise any negative environmental impacts associated with its policies, while promoting policies where there is synergy between its economic, social and environmental objectives.

Structure of this document

The document is structured as follows: Chapter 1 sets out the background and institutional context for the work and outlines priorities for the coming year; Chapter 2 deals with electricity generation issues; Chapter 3 deals with transmission and distribution of gas and electricity; Chapter 4 deals with gas and electricity retail supply; Chapter 5 summarises Ofgem's work to promote greater environmental awareness of its policy development and to build and maintain relationships with other relevant organisations; and Chapter 6 sets out Ofgem's environmental work programme for 2003/4.

Principal achievements of 2002/03

Major projects over the year have included the following:

- analytical work as part of the White Paper process on the cost to customers of CO_2 reduction under a number of different schemes;
- preparatory work to develop a methodology for assessing the environmental impact of Ofgem policies;
- completed research studies into:
  - the effects on domestic consumption from increased awareness of energy use;

- consumer attitudes to, and implementation options and associated costs of, the disclosure of fuel sources on electricity bills;
- energy savings from the installation of insulation in gas-heated homes under the former Energy Efficiency Standards of Performance programme; and
- the use of sulphur hexafluoride in the electricity industry, and its environmental impacts.

- administering climate change programmes on behalf of Government in respect of renewables and energy efficiency and developing procedures and systems to administer the exemption from the Climate Change Levy for electricity generated using Good Quality CHP plants from 1 April 2003; this has included:
  - issuing nearly five million ROCs and nearly eight million LECs have been issued over the year, each representing 1 MWh of renewable generation;
  - registering 800 ROC transfers of ownership, representing some 3 million ROCs; and
  - assessing 100 energy efficiency schemes representing energy savings of around 17 TWh.
- facilitating the joint DTI-Ofgem co-ordination group looking at barriers to the connection of larger amounts of distributed generation;
- engaging with distribution companies on options for incentives for connecting and using distributed generation; and implementing interim arrangements to make it easier for generators to connect, by phasing the payment of connection charges;
- taking forward important work on incentives to reduce electricity transmission and distribution losses; these projects have important synergies, combining as they do economic, social and environmental benefits;

- consulting on environmental amenity statements required under Schedule 9 of the Electricity Act;

- continuing work on improving Ofgem's own environmental performance: during the year Ofgem received endorsement that it had made the annual improvements required under its ISO 14001 certification; Ofgem also installed a CHP plant to meet its baseload energy demand.

The year ahead

Ofgem's environmental work programme for the coming year reflects the strategy set out in the White Paper and includes the following:

Generation

- work to assist Defra with the implementation of the EU-Emissions Trading Scheme;

- joint work with Environment Agency on air quality emissions;

- work to introduce the procedures for the exemption from the CCL for Good Quality CHP, and

- work to implement EU-wide Renewable Energy Guarantees of Origin (REGOs) which the DTI is currently consulting on.

Transmission and distribution

- contributing environmental expertise to the Distribution Price Control Review, in particular in relation to distribution losses and distributed generation, and

- contributing environmental expertise to the work on the creation of a single, integrated and competitive wholesale electricity market covering the whole of Great Britain.

Retail market

- taking forward work on improving consumer information on consumption;

- assisting DTI with implementation of Fuel Disclosure requirements in the Electricity Directive;

- contributing to the evaluation of energy efficiency programmes, and
- updating Green Supply Guidelines to take account of REGOs and other developments

Transparency and accountability

- contributing expertise to environmental impact assessments;
- reviewing progress with environmental reporting, and
- contributing to Government's joint working group on the environment.

In 2003/04 Ofgem will continue to progress a programme of research into environmental issues to inform policy options, as well as wider environmental and energy debates.

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1. Introduction

Purpose of this document

1.1 Ofgem published its Environmental Action Plan (EAP) in 2001. It set out Ofgem's role and responsibilities in relation to the environment, within the limits of its statutory duties. It also recognised the growing political importance of meeting environmental commitments, national and international.

1.2 In June 2002 Ofgem published the first Annual Review of the EAP. It assessed the progress made over the previous year to deliver the commitments made in the EAP, set out a work programme for the year ahead and reported against a number of environmental indicators. In addition, it announced the setting up of a high-level Environmental Advisory Group and a panel of environmental economists.

1.3 This second Annual Review assesses Ofgem's work over the past year in the light of significant developments, sets out the work programme for the year ahead and updates progress against the environmental indicators published last year.

The Energy White Paper

1.4 In February this year the DTI issued its Energy White Paper, which sets out a vision for the UK's energy policy over the next 20 years and beyond. Significantly, for the first time, Ministers have put the UK on a path to cutting CO_2 emissions by 60% of 1990 levels by 2050. This is combined with three other objectives: maintaining security of supply, promoting competitive markets and ensuring that every home is adequately and affordably heated.

1.5 The White Paper has important implications for Ofgem's environmental work programme over the coming year and beyond. These are outlined in more detail later in the document, and include commitments to participate in the following:

- a new joint working group on environmental issues including DTI, Defra and other departments as required;
- an energy services group including DTI and energy suppliers to consider how to facilitate an effective market in energy services;

- a high level group on development of the Energy Efficiency Commitment from 2005; and

- preparatory work for the Government review of the Renewables Obligation in 2005/6 and the accompanying strategy for renewables for the decade to 2020.

1.6 Ofgem played a full part in the White Paper process. In August last year, Ofgem submitted a response to the Government's consultation document, issued following the earlier Performance and Innovation Unit's Report on energy policy. This response formed the basis of our input to the various stages of the White Paper. It recommended that a broad economic instrument would be likely to achieve CO_2 reductions at lower cost to consumers than a series of different instruments with widely varying costs per tonne of avoided emissions. In line with this, Ofgem urged the Government to support the European Union's proposal for a compulsory greenhouse gas trading scheme, and to rely on emissions trading more widely in order to deliver environmental improvement at least cost to consumers.

Ofgem's statutory duties

1.7 The Environmental Action Plan set out Ofgem's statutory duties in full. Ofgem's principal objective is to protect the interests of consumers, including future consumers, wherever appropriate by promoting effective competition. Secondary duties require Ofgem to take account of the effects of its policies on certain disadvantaged consumer groups and on the environment. The combination of these duties provides Ofgem with a framework for promoting a sustainable energy policy, comprising as it does a balance of economic, social and environmental duties.

1.8 In November 2002, the Secretary of State issued Social and Environmental Guidance to Ofgem for the first time. As part of this, Ofgem was asked to have regard to the UK's Climate Change Programme and Sustainable Development Programme in its policy-making process. Ministers have announced their intention to revise the Guidance in the light of the White Paper and a consultation is expected very shortly. The revised Guidance is expected to reiterate the Government's four objectives for its energy policy outlined above.

Ofgem's work on the environment

1.9 Ofgem is committed to working with Government to meet the challenge of achieving a low carbon economy, at least cost to consumers. Ofgem contributes to this by seeking to minimise any negative environmental impacts associated with its policies, while promoting policies where there is synergy between its economic, social and environmental objectives.

1.10 In future, environmental impact assessments will be produced for all significant new policies, as part of the Regulatory Impact Assessments that Ofgem is committed to producing. Ofgem also carries out a programme of research in order to gain a better understanding of the issues involved. Wherever possible, this is carried out in partnership with other organisations that have a common interest. The results of this research will inform the work programme going forward.

1.11 During the year Ofgem has set up a high level Environmental Advisory Group composed of experts from a range of backgrounds. The Group has met twice to date. Ofgem has also established a panel of environmental economists, and consults a range of interested parties from time to time about its environmental work.

Principal achievements of 2002/3

1.12 During the year Ofgem has made considerable progress on a number of fronts. Ofgem has worked hard to participate constructively in the White Paper debate, and is now an important part of the implementation process. Ofgem carried out analytical work on the cost to customers of saving a tonne of CO_2 under a number of different schemes. The results were submitted to Government. Ofgem also carried out preparatory work on the EU's proposed emissions trading scheme. Ofgem welcomed the Government's strong commitment to the scheme set out in the White Paper. Ofgem is now closely involved in the work going forward on implementing the scheme in the UK.

1.13 Ofgem has also undertaken a considerable amount of preparatory work for assessing the environmental impact of policies. This will be taken forward over the coming year as part of the Regulatory Impact Assessment process.

Particularly important areas of work in this respect have been related to losses from electricity transmission and distribution systems.

1.14 Over the year, Ofgem has initiated research on a number of issues. Completed to date are studies into:

- the use of SF_6 in the electricity industry, and its environmental impacts;
- the effects on domestic consumption from increased awareness of energy use;
- consumer attitudes and implementation costs related to the disclosure of fuel sources on electricity bills, and
- energy savings from the installation of insulation in gas-heated homes under the former Energy Efficiency Standards of Performance programme.

1.15 Research projects are still underway on:

- the impact of intermittent renewables on transmission and distribution systems, and
- a profile of CO_2 emissions from generation over the past two years.

1.16 Over the year Ofgem has committed significant resource to its executive environmental functions which administer programmes on behalf of the Government for renewables and energy efficiency. The procedures and systems for administering the programmes have operated very smoothly, and are now firmly established. In the renewables area, nearly five million Renewables Obligation Certificates and nearly eight million Levy Exemption Certificates have been issued over the year, each representing one megawatt-hour of renewable generation. Eight hundred ROC transfers of ownership have been notified to Ofgem, representing some three million ROCs. In the energy efficiency area, 100 schemes have been assessed during the year by energy suppliers, representing energy savings of around 17 TWh.

1.17 During the year, Ofgem has set up procedures and designed systems to administer a further exemption from the CCL for electricity generated using

Good Quality CHP technologies. This exemption came into force on 1 April 2003. Ofgem has also continued to set and collect the Fossil Fuel Levies, and to collect information about the development of generation using CHP and record it on a database.

1.18 Another important area of work for Ofgem has been its work on distributed generation. This work has gone forward on a number of fronts. First, Ofgem has provided a chairman and secretariat for the joint DTI-Ofgem co-ordination group looking at barriers to the connection of the larger amounts of distributed generation that will be required if the Government's targets for renewables and CHP are to be met. This group has set up a number of workstreams to look at technical and commercial considerations, and some 30 research projects are now underway.

1.19 Secondly, Ofgem has engaged with distribution companies as part of the distribution price control review. A major conference in September outlined the challenge for companies, and for Ofgem, in achieving the task of 'rewiring Britain' in a cost-effective manner. Callum McCarthy, Chief Executive of Ofgem, called on the companies to engage at the highest level. This was followed up by an open letter to chief executives of DNOs setting out options for incentives for connecting and using distributed generation.

