

UK POWER GIANTS

**GENERATING
CLIMATE
CHANGE
2007**

A benchmarking
report for WWF-UK
by Innovest

Innovest
STRATEGIC VALUE ADVISORS



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Executive Summary

This is the third annual UK *Power Giants: Generating Climate Change* ranking report, and is a ranking assessment of the 'big six' UK electricity generators: Centrica; EDF Energy; E.ON UK; RWE npower; Scottish Power; and Scottish and Southern Energy (SSE).¹

This year's approach differs somewhat from that of the previous two *Generating Climate Change* reports in 2005 and 2006. As before, this year Innovest has been commissioned by WWF-UK to assess and benchmark the six companies' performances against a set of criteria focusing on actual practice, performance against regulatory standards, and coherence of carbon management and strategy.

However, to complement Innovest's assessment, this year WWF-UK was also keen to undertake a parallel qualitative assessment of the companies' positions on a range of key public policy questions which are currently live topics in the climate change and energy debates. See the sister report written by WWF-UK entitled *UK Power Giants, Talking Climate Change, 2007*².

WWF-UK regards climate change as the most serious threat facing the planet and human development, and one which demands urgent global and national action. To prevent average global temperatures from increasing by more than 2°C above pre-industrial levels – a threshold above which the risk of severe and irreversible tipping points in the climate becomes increasingly likely – the world's emissions of greenhouse gases will need to peak and start to decline within the next 10-15 years.

Over the past year there has been a recognised step-change in public awareness, media commentary and political intention to address the key issues of climate change and global warming. For example, former US Vice President Al Gore's Oscar-winning documentary, *An Inconvenient Truth*, and the authoritative Stern Review of the Economics of Climate Change, have reinforced the consensus among the scientific community that human activities are having a significant, negative influence on the world's climate.

Power generation accounts for approximately 40% of global greenhouse gas (GHG) emissions, and consequently the utilities sector is seen as a priority area for control by governments that have made commitments to reduce their carbon dioxide (CO₂) emissions.

Similar to previous ranking reports, this study compares the 'carbon profiles' of the UK electricity generation companies. Profiles are determined by assessing portfolios, emissions over time, performance against renewables and energy efficiency

¹ As in previous years, the report does not include British Energy owing to the difference in the asset base between a wholly nuclear power generator and the rest of the companies in the review.










² *UK Power Giants - Talking Climate Change, 2007*. A report written by WWF-UK, published September 2007.

commitments, and company initiatives. In addition, this year's report assesses top-level strategy and commitments, management processes and internal awareness schemes.

Consequently, the leading companies identified in this review were Centrica and Scottish Power. However, no companies were able to demonstrate high scores for all the relevant indicators. EDF Energy and RWE npower were rated fifth and sixth respectively.

Ratings

Table 1. Overall Assessment Matrix

 = HIGH TIER / GOOD PERFORMANCE  = MEDIUM TIER / AVERAGE PERFORMANCE  = LOW TIER / POOR PERFORMANCE	CENTRICA	EDF ENERGY	E.ON UK	RWE NPOWER	SCOTTISH POWER	SSE
Overall Strategy [20%]						
Policies						
Targets						
Climate Change Management [20%]						
Governance Structure						
Cultural Indication						
Management Systems						
Stakeholder Relations						
Climate Change Mitigation Performance [60%]						
Emissions Trends						
Renewables Capacity						
Conventional Resources						
Demand Side Management and Energy Efficiency						
New Business and Products						
Overall (1 = highest)	1	5	3	6	2	4

Grade Definitions

To varying degrees a HIGH TIER rating is determined by:

Policy and Targets	<ul style="list-style-type: none"> ❑ Company has identified climate change as its key business risk, either through a distinct, relevant climate change policy or, ideally, demonstrating that climate change underpins all policies and its overall business strategy ❑ Policies and strategies are signed off by the CEO and endorsed at board level ❑ Policies are developed in accordance with relevant guidelines and stakeholder dialogue, and benchmarked against industry standards, sector peers and leading (non-sector) companies ❑ Board reviews policies and targets periodically (at least annually) ❑ Targets are quantitative, aggressive (but achievable), and are likely to result in significant, financial constraints (at least in the short term) ❑ Target and objective areas include carbon intensity reduction, renewable capacity investment and energy efficiency, customer's energy consumption, and to a lesser extent internal direct impacts (such as business travel)
Climate Change Management	<ul style="list-style-type: none"> ❑ Clear, mature governance structure encompasses climate change issues through internal risk control. Includes relevant senior management or external advisory capabilities ❑ CEO is visible, demonstrates clear understanding of climate change and statements (press articles and industry addresses) are consistent with company policies ❑ Internal company initiatives and employee awareness programmes are relevant, achievable and innovative ❑ Management and monitoring systems satisfactorily encompass greenhouse gas emissions and energy efficiency plans ❑ At senior level company participates in relevant and progressive industry/governmental partnerships and initiatives ❑ Company can demonstrate tangible outcomes from partnerships or that initiatives guide policy development
Climate change mitigation Performance	<ul style="list-style-type: none"> ❑ Carbon intensity performance shows a significant downward trend over recent years and the company's portfolio and investments suggests this will continue. Alternatively, low levels have been maintained. In addition, any outlying increase over the past year have been adequately justified ❑ Renewables capacity has increased over recent years with a current renewables portfolio above UK industry average. Furthermore, significant capacity is currently in planning or consent stages ❑ Company can demonstrate a leading stance on conventional fuel resource development e.g. carbon capture technology
Overall	<ul style="list-style-type: none"> ❑ Company demonstrates leading, proactive commitment to the issue of climate change ❑ Commitment is reinforced through strong targets and a clear management structure. Awareness raising from senior level down to all employees is relevant and part of overall business strategy ❑ In addition to proving incremental improvements in emissions reduction and renewables capacity increases, company demonstrates proactive approach and adaptability through exceeding government and industry guidelines on energy efficiency and conventional fuel technology development.

N.B. The MEDIUM TIER ratings are derived when companies only satisfy elements of each section; the LOW TIER when they satisfy even fewer elements.

Methodology

The research approach for the latest report built on the analysis and methodology of previous reports. The main development has been to combine the four main areas of analysis (or research clusters – see *UK Power Giants: Generating Climate Change, 2006*) into three rating components:

- Climate Change Policies and Targets
- Governance Structure and Climate Change Management Systems
- Climate Change Mitigation Performance.

Issues and indicators within these divisions were scored separately and then combined to produce an overall performance rating. Given the relative importance placed on different aspects of an overall climate change management approach, weightings were applied to each indicator to produce division weightings of Policies and Targets (20%), Climate Change Management Systems (20%) and Performance (60%).³

The research methodology process consisted of two stages:

- First, a detailed research study was undertaken of each individual company's approach to climate change based on corporate disclosure (webpages, annual reports, policy documents and corporate responsibility, sustainability and environment reports, or similar). A review of third party and media information was also undertaken including relevant journals and newspapers. Corporate disclosure was combined with emissions data and renewables obligation (RO) compliance from EU and government sources. These reviews generated company-specific climate change management summary reports which were forwarded to each of the six companies in the study for their review
- In response to the management summary reports, the second stage allowed each company to respond and clarify issues raised, and to provide an opportunity for updates and latest developments beyond information contained in the corporate disclosure. The feedback process varied between the companies in the survey. Four companies provided face-to-face interviews, one company provided a telephone interview and one a detailed written response. Follow-up communication was made available and provided by some of the companies. All responses were considered comprehensive and valuable to the final analysis.

Using the climate change management summary reports and company responses, scores were evaluated for each indicator (on the weighted scale as described above). The scores were based on both quantitative and qualitative analysis. Further details on the indicators are described in the Results section below.