1.20 Thirdly, during the year, interim arrangements have been made to make it easier for generators to connect without having to pay the full reinforcement costs in advance – these have been prohibitive in a number of cases in the past. These arrangements will remain in force until 2005 when they will be subsumed by the new arrangements to be agreed under the review.

1.21 Ofgem has taken forward important work on incentives to reduce transmission and distribution losses during the year. Currently, transmission losses account for 2% of electricity generated, and distribution losses for 7%.These projects have important synergies, combining as they do economic, social and environmental benefits.

1.22 During the year Ofgem has taken forward its work on reporting. A consultation on environmental amenity statements (required under Schedule 9 of the Electricity Act) resulted in Ofgem redefining procedures for completing the statements, in co-operation with DTI, which has ownership of the legislation.

1.23 Finally, Ofgem has continued to work on improving its own environmental performance. During the year Ofgem received endorsement that it had made the annual improvements required under its ISO 14001 certification. Ofgem also installed a CHP plant to meet its baseload energy demand.

2. Generation

2.1 Electricity generation accounts for about a third of the UK's greenhouse gas emissions. The industry also has other important environmental impacts. Retaining the benefits of a secure and affordable electricity supply as we move towards a low carbon economy was identified as one of the greatest challenges the UK faces in the Energy White Paper.

2.2 Liberalisation of the markets in electricity generation and trading in Great Britain has delivered great benefits to consumers and to the economy as a whole. Liberalised markets also provide an important opportunity for the design of new regulatory structures for meeting environmental objectives – through flexible market-based instruments such as environmental taxes and trading schemes.

2.3 Ofgem is responsible for administering a number of the UK's existing market-based environmental instruments, such as the Renewables Obligation, and is participating in the development and application of other new policies and programmes.

2.4 The following sections demonstrate the specific aspects of Ofgem's environmental work over the past year in relation to its work on electricity generation.

Emissions trading

Greenhouse gas emissions trading

2.5 Ofgem supports the use of a broadly-based economic instrument for controlling greenhouse gas emissions, as outlined in its response to the Government's consultation on energy policy[1]. The energy sector is a major contributor to emissions of greenhouse gases and the implementation of the scheme in the UK may have significant implications for the sector, particularly the electricity industry.

[1] *Ofgem's response to the Government's consultation on energy policy* August 2002 50/02

2.6 In October 2001, the European Commission put forward proposals for a Europe-wide greenhouse gas emissions trading scheme. The scheme, which would only cover CO_2, is currently scheduled to start in January 2005 and is mandatory for the specified sectors, including electricity generators. The Council of Ministers agreed a common position in December 2002 and the proposed directive is currently awaiting a second reading in the European Parliament.

2.7 Ofgem has been assisting in the detailed design of the national allocation plan and transitional arrangements to ensure that any possible adverse impacts on the UK's competitive energy markets are minimised. Ofgem will continue to liaise with DTI, Defra and other relevant departments through participation in cross-departmental groups.

Air quality pollutants

2.8 The EU Large Combustion Plant Directive was revised in 2001. Ofgem has participated in a Government Forum led by Defra to implement the revised Directive in the UK. This follows on from work with the Environment Agency in regard to the potential for emissions trading for NOx and SO_2 emissions from coal- and oil-fired power stations in England and Wales, which is also ongoing.

2.9 The Government Forum on the LCPD has representatives form Defra, DTI, the devolved administrations, the environmental regulators, and others. No decision yet has been made on how the UK intends to implement the Directive. It will be the subject of major consultation before a final decision is made in November 2003.

2.10 For certain plants, in existence before 1987, Member States have some choice in how the Directive is to be implemented – these plants must either:

- comply with individual plant limits for SO_2, NO_x, and particles, or
- operate within a National Plan, under which there would be an aggregate mass target for each of the three pollutants to be met on a national rather than a plant-by-plant basis; this approach lends itself to operation of a cap-and-trade scheme.

2.11 While implementation does not take effect until 2008, the UK must submit a National Plan to the European Commission for approval by October 2003, if it chooses to take that route.

2.12 Ofgem in principle supports emissions trading as a least-cost approach to regulation. It has therefore given support in principle to the national plan approach to implementing the LCPD. However it is important that the features of any emissions trading framework, including the allocation methodology and the trading rules, are carefully designed to ensure that the benefits of trading are maximised and anti-competitive market distortions are avoided.

Wholesale electricity trading

2.13 In July 2002, Ofgem published a review of the first full year of operation of the New Electricity Trading Arrangements (NETA). To assist in its analysis Ofgem undertook a survey of smaller generators' experience over the first year of NETA. The results of the survey suggested:

- as expected, very few smaller generators have chosen to participate in trading by BSC Parties;
- most smaller generators continue to sell their output to their local supplier; 50% of those responding said they had held discussions with independent consolidators but only 3 generators had contracted with a consolidator;
- on average, the smaller generators reported receiving lower prices than previously; however, the average price reduction reported was less than for the average generator; and
- the output of smaller generator respondents was slightly up (by 2.5%) over the first year of NETA compared to the previous year.

2.14 In December 2002, Ofgem launched a micro-website to provide focused information and guidance for current and potential smaller generators to gain a better understanding of the current electricity trading arrangements of significance to them. The information on the site relates to smaller generators in

the England and Wales electricity market only[2]. It is intended to include information relating to Scottish smaller generators once the issues around the harmonisation of electricity trading and transmission in Great Britain have been resolved. Information on the following is included on the website:

- BSC charges and benefits;
- metering systems;
- trading structure and administration;
- legal framework, and
- consolidation.

2.15 In March 2003, Ofgem approved Modifications to both the BSC[3] and NGC's use-of-system charging methodology which will have the effect of assisting small scale distributed generators. Both modifications also improve competition for the purchase of electricity from distributed generation.

2.16 The modification to the BSC comes into force on 5 November 2003. It will ensure that distributed generators have the opportunity to receive directly from NGC the benefit of reducing the costs of energy balancing services. The changes to NGC's charging took effect from 1 April 2003 and will ensure that distributed generators can be paid directly by NGC for the benefit of reducing the demand on the transmission system rather than these benefits going to suppliers.

Government programmes to promote renewables

Climate Change Levy exemption for renewables

2.17 Certain electricity supply is exempt from the Government's Climate Change Levy, including supply from specified renewable sources. To qualify for the exemption, renewable electricity must be supplied to customers in the UK.

[2] Smaller generators are taken to be those who are licence exempt or exemptible, generally with a generation capacity of 50MW or less.
[3] Modification P100

Ofgem is responsible for monitoring the exemption claimed in Great Britain; Ofreg has a similar role in respect of electricity supplied in Northern Ireland.

2.18 Evidence for this exemption is provided by Levy Exemption Certificates (LECs) issued by Ofgem. In order for LECs to be issued, the station that generated the electricity must be accredited. To date Ofgem has accredited 769 generating stations under the CCL exemption with an installed generating capacity of 3.4GW. LECs are issued monthly on metered output. One LEC is issued for each qualifying megawatt-hour produced.

2.19 Following the issue of the LECs, final suppliers are required to notify Ofgem of the quantity and serial numbers of the certificates purchased from generators. Ofgem then validates this information.

2.20 Electricity suppliers are required to provide quarterly returns to HM Customs and Excise showing the amount of Levy due. They are also required to declare the amount of renewables exemption claimed and to produce details of the LECs held and confirmed by Ofgem as part of their evidence of this. Ofgem will report to HM Customs & Excise (HMCE) to verify the quantity of LECs held by each supplier and will provide information on LECs as requested by HMCE.

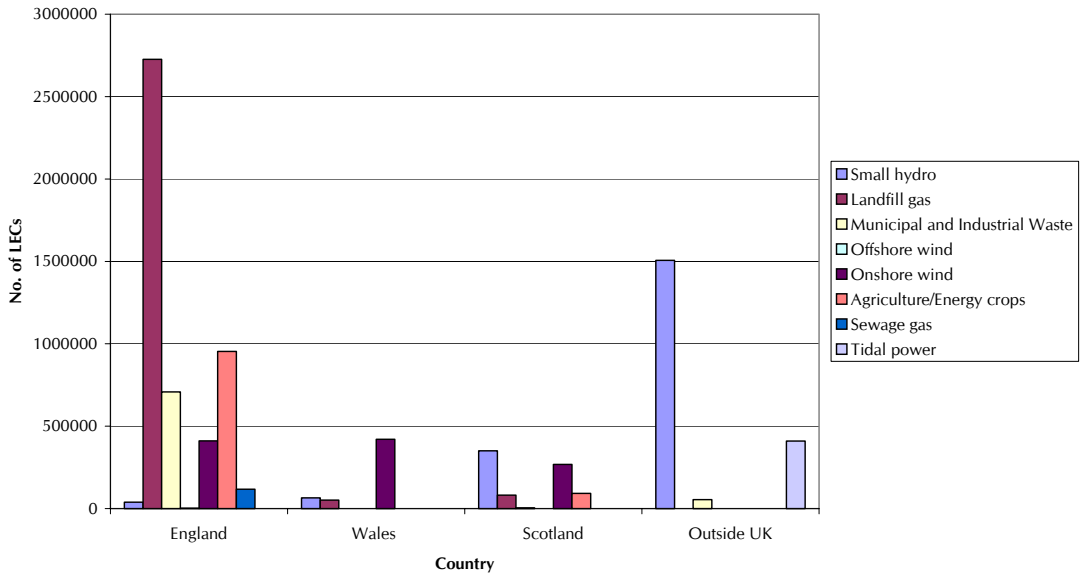
2.21 Table 1 below shows the numbers of LECs issued by month and certain technologies (on- and offshore wind, hydro, 'other' includes landfill gas, sewage gas and energy crops).