Scores are presented as high / medium / low rankings for each indicator. All indicators and the three divisions are then combined to illustrate overall company rankings based on a 1 to 6 scale, where 1 represents the sector leader.

³ In addition to sector knowledge, weightings were determined to align with WWF policies, and derived from Innovest's other climate change products and general methodological approach

Results

The results section is divided into three areas. An introduction to the separate Indicators used for the analysis is provided – i.e. what key elements were being sought. Secondly, Company Results are displayed graphically. Similar to the main results table in the executive summary, results are expressed in high/medium/low categories. Finally, brief Company Reviews outline score justifications and performance highlights.

1. Overall Strategy

- INDICATORS

1.1 Policies

This study seeks to dissect overall business strategies and company approaches to effective climate change management. The starting point is a company policy. This should formalise the commitment, identifying climate change as a key business risk. To add credence a relevant policy should be endorsed by the CEO.

As outlined in the methodology section, this year's report has built on the research cluster approach. However, relevant policies should encompass the company's commitment to emissions reductions, renewable capacity growth, energy efficiency (including government Energy Efficiency Commitments), and energy demand services.
















Furthermore, leading policies should be 'active' documents regularly reviewed and adapted to changes in legislation, and to global developments. Benchmarking is also perceived as an important element to an effective policy using relevant guidelines, stakeholder dialogue, industry standards and peers' performance to aid their development.

1.2 Targets

In contrast to previous years' reports, more emphasis has been placed on company targets: an important element in driving strategy and monitoring performance and progress. While it is commonplace across all industries for companies to have general environmental or carbon reduction objectives, leaders will be expected to have SMART (Specific, Measurable, Achievable, Relevant, Timely) targets. In the short term, to achieve these targets may place significant financial constraints on the business through, for example, infrastructure investment. Similarly, to the scope of a policy, targets would be expected to cover key areas including carbon intensity reduction, renewable capacity investment, energy efficiency and customer's energy consumption. Other objective areas can include internal direct impacts such as business travel and office consumption.

- COMPANY RESULTS

Table (a). Ratings for Overall Climate Change Strategies

	CENTRICA	EDF ENERGY	E.ON UK	RWE NPOWER	SCOTTISH POWER	SSE
 = HIGH TIER / GOOD PERFORMANCE  = MEDIUM TIER / AVERAGE PERFORMANCE  = LOW TIER / POOR PERFORMANCE						
1 Overall Strategy [20%]						
1.1 Policies						
1.2 Targets						

- COMPANY RATING REVIEWS

1.1 Policies

Generally, across the companies reviewed the policies are considered adequate. The companies accept the scientific consensus regarding global warming and, to varying degrees, recognise climate change as a significant issue to their business which is reflected in relevant board-level endorsement. Furthermore, policies tend to be reviewed at board level, at least on an annual basis.

All the companies have an environmental policy that places an emphasis on climate change. **Centrica's** policy is above average relative to the expectations set out in the policy goals defined by WWF. The company recognises the risks and opportunities, and identifying the reputational benefits of taking a leadership position. **Scottish Power** has gone beyond this approach where climate change appears to underpin all company policies and business strategy, although these are supported by subsidiary policies including transport and internal energy efficiency.

A standard approach to benchmarking processes appears to be undertaken by the majority of the companies surveyed. This is in part due to a lack of widely recognised climate change-related standards. Most companies refer to Business in the Community's CR Index⁴ as their main external benchmarking mechanism, which has only a limited focus on climate change. Internally, **EDF Energy** utilise its parent company, EDF SA, which benchmarks all subsidiaries. A similar exercise is undertaken by **E.ON UK**.

There are various levels of sector benchmarking. **Scottish Power** places particular emphasis on competitor analysis.

⁴ For more information see: www.bitc.org.uk/what_we_do/cr_index/index.html

1.2 Targets

Presently, there is a significant amount of variation in the quality of targets set by the companies in this review. **EDF Energy, E.ON UK, Scottish Power** and **SSE** have carbon intensity reduction targets in place.