Table 1: Number of LECs issued by month
(thousands of LECs)

Month	Hydro	Wind	Other
January 2002	151	99	368
February	201	133	322
March	264	91	388
April	25	75	382
May	284	89	394
June	91	76	401
July	26	39	406
August	100	31	405
September	54	31	404
October	64	81	417
November	152	99	449
December	198	107	463
January 2003	338	138	404

Source: Ofgem

Chart 1 - LECs issued by country and technology Jan 02 - Jan 03

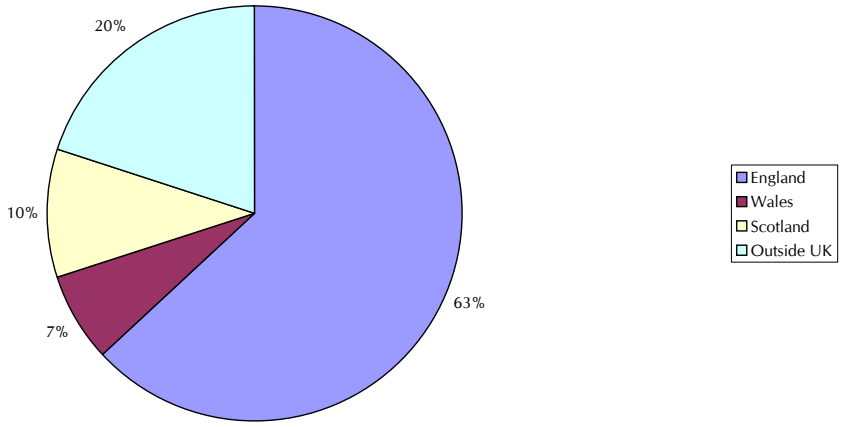


Source: Ofgem

2.22 Chart 1 above shows numbers of LECs issued by technology and country in Great Britain. The chart shows a similar pattern to that shown in the previous annual review. In England the largest numbers of LECs have been issued to landfill gas generators, followed by biomass (agriculture/energy crops). Scotland is dominated by hydro and wind while Wales mainly has onshore wind power.

2.23 Chart two shows total numbers of LECs issued by Ofgem to generators in Great Britain and outside the UK. LECs may be issued to generators who supply to the UK but are located outside the UK, for instance in France and Belgium, who supply through the interconnector.

Chart 2 - LECs issued by countries Jan 02 - Jan 03



Source: Ofgem

Renewables Obligation[4]

2.24 April 2002 – March 2003 was the first full year of operation of the Renewables Obligation (RO). In that time the systems for operation, monitoring and enforcing the system were fully implemented. The Obligation for each supplier is calculated by applying a percentage to that supplier's total electricity sales. From April 2003 the target was increased, in line with the Order, to 4.3% of electricity sales.

Issue of Renewables Obligation Certificates (ROCs)

2.25 ROCs are issued to accredited generators for eligible renewable electricity generated within the United Kingdom and supplied to customers in Great Britain.

2.26 In order for ROCs to be issued, the generating station must be accredited by Ofgem to ensure that the electricity generated meets the eligibility criteria for the Obligation. To date Ofgem has accredited over 490 generating stations for the RO.

[4] References to the Renewables Obligation include Renewables Obligation (Scotland)

2.27 ROCs are issued electronically into the relevant account in the Register. Each certificate has a unique number and details the generating station and the period in which the electricity was generated. A supplier may discharge the Obligation by presenting ROCs bought from generators or another party as ROCs can be sold separately from the electricity.

2.28 The Register is a record of eligible ROCs at that point in time and tracks the transfer of ROCs between holders (not necessarily ownership). The Register enables Ofgem to be satisfied that, when ROCs are presented for compliance purposes, the holder can be verified.

2.29 Ofgem is responsible for assessing and monitoring the extent of compliance by suppliers. Suppliers will be required to provide evidence of their compliance with the Obligation by a specified date, after the end of each Obligation period. This can be through the presentation of ROCs or by paying a buyout price to Ofgem for part or all of the Obligation.

2.30 The legislation initially set the buyout price at £30/MWh until 1 April 2003. Ofgem adjusts this in line with the retail price index and announces the new buyout price each year. For the year 1 April 2003 – 31 March 2004 the buyout price is set at £30.51 per megawatt-hour. The proceeds from the buyout will be returned to suppliers by Ofgem according to the number of ROCs that each supplier presents to discharge the Obligation.

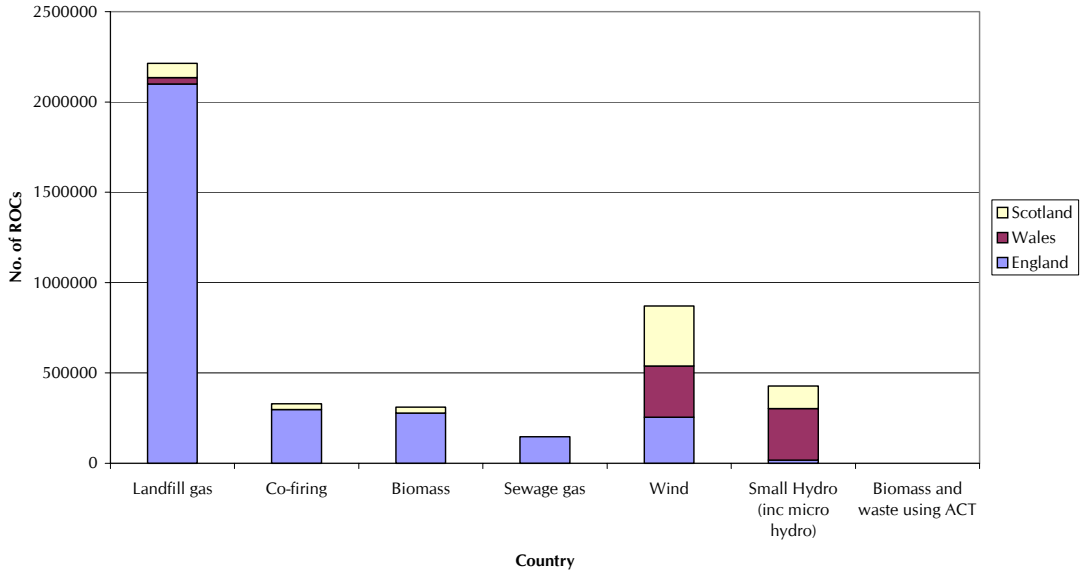
2.31 If a supplier fails to present evidence of fulfilling the Obligation, either through ROCs or through paying the buyout, by the specified day, they will be considered in breach of a 'relevant requirement' within the meaning of section 25 of the Electricity Act 1989.

2.32 Market analysts have estimated that in April 2003, the market price of a ROC was £47 per megawatt-hour[5], reflecting the avoidance of paying the buyout price and the expectation of a recycle premium.

[5] *Energy Argus Global Emissions* April 2003

2.33 Chart 3 below shows ROCs issued by country and technology type. It shows a similar trend to the LEC data, in that landfill gas dominates followed by wind and small hydro.

Chart 3 - ROCs issued by country and technology Jan 02 - Jan 03



Source: Ofgem

Audits

2.34 Ofgem has carried out audits on generators accredited for the Renewables Obligation and/or Climate Change Levy exemption for renewables during the year. Generators from each technology have been selected. Ofgem uses the audits to satisfy itself that the information provided in the application is true and accurate and that the stations are eligible for the appropriate scheme. The audits are also used to check the accuracy of the monthly information provided by the generators to inform the ROC and LEC issue. Ofgem expects to increase the size of its audit programme next year.

Non-Fossil Fuel Obligation

2.35 Between 1990 and 1998 the principal instruments for supporting renewable energy in Great Britain were the Non Fossil Fuel Obligation (NFFO) in England and Wales, and the Scottish Renewable Obligation (SRO) in Scotland. Orders made under these schemes (five NFFO orders and three SRO orders) required the former Public Electricity Suppliers (PESs) to purchase a specified amount of electricity from renewable sources. The aim of the orders was to create an initial

market for established renewable technologies. Ofgem has ongoing responsibilities in regard to these programmes in setting the amount of the Fossil Fuel Levy (FFL) and in oversight of certain aspects of the contracts.

2.36 In England and Wales the contracts, for which suppliers now bid in six-monthly auctions conducted by the Non-Fossil Purchasing Agency (NFPA), will last for up to another 15 years[6].

Fossil Fuel Levy

2.37 Suppliers' additional costs in purchasing electricity from renewable sources under these contracts have been met by means of the FFL and the FFL (Scotland), which are payable on almost all electricity. The purpose of the Levies is to fund the difference between the contract prices payable to the renewable generators and the market price of electricity. Ofgem is responsible for setting the rate of the Levy.

2.38 Within the framework set by the Fossil Fuel Levy Regulations 1990, as amended, the NFFO auction arrangements, and the Renewables Obligation, Ofgem must review the Levy rate annually. Variations to the Levy rate take account of:

- current and forecast balances of Levy funds held in a dedicated bank account;
- forecast sales of leviable electricity (and hence expected Levy receipts);
- forecast NFFO/SRO generation;
- prices achieved in the NFPA auctions of NFFO contracts;
- investment income from Levy funds on deposit; and
- the expenses of Ofgem and the Levy Collector.

2.39 In January 2003 Ofgem announced that the Fossil Fuel Levy rate in England and Wales, and in Scotland, would remain at zero for the coming year (starting on 1

[6] The last is due to terminate in 2018

April 2003). The Levy has been set to zero because additional funding is not required to meet the cost of NFFO generation; this is the result of the high prices received in NFPA auctions. Although the rate of the Levy is set to zero, the Levy is not abolished and could be increased in future years.

2.40 At present, arrangements in Scotland differ from those in England and Wales. SRO output remains under contract with the supply successor companies in Scotland, although the ROCs associated with that output are auctioned separately by NFPAS. The monies thus raised are being used to reduce the cost of the FFL in Scotland.

Other activities

2.41 Ofgem has further ongoing duties in relation to NFFO contracts. If a generator seeks a NFFO contract amendment and the Non Fossil Purchasing Agency (NFPA) agree to the proposed change, NFPA contacts Ofgem to establish whether such a contract amendment would cause that revised arrangement to cease to be a qualifying arrangement under the order. The concept of a qualifying arrangement is relevant to the payment of Fossil Fuel Levy support to NFFO generators. Ofgem can only make payments in respect of qualifying arrangements. Equivalent arrangements apply for SRO contracts.

2.42 The Locational Flexibility Order came into effect in December 2001 and enables certain NFFO projects to move location and continue to be a qualifying arrangement. Similar arrangements are in place in respect of SRO contracts in Scotland.

Combined Heat and Power (CHP)

2.43 As reported in the 2001/02 annual review, Ofgem is committed to improving the data held on its CHP database. This database fulfils a requirement under the Electricity Act 1989. Ofgem successfully worked with Defra and Future Energy Solutions, who operate the CHPQA scheme on behalf of Defra, to ensure that the most up to date information is made available to Ofgem. When CHP generators apply for the CHPQA scheme their permission is sought for data on their scheme to be released to Ofgem. During the last round of data collection 341 accredited generators agreed to have details of their scheme passed to Ofgem.