E.ON UK indicated that various analysis scenarios were used to determine the time horizons for its targets, which consequently can only be achieved by significant financial investments. Post 2012 targets are currently being reviewed at group level.

RWE npower and **Scottish Power** have renewable generation or investment objectives. In addition, **RWE npower, Scottish Power** and **SSE** have identified customer energy savings in their target-setting.

Both **Centrica** and **RWE npower** claim to have stronger targets and objectives currently in development. **Scottish Power's** integration with Iberdrola is likely to have significant implications for target setting with clearer targets due later in 2007.

2. Climate Change Management

While this study has placed emphasis on the importance of policies and an overall strategic direction, a policy is only wholly effective if implemented into a risk management and governance structure, and throughout a company. Coupled with awareness and initiatives a company can illustrate how key issues filter down to all employees and communicated to stakeholders.

- INDICATORS

2.1 Governance Structures

It is becoming increasingly commonplace for companies across all industries to demonstrate how key issues of corporate responsibility (CR) are incorporated into overall governance structures. For heavy industry, issues such as health and safety are often integrated into board-level committees and monitoring processes. This review analysed how companies in the UK power sector are integrating the key issue of climate change. At a global level – regardless of industry – leading companies can demonstrate that climate change management and performance is effectively monitored at board-level or relevant senior management committees (environment, energy efficiency or even renewable energy committees). As such they will be incorporated into overall risk control procedures.

2.2 Cultural Indication

In addition to a clear, mature governance structure, it is important for a company chief executive officer (CEO) to be visible, committed and knowledgeable of the issue. This helps ensure 'buy-in' from employees at all levels. Furthermore, a CEO's public profile such as industry memberships, media contributions and industry addresses should be consistent with company policies and business strategy. Other elements to indicate strong and progressive cultures are employee awareness schemes and company

initiatives that promote climate change management at a local, facility or business unit level. These programmes should be relevant, achievable and there can be opportunities for innovation.

2.3 Management Systems




























Since the UK power sector is highly regulated, strong environmental management systems and data verification should be the norm. However, there are opportunities for companies to demonstrate proactive approaches that are aimed towards specific GHG management, energy efficiency and external auditing processes.

2.4 Stakeholder Relations

Generally, companies in the UK power sector are pushing in the same direction, and want clear strategies and frameworks at both government and European level. Dialogue with the government, such as the response to the recent Energy Review, has to be adequately managed. In addition, there is an increasing number of governmental and industry initiatives aimed towards climate change or relevant technological developments. This study looks beyond the sheer number of memberships and partnerships but attempts to identify a stakeholder relations strategy – i.e. are the partnerships consistent with business strategy and how do initiatives guide policy development; and can the company demonstrate tangible outcomes?

- COMPANY RESULTS

Table (b). Ratings for Overall Climate Change Management Processes

	CENTRICA	EDF ENERGY	E.ON UK	RWE NPOWER	SCOTTISH POWER	SSE
 = HIGH TIER / GOOD PERFORMANCE  = MEDIUM TIER / AVERAGE PERFORMANCE  = LOW TIER / POOR PERFORMANCE						
2. Climate Change Management [20%]						
2.1 Governance Structure						
2.2 Cultural Indication						
2.3 Management Systems						
2.4 Stakeholder Relations						

- COMPANY RATING REVIEWS

2.1 Governance Structures

A clear indication that companies are taking the issue of climate change more seriously is through evidence of improved governance structures. All companies in the review can point to developments in recent years that indicate that climate change is being formalised into its internal control mechanisms.

Both **Centrica** and **EDF Energy** have made significant changes to their governance structures over recent years. Centrica's corporate responsibility committee is the main board committee to lead its strategy and oversees a number of CR risks including climate change. EDF Energy has replaced its CR Strategy Group with the CR and Environment (CR&E) Panel to help the delivery of its Sustainable Futures project (which includes climate change commitments). **Scottish Power's** governance structure is the most mature of those companies reviewed.

Internal mechanisms can inform and assist the committees. **Scottish Power's** environment forum has been in place since 1999, and there are examples where it has impacted board and senior management decision-making. **E.ON UK** has recently recruited a senior management position, Head of Climate Change. In addition to in-house capabilities **EDF Energy** has an external advisory committee with high-profile members which reports directly to the CEO.

2.2 Cultural Indication

Across all companies in the review, the CEO is ultimately responsible for the individual climate change strategies. However, there is variation in the visibility and perceived commitment between the CEOs. At **Centrica** the CEO has been particularly vocal over recent months regarding its new energy business.

There are various employee awareness programmes and company initiatives in place. Both **RWE** and **SSE** have undertaken employee surveys to gauge attitudes towards environmental issues. SSE survey in 2005 is to be used as a benchmark for future surveys and to measure progress of initiatives such as commuting programmes.

More innovatively, **EDF Energy**, **E.ON UK** and **SSE** have attempted to raise awareness among employees by screening *An Inconvenient Truth* in offices and facilities. All companies can illustrate how this programme has produced positive results – for example, 'energy champions' putting themselves forward to improve performance at a local level.

At **Centrica**, to coincide with the external launch, the CEO has recently been involved in a corporate roadshow to introduce the managing director of the new energy services business division. Furthermore, the company has recently relaunched its employee environmental awareness campaign to highlight its position on climate change.

2.3 Management Systems

All companies have formalised management systems and the majority have ISO 14001 accreditation. **E.ON UK** has strong monitoring of office and business transport emissions and **EDF Energy**, under its environmental management system, is currently developing indicators specifically for energy management and carbon footprint measurement.

2.4 Stakeholder Relations

All companies in the review are involved in industry partnerships and initiatives to varying degrees. **SSE's** CEO and Head of Sustainable Development chair a number of relevant industry councils and it is one of the founding companies of the Carbon Capture Storage Association (see below). While SSE is associated with a number of progressive initiatives, it is also aware of becoming involved in 'talking shops' and it monitors progress of its involvement. Similarly, **E.ON UK** chairs a number of relevant industry initiatives and has recently held a stakeholder workshop to debate with government, regulator and consumer groups. **RWE npower** has a comprehensive key stakeholder identification processes through mapping and auditing activities.

3. Climate Change Mitigation Performance

While this year's review has analysed overarching policies and climate change-oriented management systems, their ultimate effectiveness can only be determined through performance indicators. As such, and in line with previous reports, analysis was conducted for GHG emissions performance, and an evaluation of energy efficiency commitments, renewable capacity portfolios and technology developments.

- INDICATORS

3.1 Emissions Trends

CO₂ emissions from the UK power sector have grown markedly in recent years.⁵ However, given the differences in historical asset infrastructure and investment between companies, to effectively analyse a 'snapshot' and comparison of absolute GHG emissions is difficult. Furthermore, and particularly at a global level across all industries, there is a significant amount of variation in the quality of GHG emissions recording and monitoring. For the purposes of this review, a more effective indicator of performance is emissions trends – i.e. carbon intensity (CO₂ per kWh of electricity generated) directly between companies, and individual trends over both the last year and a four year period.⁶

The EU Emissions Trading Scheme (EU ETS) forms an integral part of the EU's strategy to meet its obligations under the Kyoto Protocol. EU member state governments are required to set an emissions cap for all installations covered by the scheme, where each installation is allocated allowances for a particular commitment period set down in a

⁵ 'UK Power Sector Emissions – Targets or Reality', March 2007. A report written by IPA + water consultants and found at: <http://www.wwf.org.uk/filelibrary/pdf/ipareport.pdf>

⁶ Owing to the quality of data available, a four year period was selected to make effective comparative analysis. It is hoped that as the quality and transparency of emissions data improves, further reviews will include meaningful analysis of emissions per supply (domestic and industrial customer) in addition to emissions per generation.