2.44 To enhance the quality and usability of the information held by Ofgem a new database has been commissioned. The database has more functionality and report features than the previous method of holding the data. This will enable Ofgem to provide more useful CHP data on its website. Table 2 below shows the number of schemes and generating capacity from Ofgem's database. Comparison with a similar table in the Digest of UK Energy Statistics (DUKES) shows that there are a significant number of schemes for which Ofgem has no information. DUKES gives a total capacity figure of 4,801 MWe for 1,573 schemes, compared with 3,895 MWe for 1,161 from the Ofgem database.

Table 2 CHP schemes by capacity and size range

Size	Number of Schemes	Generating Capacity MWe
Less than 100 kWe	519	31.3
100 kWe to 999 kWe	578	569.3
1 MWe to 9.9 MWe	56	1672.0
10.0 MWe and above	8	1622.3
	1161	**3894.9**

Source: Ofgem CHP database

3. Transmission and distribution

3.1 The transportation of gas and electricity through transmission and distribution networks is the only remaining area of monopoly in the industries regulated by Ofgem. Ofgem regulates prices and quality of service of these networks in the interests of consumers. It is increasingly recognised that the environmental performance of these networks is an important part of their service quality. It is therefore appropriate for Ofgem to consider the environmental performance of networks, for example the scale of losses, as well as the ability of the networks to deliver the services required to meet environmental objectives – particularly in the connection and use of new generation from renewable sources and CHP. The following identify the key actions taken in 2002/03 by Ofgem in this area.

Transmission losses

England and Wales

3.2 The Gas and Electricity Markets Authority issued a decision in January[7] approving Modification Proposal P82 implementing zonal transmission losses on 1 April 2004. The decision modifies the Balancing and Settlement Code (BSC), which contains the rules and governance for trading in England and Wales. It will change the way market participants are charged for losses from the transmission system. The changes mean that generators and consumers will pay differential charges according to their location in various zones, instead of the existing uniform charges.

3.3 Under the modification, a Transmission Loss Factor Agent will be appointed to calculate zonal loss factors (TLFs) to be fixed in advance for a year at a time (April to the following March). The method for calculating the TLFs is defined in the BSC modification and would be based on modelling of the system. The annual zonal marginal factors are to be scaled by a factor of 0.5 so that the value of losses is not over-recovered. The TLFs calculated would be used to adjust the metered volumes of generators and suppliers for transmission losses.

[7] *Modification to the Balancing and Settlement Code ("BSC") - Decision and Direction in relation to Modification Proposal P82: "Introduction of zonal transmission losses on an average basis"* MP No. P82 17 January 2003

3.4 One of the key aims of the BSC modification is to reduce the overall volume of losses. Ofgem believes that, by better reflecting the costs of transmission losses on participants, existing generation will be used more efficiently in the short-term and participants will face long-term incentives to take transmission losses into account when making investment decisions. Any reduction in overall transmission losses will mean less energy is required to meet electricity demand and hence would mean an overall reduction in emissions and other adverse environmental impact of electricity generation and transmission.

3.5 Better targeting of transmission costs also has the potential to encourage more local, distributed and on-site generation, as they will be able to capture greater benefits from reducing overall transmission costs.

3.6 In making the decision, Ofgem also examined the impact of more zonal losses on other Government climate change initiatives such as the Renewables Obligation (RO) and the exemptions from the Climate Change Levy (CCL) for renewables and CHP. The adoption of more cost reflective charging for losses will encourage the more effective location of such plants, including encouraging the development of otherwise marginally uneconomic plant located in regions which will have reduced loss factors.

3.7 To the extent that northern areas have a higher proportion of sites suitable for renewable generation development (including in terms of available resource, costs and output) then the change to more cost reflective charging should not unduly influence such development decisions.

DTI consultation

3.8 The DTI has published a consultation[8] on transmission losses and whether the changes are appropriate in a Great Britain-wide market. It specifically asked for views on:

- costs and benefits of average zonal losses in a GB market,

[8] *Transmission losses in a GB electricity market A DTI consultation document* January 2003

- the impact of average zonal losses on GB consumers in the short and long term and the impact on different types of consumers and on consumers in different parts of GB, and

- the impact of average zonal losses on the development of renewables in GB in the short, medium and long term.

3.9 Ofgem submitted a response to the DTI consultation which expressed the view that the extension of zonal losses to the whole of GB would be consistent with the statutory duties of Ofgem and of the Secretary of State, and would be in the interests of customers and the development of the electricity market generally. The environmental arguments in favour of this position are essentially the same as for the application of zonal loss charges in England and Wales outlined above.

3.10 The Secretary of State has not yet announced a decision on this matter.

Distribution losses

3.11 The incentive framework for the management of distribution losses is currently being reviewed. The present incentive regime encourages DNOs to take operational and investment decisions to reduce losses by rewarding out-performance and penalising underperformance based on a target level of losses derived from historic performance.

3.12 A formal consultation paper was issued in January 2003 and set out three options for the framework:

- modifying the parameters of the current incentive scheme;

- introducing a scheme based on the National Grid Company's System Operator incentive model, and

- making DNOs responsible for the purchase of electricity to cover losses.

3.13 Respondents to the January paper broadly agreed with Ofgem's view that the current incentive scheme does not necessarily adequately encourage DNOs to consider losses in their investment and operation decisions. Ofgem will soon be

releasing a document which discusses options for improving the incentives on DNOs.

BETTA

3.14 The purpose of the British Electricity Transmission and Trading and Transmission Arrangements (BETTA) is to facilitate the creation of a single, integrated and competitive wholesale electricity market covering the whole of Great Britain (GB)[9].

3.15 A draft Electricity (Trading and Transmission) Bill was published in January 2003 by the DTI to provide the legislative framework for the changes. The DTI published a regulatory impact assessment of the proposal including assessment of the environmental impact. Negative environmental impacts may arise because lower prices will lead to greater electricity consumption, with greater carbon dioxide emissions resulting. However, the following potential benefits for renewables and CHP were identified:

- all sources of generation throughout GB will have fair and transparent access to the transmission system;
- a single set of co-ordinated locational price signals across GB will facilitate the planning of any necessary network reinforcement and enable the costs to be allocated fairly;
- companies operating in both England & Wales and in Scotland will only have one set of trading and transmission arrangements instead of two and no specific interconnector arrangements;
- consolidation services may be more viable in a larger single market; and
- BETTA could increase the number of potential purchasers of the output of smaller generators in Scotland and thus improve their chance of negotiating better prices.

[9] The rationale for BETTA is set out in 'The development of British Electricity Trading and Transmission Arrangements (BETTA): a consultation paper', Ofgem 2001 74/01

3.16 In general, the above effects would reduce barriers to entry for smaller generators in Scotland. An integrated and co-ordinated set of transmission price signals should help targets for renewable generation to be met at the lowest overall cost, including the cost of transmission reinforcement where necessary.

3.17 The environmental impact assessment concluded that it is hard to be certain of the overall net environmental impact of BETTA, but that the overall impact of the various effects is likely to be small.

Transco output measures

3.18 As reported in last year's Annual Review, Ofgem has introduced a requirement under the 2002 price control for Transco to provide an annual report on the medium-term performance of its National Transmission System (NTS) business and each of its Local Distribution Zone (LDZ) networks. This includes reporting on and explaining levels of carbon dioxide, nitrogen oxide and methane emissions for its NTS and regional networks and performance against other relevant environmental targets. Transco is due to submit an annual environmental report to Ofgem in July this year.

Distributed generation

3.19 Distributed generation[10] has an important role to play in helping the Government achieve its environmental targets and aspirations. Distributed generation technologies include renewable energy and CHP. These technologies reduce the amount of greenhouse gas emissions associated with electricity generation.

3.20 The UK already has around 550 MW of connected wind plant[11]. By 2010 there could be as much as 7.5 GW of wind capacity connected to the network. This in itself will bring significant technical, commercial and regulatory challenges. Domestic CHP is a new technology close to market. These units will directly replace existing domestic boilers. As well as providing space heating and hot

[10] Also referred to as 'embedded generation' distributed generation is electricity generation connected to distribution networks rather than the high voltage transmission networks. Please note that in England and Wales distribution networks operate at 132 kV and below. In Scotland they operate below 132kV.
[11] Source: British Wind Energy Association

water they will also generate electricity. The electricity generated, and used in the dwelling at times when heating and hot water are needed[12], offsets peak load electricity which generally has higher than average CO_2 emission rates. Electricity losses associated with transmitting and distributing electricity long distances from large power stations to domestic premises are greatly reduced by this technology because it generates at the point of demand.

3.21 Given the significant role that renewable generation and CHP will play in achieving environmental targets Ofgem, as the regulator, has an important role to perform in ensuring that there are no barriers to the proliferation of these technologies. Ofgem's role is not to 'pick winners'. Instead it attempts to ensure that the regulatory regime allows for fair and transparent access to both distribution and transmission networks e.g. work on the current distribution price control review which will establish the right incentives for the distribution network operators to connect generation to their networks.

3.22 In order to further facilitate this increase in the connection of distributed generation, the Government established the Distributed Generation Co-ordinating Group (DGCG). The group is jointly chaired by Ofgem and the DTI and further details including membership, minutes of meetings, papers etc. can be found on the DGCG website (www.distributed-generation.gov.uk). To support its work the DGCG established a Technical Steering Group (TSG). The TSG runs a work programme, consisting of over 35 projects, on behalf of the DGCG. The work programme is divided into six work areas. These are:

- workstream 1: Distributed generation: status and projections
- workstream 2: Standardisation of information and solutions
- workstream 3: Short-term network solutions
- workstream 4: Micro-generation solutions
- workstream 5: Long-term network concepts and options
- workstream 6: Industry skills and resource

[12] Typically first thing in the morning and in the early evening

3.23 There are a number of technical challenges for the networks that will need to be overcome if distributed generation is to be connected in significant amounts. These are currently being addressed by the workstreams 3 and 5. Workstream 3 is looking at short-term network solutions (i.e. what can be done now) and has made progress in developing a methodology which will allow distributed generation to be recognised as contributing to network security[13].

3.24 Workstream 5 is to look at the network in the longer term. This work involves looking at new innovative technical solutions and the move from the passive networks that exist today to fully active networks, managed in much the same way as the transmission network.

3.25 Micro-generation creates its own set of challenges – technically for the network, legally for compliance with the various regulations and commercially for export reward. Workstream 4 has been dedicated to looking at micro-generation issues. Work has progressed well on the technical connection standard for micro-generation (Engineering Recommendation G83) and some useful discussion papers on, for example, metering have been published. The workstream also held a seminar, to promote its work, in February 2003.

3.26 In September 2002 Ofgem and the Institution of Electrical Engineers held a joint conference on 'CHP, renewables and electricity distribution networks – a strategic review'. At this event Callum McCarthy, the Chief Executive of Ofgem, recognised that the expected increase in distributed generation would be challenging. A Distribution Network Operator (DNO) could have 300 embedded generators connected to every substation, compared with 300 over the whole network at present.

3.27 Ofgem's Distributed Generation Project team is responsible for co-ordinating Ofgem's work in relation to distributed generation. They also provide the secretariats for TSG and the DGCG. The work of the Distributed Generation Project is overseen by a project board comprising interested parties from across Ofgem. The project board meets approximately every six weeks. This is an essential component in helping to ensure that the regulator's actions, in relation

[13] This will allow DNOs to avoid network reinforcement, in appropriate circumstances, by utilising generation, without being in breach of their licence.

to distributed generation, are coherent and that this work fits into the wider work of Ofgem.

Impact of SF_6 emissions

3.28 In 2002 Ofgem commissioned research to examine the costs and benefits of reducing sulphur hexafluoride (SF_6) emissions[14]. SF_6 emissions contribute to climate change and are covered by the Kyoto Protocol. Estimated emissions of SF_6 in 2000 are 0.15MtC.

3.29 Sulphur hexafluoride is an important greenhouse gas with a global warming potential of 22,200 over a 100 year time horizon[15] (compared with carbon which has a GWP of 1). The research builds on the PAGE95 model that was used in a previous piece of work to examine the climate change benefits of reducing methane emissions. It uses the PAGE2002 model to calculate the marginal impacts of CO_2, CH_4 and SF_6 emissions. For SF_6 the model gives a mean marginal impact value of US$[16] 200,000 per tonne.

3.30 The report concluded that for SF_6 the climate change impacts are much larger than the market price. The economics of schemes to reduce the leakage of SF_6 would be transformed if the climate change impacts were counted. The full report is available on Ofgem's website.

3.31 As part of Ofgem's environmental research programme it commissioned a separate project to complete a literature review of current SF_6 management practices in the UK, Europe and US. This work is now available to inform policy on how to take the SF_6 work forward.

[14] Hope C. *The marginal impacts of CO_2, CH_4 and SF_6 emissions University of Cambridge* March 2003
[15] IPCC 2001b *Climate change 2001 The Scientific Basis* Contribution of Working Group I to the Third Assessment Report of the Intergovernmental panel on Climate Change, Cambridge University Press
[16] year 2000 prices

4. Supply

4.1 The Energy White Paper identified energy efficiency and other demand-side measures as key contributors to moving towards a low carbon economy. The gas and electricity supply businesses are very important in the delivery of these objectives. Suppliers have been instrumental in delivering existing efficiency measures and will have key roles to play in the future including in the delivery of energy services. Liberalising the supply market in Great Britain has allowed all consumers to choose their suppliers. Good information on various aspects of supply can facilitate consumers making choices on environmental or other issues, as well as price.

Green supply offerings

4.2 Since the publication of Ofgem's *Guidelines on Green Supply Offerings* there have been some changes in the green supply market. The most significant has been the decision by the Energy Saving Trust (EST) to withdraw its Future Energy accreditation scheme and cease to have a role in accrediting green supply offerings.

4.3 This decision was based on the mixed response that the EST received from suppliers and also a reluctance from the Government to help fund any marketing of the Future Energy brand.

4.4 Ofgem recognises that this means that there is now no third party accreditation scheme for green offerings. To address this Ofgem has been discussing with various consumer bodies and green groups the possibility of an accreditation system entering the market.

Consumer information

4.5 Ofgem has stated on a number of occasions that it considers energy bills to be an important means of communication between suppliers and consumers. Ofgem undertook to provide guidance to suppliers on the provision of annual consumption data on consumer bills. There are a number of techniques and technologies available to improve domestic feedback on energy consumption. These include:

- shorter billing cycles;
- more informative presentation on bills i.e. consumption graphs/data; and
- 'smart' meters displaying load-reducing opportunities.

4.6 In order to inform this work, Ofgem has undertaken some research on the potential for improving customer information.

Fuel mix disclosure

4.7 Under the proposed European Union (EU) Directive on liberalisation of the European electricity market there is the provision for all electricity suppliers to be required to inform their customers of the fuel mix of the electricity that they are selling. This practice is in place in Austria and in several US States where charts and/or statistics are included on customers' bills giving fuel mix and, in some cases, pollution information.

4.8 Ofgem has been working closely with the DTI and other organisations to consider what might be done in the UK to implement this part of the Directive. As part of this, Ofgem is providing support for IT Power to contribute to a Europe-wide research project, the Consumer Choice and Carbon Consciousness for Electricity (4CE) project. This project is also funded under the European Commission Altener Programme and involves a team of 6 European partner organisations. The UK partners are IT Power and Oxford University's Environmental Change Institute.

Energy Efficiency Commitment

4.9 Part of the Government's Climate Change Programme, the Energy Efficiency Commitment (EEC) programme, places an energy savings obligation on electricity and gas suppliers to be achieved by 31 March 2005. The programme recognises both the social benefits of energy efficiency and the contribution this can make to the reduction of carbon emissions.

4.10 In practice EEC involves suppliers helping households install energy efficiency measures in homes. Suppliers are required to target at least half of the energy savings from the measures at the 'priority group' – households that receive

income related benefits or tax credits. All energy suppliers with at least 15,000 domestic customers have an obligation to achieve improvements in their customers' energy efficiency – eleven suppliers were set an EEC target in January 2002 totalling 62 TWh.

4.11 Ofgem's role in administering the scheme is to approve each energy efficiency scheme set up by suppliers and to monitor progress. Suppliers provide quarterly reports to Ofgem on the development of their schemes.

4.12 Suppliers' most recent reports, detailing the schemes set up and the measures delivered up until the end of December 2002, show that suppliers are now installing energy efficiency measures at almost five times the level of that achieved under the predecessor programme, the Energy Efficiency Standards of Performance 3 (EESoP 3).

4.13 To date Ofgem has assessed and approved 100 schemes. The following are examples of the types of schemes which have been approved.

Scottish and Southern private landlord and social housing improvements

4.14 This scheme is a good example of how the EEC is leading to improvements in hard-to-heat homes and difficult-to-reach sectors. Scottish and Southern is partnering with social housing providers to offer a comprehensive range of discounted insulation measures to priority group households. The scheme also aims to target the private landlord sector, where it has historically been difficult to encourage energy efficiency.

4.15 A significant proportion of the anticipated energy savings relate to internal or external wall insulation. These types of insulation for solid wall properties can be very beneficial in terms of energy efficiency, but are more expensive than conventional insulation.

Seeboard Home and Private Insulation (ESCo)

4.16 During the first year of EEC, Seeboard ran two innovative schemes which each provided a range of measures as part of an energy service package. These schemes were predominantly aimed at owner-occupiers and included an energy audit which was in the form of either an 'in home' or telephone survey. Where it was appropriate, subsidised measures were offered to the householder including

cavity wall insulation, hot water tank insulation, draught-proofing and energy saving light bulbs. Energy efficiency advice was also offered to the householder to encourage behavioural changes in their energy use. The customer was given a choice of payment methods including the option to defer payment. This approach was attractive to householders as they could immediately benefit from increased comfort, whilst managing the costs of the improvements over time.

British Gas appliance exchange/incentive programme

4.17 This scheme is an example of how a supplier/business partnership can bring about significant energy savings under the EEC. British Gas have teamed up with Comet to communicate the advantages of energy efficiency to customers and to offer discounts on a range of A-rated cold and wet appliances including fridges, freezers, washing machines and dishwashers. To reach a wide audience the offer is promoted through a variety of channels by both partners. Comet sales staff have been trained so that they can communicate effectively the benefits of energy efficiency to the customer. The scheme also allows customers to trade-in their old appliances for a price discount during promotional periods and this ensures that old, inefficient appliances are removed from circulation.

EEC data

4.18 Table 3 below shows the current number of approved measures and lifetime savings of the current EEC schemes by type. The measure with by far the largest savings is insulation. This is because cavity wall insulation compared with boilers lead to larger annual savings. The insulation measures also have an estimated 30-year lifespan which is significantly longer than the other measures. For instance heating is estimated to have a 15 year lifespan and appliances a 10 – 15 year lifespan. Insulation measures have accounted for about 65% of suppliers' work in the first year.

4.19 The EEC has delivered over 17,000 GWh of energy savings during its first year, equating to just 30% of the overall target. The suppliers' quarterly reports also show that 45% of delivered energy savings have been achieved in priority group households. The target is for at least 50% of the overall energy savings to be met within this group.

Table 3 Approved EEC measures to date[17]

Measure	No. of measures	Total lifetime carbon savings (ktC)	% of total savings
Appliances	7,225,911	603	3.68%
Heating	651,702	1,333	8.15%
Insulation	2,681,755	11,396	69.67%
Lighting	29,341,214	3,025	18.50%
Total	**39,900,582**	**16,357**	**100%**

Source: Ofgem

[17] The figures are based upon suppliers' approved proposals to date. Whilst the figures may broadly reflect the split of measures and carbon savings to be achieved by the EEC, it is highly likely that the actual measures installed and the carbon savings achieved will differ from the suppliers' proposals due to the varying success of the different delivery mechanisms used.

5. Increasing openness, transparency and accountability

5.1 This chapter sets out Ofgem's work to promote greater environmental awareness in Ofgem's policy development and to build and maintain relationships with other relevant organisations. The Energy White Paper places great emphasis on partnerships between Government agencies, regulators, devolved administrations, regions, local government and business.

5.2 It also covers the actions that Ofgem will be undertaking to improve its internal environmental policies, in the light of Defra's 'Greening Government' initiative.

Social and Environmental Guidance

5.3 In November 2002 the Secretary of State for Trade and Industry issued Social and Environmental Guidance to Ofgem. The Guidance – to which Ofgem is required to have regard – was part of the new regulatory framework established under the Utilities Act 2000. The Guidance identifies the UK's Climate Change Programme and Sustainable Development Programme as the key relevant areas in its environmental policy-making process.

5.4 In issuing the Guidance the Secretary of State made clear that it would be reviewed in the light of the Energy White Paper. Ministers have recently announced their intention to do so and a consultation is expected very shortly. The revised Guidance is expected to reiterate the Government's four objectives for its energy policy as outlined in the Energy White Paper.

Environmental reporting

Schedule 9 amenity statements

5.5 All licence holders and persons authorised by exemption have obligations under Section 38 and Schedule 9 of the Electricity Act (as amended). These require a transparent policy for preserving amenity when constructing or operating power stations, installing overhead (or underground) lines, or carrying out other works in connection with the transmission or supply of electricity.

5.6 Ofgem published its summary of responses and decision document[18] in March 2003. The document concluded that Ofgem will continue to carry out an administrative role in relation to Schedule 9. This includes the following:

- providing copies of the guidance in Schedule 9 statements to new or potential licensees, which will give them an introduction to the requirements under the Act; and
- providing copies of the model Schedule 9 statement to new or potential licensees, enabling smaller licensees to discharge their functions in a relatively standard format that is acceptable to the statutory consultees.

5.7 Copies of the responses to the consultation and the full decision document are available on Ofgem's website.

Regulatory Impact Assessments

5.8 Ofgem has committed to introduce Regulatory Impact Assessments for all significant new policies initiated by Ofgem. In addition to identifying the impacts on customers and the industry, Ofgem will also address the effects of any significant initiative on the environment, security of supply and social issues.

5.9 Environmental assessment of options and of final decisions has been a key part of a number of Ofgem documents in the past year, most significantly in regard to consideration of losses from electricity transmission and distribution systems.

Environmental Advisory Group

5.10 Ofgem has established a high level external group to provide advice on Ofgem's environmental work. The first meeting of the Environmental Advisory Group took place in November 2002. The Group meets twice-yearly; the second meeting was held in May 2003.

5.11 The group's purpose is to advise Ofgem on the priorities for its work in relation to the environment. In particular the group advises Ofgem in:

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[18] *Electricity Act 1989 Schedule 9 statement summary of responses and decision document* Ofgem March 2003 (17/03)

- developing its work on the environment;
- reviewing achievements under the Environmental Action Plan and annual reviews of the plan;
- identifying areas for future research on environmental issues, and
- considering the role that Ofgem's executive functions play in meeting the Government's environmental targets. (These functions include the Climate Change Levy exemption for renewables and CHP, the Renewables Obligation, the Energy Efficiency Commitment, and the remaining NFFO and SRO contracts).

5.12 More detailed information, including the terms of reference of the group can be found on Ofgem's website, under the Environmental Advisory Group menu. The current list of members is in Appendix 1.

Environmental economists panel

5.13 In addition to the EAG, Ofgem has also set up an Environmental Economists Panel. This is a panel of experts that Ofgem can call upon to give advice and comment on specific work or items of policy.

Research projects 2002/03

5.14 Ofgem committed to carrying out a programme of research into certain environmental issues. The work is designed to:

- inform Ofgem's projects and regulation;
- provide an opportunity to work in partnership with other interested parties; and
- allow Ofgem to participate in the wider environmental debate.

5.15 Five broad areas were identified in last year's annual review, and work is being developed in each of these:

- **cost to consumers of meeting renewable generation targets:** as part of the distribution price control review, Ofgem is investigating the costs

associated with increased penetration of renewable generation. This piece of work will be completed shortly, and will inform the process of developing incentive mechanisms for DNOs to connect and use distributed generation

- **costs and benefits of energy efficiency programmes:** Ofgem has undertaken research to evaluate the effectiveness of insulation installed in gas-heated homes during EESoP3. This work will be published in the coming months

- **understanding the benefits of advanced metering**: Ofgem is seeking options for more detailed research in this area, possibly through monitoring of advanced meter trials

- **improved consumer information**: Ofgem has undertaken initial scoping research into the nature and effect of consumption data provided by suppliers to consumers

- **impact of sulphur hexafluoride emissions**: Ofgem has undertaken two research projects in inform its policy on SF_6 emissions from the electricity industry. See Chapter 3 for further information.

Ofgem's internal environmental management

ISO14001

5.16 As reported in the previous annual review, in February 2002 Ofgem gained ISO 14001 accreditation for its environmental management. In February 2003 Ofgem successfully passed the one year audit of its environmental management system. Ofgem's environmental management system includes policies on:

- Building management

- Information technology

- Recycling

- Other issues including business travel and cycling to work

Combined heat and power

5.17 In March 2003, the Chief Executive of Ofgem, Callum McCarthy, together with Brian Bender, the Permanent Secretary for Defra, and David Green, Director of the Combined Heat and Power Association, unveiled a new CHP plant installed at Ofgem's headquarters in Millbank. This unit provides the building with its baseload electricity and heat.

5.18 The unit will reduce the cost of running the building and combined with 10% of Ofgem's electricity coming from green supply will contribute to reducing carbon dioxide emissions.

6. Future work priorities 2003/04

6.1 Ofgem's Corporate Strategy 2003–2006 outlines how environmental issues are to be incorporated into its work over the next three years. It identifies a number of priorities for the coming year. Ofgem's work programme reflects the Government's Energy White Paper, which sets out a clear commitment to a low carbon economy. Ofgem is committed to working with the Government to meet the challenge of moving towards this objective, at least cost to consumers.

6.2 This chapter covers Ofgem's environmental priorities in more detail for the year ahead.

Generation

Greenhouse gas emissions trading

6.3 In the Energy White Paper the Government has stated that a carbon emissions trading scheme is central to the future market and policy framework for achieving the UK's goals in reducing emissions of greenhouse gases and moving towards a low carbon economy. Trading provides a mechanism to achieve emissions reductions at least cost.

6.4 Ofgem will continue to work closely with Defra in the coming year on the development of the national allocation plan and other aspects of the implementation of the scheme in the UK to ensure that the scheme is fully compatible with the UK's liberalised energy markets and provides benefits to consumers.

6.5 The UK already has a number of policy measures aimed at reducing greenhouse gas emissions in place. The proposed European greenhouse gas emissions trading scheme overlaps with a number of these policies and transitional arrangements will need to be put in place. These arrangements will need to be based on robust analysis ensure that the overall impact of the instruments is effective and avoids double burdens (or benefits), or inappropriate incentives.

Air quality issues

6.6 Ofgem will continue to work with Defra, the Environment Agency, the Scottish Environment Protection Agency (SEPA) and others on the implementation of the European Large Combustion Plants Directive (LCPD) and other measures to regulate the emissions from the electricity and gas industries of pollutants affecting air quality and acidification. Ofgem is keen to ensure that maximum appropriate use is made of flexible market-based instruments that will allow important environmental objectives to be met at least cost.

6.7 Important decisions must be taken in the near future by the UK Government in relation to the implementation of the LCPD; Ofgem is participating in the governmental forum on implementation and is also meeting with the industries to gain their views.

Wholesale electricity trading

6.8 Ofgem will continue to monitor the arrangements for the wholesale trade in electricity to ensure effective participation from small generators and the demand side on fair terms. This will provide benefits to consumers and the environment. In particular, Ofgem is keen to ensure that the potential of the demand side in electricity trading arrangements is reached. To this end, it is proposed to develop a micro-website to assist the participation of demand customers, similar to the site already in place for small generators.

Executive functions

6.9 Ofgem will continue to administer the Climate Change Levy exemption for renewables and the Renewables Obligation as well as remaining responsibilities under the Non-Fossil Fuel Obligation and the Scottish Renewables Order. This will include the collection and recycle of the buyout from the first year of the Renewables Obligation and ongoing audit and enforcement of the Renewables Obligation and CCL exemptions.

Climate Change Levy CHP exemption

6.10 The Government announced in the 2002 budget that all good quality CHP would be exempt from the Climate Change Levy. The necessary regulations and

State Aids approval have been put in place to allow the scheme to begin from 1 April 2003.

6.11 Ofgem will introduce an interactive website to allow for the submission of monthly output data and the management of CHP LECs. Ofgem will be publishing administrative procedures and a user guide for the website and has also held a workshop for industry.

REGOs

6.12 The Renewables Directive[19] deals with the promotion of electricity from renewable sources. It calls upon all Member States to adopt indicative targets and take decisive steps to place renewable energy at the centre of energy policy. Article 5 of the Directive requires the provision of Renewable Energy Guarantees of Origin (REGOs) to generators in respect of electricity generated from renewable sources.

6.13 The DTI is currently consulting on the implementation of this part of the Directive[20]. The Government intends to implement the provision through a Regulation under the European Communities Act 1972, and has proposed that Ofgem will have responsibility for issuing REGOs for renewable energy generated in Great Britain. Ofgem is considering internally what action it needs to take depending on the outcome of that consultation.

Transmission and distribution

BETTA

6.14 2004 should see the passing of legislation to make the introduction of uniform electricity trading and transmission arrangements in Great Britain (referred to as BETTA). A bill was published in draft form in January 2003.

6.15 The purpose of BETTA is to introduce wholesale trading and transmission arrangements for GB to enable competitive GB markets to develop further, which in turn benefits customers. BETTA will deliver benefits to small generators

[19] 2001/77/EC
[20] DTI Guarantees of Origin for Renewable Energy, implementing Article 6 of the EU Renewables Directive (2001/77/EC) March 2003

by opening access to a single GB market. The current arrangements for trading across the interconnector will also be removed. Ofgem/DTI will continue to consult on the arrangements for BETTA, which will include a specific consultation on small generators.

Electricity distribution price control review

6.16 Work for the Distribution Price Control Review (DPCR) has now started and the new price control will take effect from April 2005. Since the last DPCR, Ofgem's social and environmental responsibilities have been strengthened and this is reflected in its approach to the review.

6.17 The main environmental elements included in the price control work programme are:

- consideration of whether Distribution Network Operators (DNOs) should be subject to some environmental output measures such as reporting requirements, and proposals for possible measures;
- analysis of the environmental implications of specific mechanisms, such as incentives for loss reduction, connection of distributed generation, use of demand-side management, and the structure of distribution charges, and
- development of an environmental impact statement, to be included in the regulatory impact assessment for the price control.

Electricity distribution and transmission losses

6.18 A key part of the price control system for DNOs is the operation of specific incentives for the minimisation of losses from the system. In the coming year Ofgem will further develop its thinking in relation to the design of incentives. This process is to be integrated into the distribution price control review. A further consultation paper detailing the responses to the consultation and preliminary conclusions will be published soon.

6.19 Ofgem will continue to take forward work on transmission losses in the context of BETTA.

Distributed generation

6.20 A particularly important area where Ofgem's work will contribute to achieving a low carbon economy is the challenge of 'rewiring Britain' to meet the anticipated growth in distributed generation – in the form of new renewable generation and CHP. The most appropriate form for incentives to DNOs to connect and make use of distributed generation will be a key consideration in the coming electricity distribution price control review (see above). Further work to remove barriers to distributed generation is being advanced jointly with the DTI through the Distributed Generation Co-ordination Group.

Supply

Future energy efficiency measures

6.21 The Energy White paper suggests that energy efficiency policies and programmes will need to be further developed in order to make a contribution towards meeting emission reduction targets. This includes existing programmes such as the domestic sector Energy Efficiency Commitment administered by Ofgem and new programmes. In the coming year, Ofgem will be working with the Government to assist in the development of new policies and programmes. Specific action includes:

- participating in discussions on future domestic energy efficiency programmes;
- contributing to the evaluation of existing energy efficiency programmes;
- participating in a working group on energy services, and
- liaising with Defra on the most appropriate measures for the non-domestic sector, including small and medium enterprises.

Billing information for consumers

6.22 Informed consumers are a pre-requisite for the efficient operation of a competitive market. Consumers who are more informed about their energy use are more likely to make active choices about how they use it, about what to do about controlling it, and from whom and how they buy it.

6.23 In the coming year Ofgem will work with suppliers, consumers, energywatch and other interested parties to explore the options for providing better information to consumers on their energy use including changes to billing cycles, more informative on-bill presentation of consumption data and smart meters displaying energy use and identifying load-reducing opportunities.

Green supply

6.24 In April 2002 Ofgem issued guidelines to suppliers on green supply offerings in the domestic market. These guidelines identified the key principles of transparency, additionality and verification. Since the publication of these guidelines a number of changes have taken place: the Renewables Obligation has been in place for a full year, the Energy Saving Trust has announced that it will not be continuing the "Future Energy" labelling scheme and implementation of the system of REGOs to certify a broader range of renewable energy than is eligible for ROCs and LECS. It is therefore appropriate that Ofgem revisit and update the Green Supply Guidelines in the light of these developments.

Increasing openness, transparency and accountability

Regulatory impact assessment

6.25 As reported in the Government's White Paper, *Our energy future – creating a low carbon economy*, Ofgem has committed itself to producing regulatory impact assessments, which will include environmental assessments, for all significant new policies. The Government intends to formalise this obligation through primary legislation, which will place Ofgem in a similar to position to certain other regulators, notably the Financial Services Authority and Ofcom.

6.26 In most cases, it is expected that environmental appraisal will form a part of the Regulatory Impact Assessment. However, for very large projects (e.g. price control reviews) or where the environmental impacts are large, or crucial to the decision, a separate environmental statement may be prepared.

Joint Working Group on Environmental Issues

6.27 Building on the successful Joint Energy Security of Supply Working Group (JESS), a new joint working group including DTI, DEFRA and Ofgem will be set up to look at relevant environmental issues. Consultation between the bodies has begun to develop the terms of reference and the work programme for the Working Group.

6.28 Ofgem sees considerable merit in establishing a group which develops a common and consistently used framework (including terminology) for assessing and deciding whether environmental objectives are being met across all departments involved in moving to a low carbon economy. It is Ofgem's view that it will take forward a co-ordinated analytical work programme on environmental issues of common interest to all members.

Environmental reporting

6.29 Ofgem intends to take forward work in conjunction with other Government agencies, companies and industry associations to promote best practice and consistency in environmental reporting by gas and electricity companies.

Environmental Advisory Group

6.30 Ofgem's work will continue to be informed by the Environmental Advisory Group, which brings together a wide range of interests from Government, industry academics and voluntary groups with expertise in the relationship between the gas and electricity industries and the environment. It will also be informed by its panel of environmental economists.

Environmental research programme

6.31 In 2003/04 Ofgem will continue to progress a programme of research into environmental issues to inform policy options, as well as wider environmental and energy debates. Issues currently planned for research on 2003/04 are:

- distributed generation—There are a number of uncertainties surrounding the development of distributed generation and further work will be undertaken in this area; this may include improving estimates of the incremental costs of connecting renewable generation; the types of

incentives that DNOs would require to connect and distributed generation and use it for network services; and how markets respond to increased levels of unpredictable and unreliable generation; this work will inform the Distribution Price Control Review

- advanced metering—there has been some evidence from overseas that advanced meters can lead to a considerable reduction in energy consumption; Ofgem will continue to seek opportunities to monitor the impact of advanced meters on energy consumption

- consumer information— recent work in this area will be further developed in the coming year

- joint work with the Environment Agency—Ofgem has been working with the Environment Agency to pursue research projects in areas of mutual interest. As part of this, work has been commissioned to identify trends in CO_2 emissions from the generation sector in the last few years.

7. The environmental context

7.1 Ofgem has developed a number of indicators that help to identify changes in the gas and electricity industries. These indicators are a part of Ofgem's commitment to report annually and monitor and measure progress against the Environmental Action Plan. As reported in the previous annual review the indicators include:

- Emissions data – greenhouse gases, sulphur dioxide emissions and oxides of nitrogen emissions;
- Renewables data – percentage of electricity generated from renewables and renewables capacity, and
- Combined Heat and Power.

7.2 Throughout most of the data a baseline date of 1990 is used. This is consistent with baselines used in targets such as the Government's target to reduce CO_2 emissions by 20% on 1990 levels by 2010, and the target to reduce greenhouse gas emissions by 12.5% on 1990 levels.

7.3 Charts 4 and 5 show an overview of energy use in the UK. Domestic energy use is the second largest use of energy after transport, consuming 31% of UK energy.

Chart 4 - Final energy consumption by sector 2001

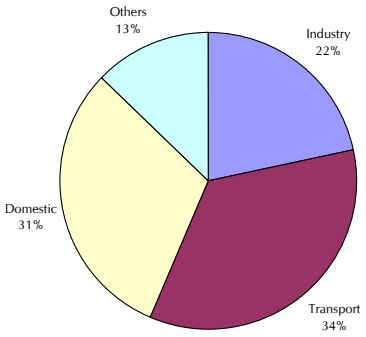
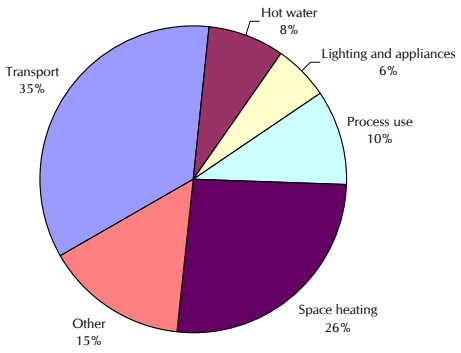


Chart 5 - Final energy consumption by end use 2000



Source: DTI

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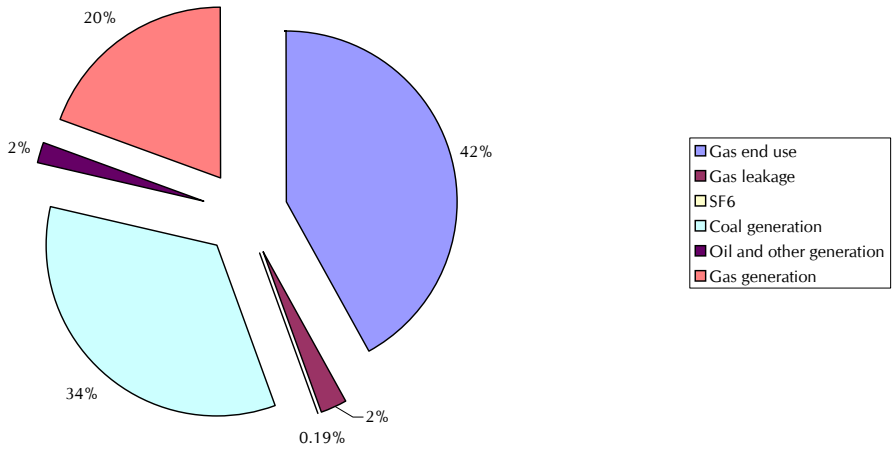
Electricity and gas industries' contribution to emissions

7.4 Table 4 and charts 6 and 7 show data on the electricity and gas industries contribution to the UK greenhouse gas emissions. The major emissions from the electricity sector are from generation (carbon dioxide and nitrous oxide – N_2O) and sulphur hexafluoride from distribution and transmission switchgear. Emissions from the onshore gas industry are through gas end use (CO_2) and pipeline leakage (CH_4). Ofgem has no remit over the offshore gas industry, therefore emissions data from this sector were excluded. Data on HFCs and PFCs have been included for completeness, though neither the gas or electricity sectors emit these greenhouse gasses. Data for all greenhouse gases has been converted into tonnes of carbon equivalent (tC) using global warming potentials.

7.5 The first column shows data for 2000 and the second for 1990. Figures are for emissions from the gas and electricity sectors and as a proportion of total national emissions. Data relating to 2000 is used as recent data is not available to this level of disaggregation. The table shows that the amount of CO_2 emitted by the electricity sector rose slightly in 2000. This is due to an increase in coal generation during the year. Electricity generation accounted for approximately 52% of all carbon dioxide emissions for 2000.

Chart 6 - Greenhouse gas emissions from gas and electricity sectors 2000



7.6 Methane is a significant greenhouse gas, and emissions from the gas industry arise from pipeline leakage. Emissions from the burning of gas are included in the figures for CO_2. Pipeline leakage reduced by approximately 1% between 1999 and 2000. More significant sources of methane emissions are the waste and agriculture industries and coal mining.

7.7 Nitrous oxide (N_2O) emissions have decreased slightly on a national basis and this is also reflected in the proportion of N_2O emitted from the gas and electricity sectors. This percentage stayed level at just under 5%. Sources of N_2O are from combustion in electricity generation and gas end use but the majority of overall emissions are from agriculture and industrial processes.

7.8 Sulphur hexafluoride is one of the most potent greenhouse gases and is used in electricity transmission and distribution. The table shows that the electricity industry was responsible for 33% of emissions. This is 2% lower than for 1999. However this is due to a larger increase in national emissions than electricity industry emissions, which rose by 0.02MtC on last year's estimated figure.

7.9 There are no significant emissions of HFCs or PFCs linked to the gas and electricity industries.

Table 4: Emissions from the gas and electricity sectors 2000 and 1990

	2000				1990			
	Ofgem regulated industries		National emissions	% of national	Ofgem regulated industries		National emissions	% of national
	Sub totals	Total			Sub totals	Total		
Carbon dioxide (CO_2)								
Electricity generation								
Coal	27.24				48.56			
Gas	15.56				0.005			
Oil and other[1]	1.39				5.57			
Gas end use[2]								
Domestic	19.17				15.57			
Industrial	10.08				7.96			
Other[3]	4.20				4.55			
CO_2 total		77.64	148.2	52.4%		77.66	159.45	48.7%
Methane (CH_4)								
Gas losses	1.91				2.44			
CH_4 total		1.91	13.90	13.7%		2.44	21.0	11.6%
Nitrous oxide (N_2O)								
Electricity generation	0.57							
Gas end use	0.02							
N_2O total[5]		0.59	11.95	4.9%		0.55	18.28	3.0%
Sulphur hexafluoride (SF_6)		0.15	0.45	33.3%		0.03[4]	0.20	-
Hydrofluorocarbons (HFC)		0	2.42	0%		0	3.10	0
Perfluorocarbons (PFC)		0	0.20	0%		0	0.62	0
Totals		**80.29**	**177.12**	**45.3%**		**80.65**	**203.9**	**39.6%**

Sources: DUKES, National Atmospheric Emissions Inventory, Digest of Environmental Statistics
[1] Includes MSW, scrap tyres and sour gas
[2] Excludes electricity generation, oil and gas extraction and non-energy use and losses
[3] Includes commercial, agriculture and public administration
[4] Source: NAEI
[5] Includes emissions from combustion of natural gas, domestic, industrial, power stations, public services, railways and all emissions from power stations
All figures MtC unless stated

Air quality

7.10 Table 5 below shows emissions of the major air quality pollutants, SO_2 and NOx, from electricity generation and the combustion of gas in the UK, in comparison with total national emissions.

7.11 Table 5 and chart 7 show that the proportion of NOx from the gas and electricity sectors has stayed at 30% the same proportion of national emissions as 1999[21], however in absolute terms the amount increased. The other major contributors of NOx emissions are industry and agriculture.

[21] The figure given in the 2001-02 annual review was an error.

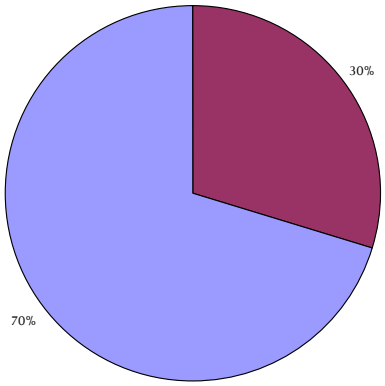
7.12 Emissions of sulphur dioxide have increased to 69% of national emissions, this is an increase of 4% on 1999. This again is due to the increase in coal generation in 2000. The next largest emitter of SO_2 is the iron and steel industry.

Table 5 Emissions of NOx and SO_2 2000

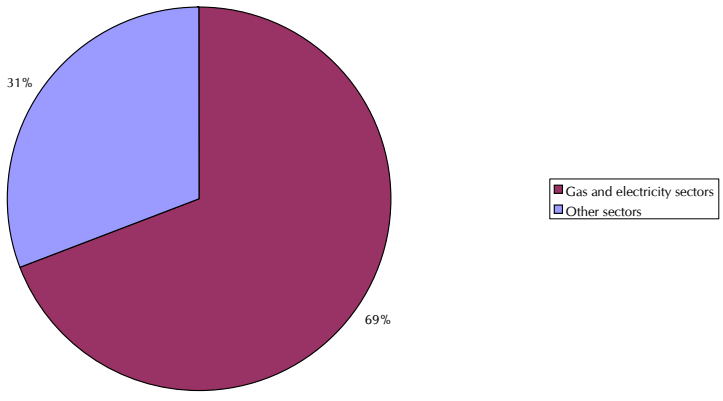
	National emissions in kilotonnes (kt)	Gas and electricity sectors (all figures in kt)			% of national emissions from gas and electricity sectors
		Generation	Gas end use	Total	
NOx	1737	365	149	514	30%
SO_2	1188	821	0	821	70%

Source: National Atmospheric Emissions Inventory
NOx is shown as equivalent tonnes of NO_2

Chart 7 – Emissions of NOx and SO_2



NOx

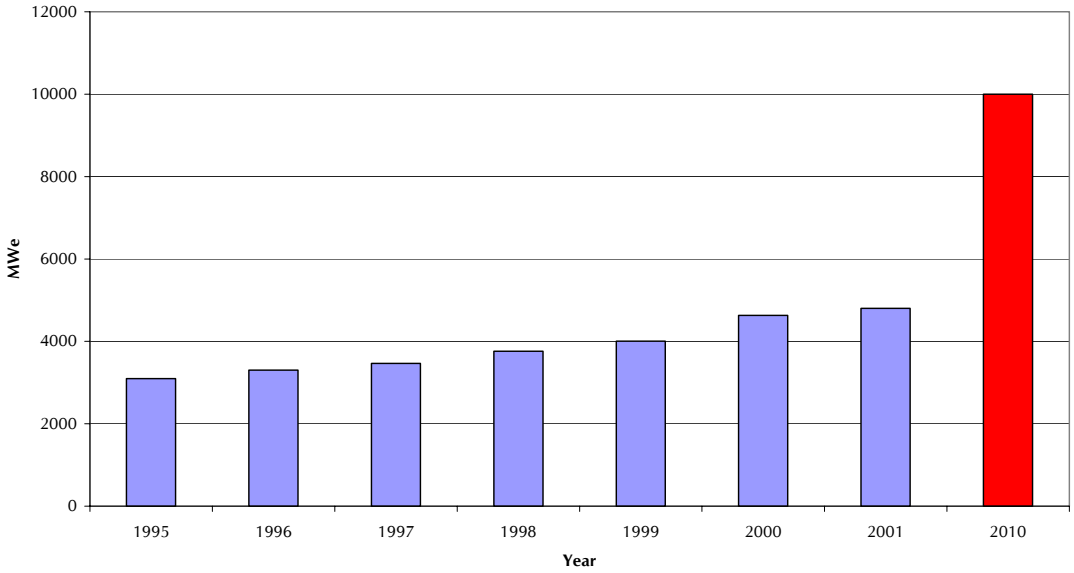


SO_2

Combined Heat and Power

7.13 Since 2000, Government has introduced a wide range of measures, including market incentives, guidance and information, financial assistance and legislative action to support the growth of CHP capacity needed to meet the UK target and lay the foundation for long-term growth in CHP.

Chart 8 - CHP capacity 1995 - 2001 (inc. 2010 target)



Source: Digest of UK Energy Statistics 2002

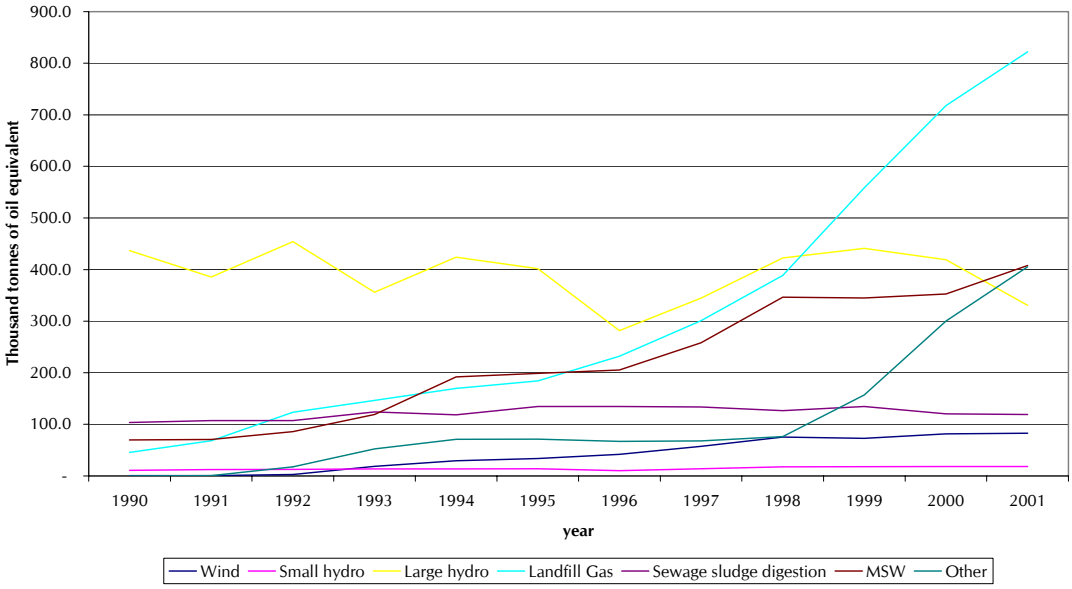
7.14 Chart 8 above shows the historical trend of CHP electrical capacity in the UK and also the 10,000 MWe target for 2010. Since 1995 there has been an increase in CHP capacity of 1707 MWe. However the increase in capacity between 2000 and 2001 was only 38 MWe, reflecting higher wholesale gas prices and lower wholesale electricity prices. There is little market incentive to take up CHP when the price of gas is relatively high compared to the electricity price.

Renewables

7.15 Chart 9 shows the renewable sources used to generate electricity from 1990 to 2001. Landfill gas continues to show a steady growth over the last few years.

However large hydro has shown a significant drop in output in 2001 (21%), due to variations in rainfall. This drop in output meant that in 2001 all renewable sources provided 2.6% of the electricity generated in the UK.

Chart 9 - Renewable sources used to generate electricity 1990 - 2001



Source: Digest of UK Energy Statistics 2002

Appendix 1 – List of Environmental Advisory Group members

Chaired by Callum McCarthy, Chief Executive, Ofgem

Brian Count, Innogy

Professor Paul Ekins, University of Keele and Policy Studies Institute

Richard Farrant, non-executive member of the Gas and Electricity Markets Authority

Rupert Fraser, Fibrowatt Ltd

Paul Jefferiss, Royal Society for the Protection of Birds

Eoin Lees, Eoin Lees Energy

Paul Leinster, Environment Agency

Joan MacNaughton, Department of Trade and Industry

Jeremy Nicholson, Energy Intensive Users' Group

John Roberts, United Utilities

Henry Derwent, Defra

Bryony Worthington, Friends of the Earth

Philip Wright, Scottish Executive