National Allocation Plan (NAP). Phase I of the EU ETS began in January 2005 for a three-year trial period as is mandatory for installations with a thermal input above 20 MW. Companies' level of involvement in the EU ETS also contributes to the analysis of performance.⁷ A higher ratio of allocated allowances/verified emissions results in a better performance score.

3.2 Renewables Capacity

Acquisition of renewable generation capacity can be seen as one of the leading long-term instruments for reducing carbon risk exposure and an indicator of policy commitment. In addition to existing generation portfolios, the analysis also included an assessment of planned or consented renewable energy investments. This study recognises that not all planned renewables capacity will come to fruition but it is an indicator of the level and direction of individual company's generation portfolio in the short-term. In addition, to generation capacity the score also incorporates the proportion of renewable electricity supplied.⁸

Since the Renewables Obligation (RO) is the UK government's main mechanism for supporting renewable energy development, the performance score includes individual company level of compliance of RO in compliance period four (CP4).⁹ Meeting the RO through surrender (or retirement) of ROCs is deemed important as this promotes further investment in renewables and assists in the development of the ROC market.

3.3 Conventional Resources

While the development of renewables generation capacity is an important indicator in the movement towards a low carbon economy, this study recognises that owing to issues of security of supply, present asset infrastructure portfolios and energy demands, conventional resources have a significant part to play in the UK's fuel mix for the foreseeable future. However, there are a number of opportunities for technological developments to improve efficiency and reduce GHG emissions of existing generation facilities. They include co-firing coal stations with biomass, and carbon capture and storage technologies.

3.4 Demand Side Management / Energy Efficiency

The UK government's Energy White Paper in April 2003 stated that the cheapest, cleanest and safest way of addressing the energy policy objectives is to use less energy. The Energy Efficiency Commitment 2005-2008 (EEC2) forms the main part of the government's Climate Change Programme and Fuel Poverty Strategy requiring obligated suppliers to achieve targets for the improvement of energy efficiency. Ofgem apportions individual targets in relation to each supplier's domestic consumer numbers. EEC2, which runs until March 2008, requires around double the activity of the previous programme (EEC1) and is expected to save around 0.5 million tonnes of CO₂ annually.

⁷ Based on Allocations, Verified Emissions and Surrendered Allowances and Compliance Status in the Community Independent Transaction Log at April 2006. Available: http://ec.europa.eu/environment/climat/emission/citl_en.htm

⁸ For comparative fuel mix data, including industry averages, the independent watchdog website was used. For more information see: www.electricity.org

⁹ Based on 'Renewables Obligation: Annual Report 2005-06', Ofgem, 28 February 2007.


































In May 2007, the government published its consultation on the Carbon Emissions Reduction Target (CERT) (previously referred to as EEC3). The government proposes to impose the CERT mechanism to 2011 at around double the level of activity of EEC2, extending the scope to include, in addition to energy efficiency measures, microgeneration and other measures for reducing the consumption of supplied energy.¹⁰ The main criticism of EEC 1 has been its ease of achievability with the majority of companies being able to demonstrate significant levels of 'over-compliance'. In addition to performance against EEC, this study evaluates how companies are going beyond governmental guidelines and objectives towards wider energy services provision. This is done through an indication of level of investments and a qualitative analysis of customer awareness schemes (residential and domestic) and energy efficiency initiatives.

3.5 New Business and Products

In an extrapolation of demand side management and as a further indicator of a company's movement towards a wider energy services provision, companies are analysed on their areas of product development and research and development (R&D). This is largely a qualitative analysis of levels of investment, outcomes of initiatives and current target areas – i.e. fossil fuels versus renewables.

- COMPANY RESULTS

Table (c). Ratings for Climate Change Mitigation Performance

	CENTRICA	EDF ENERGY	E.ON UK	RWE NPOWER	SCOTTISH POWER	SSE
 = HIGH TIER / GOOD PERFORMANCE  = MEDIUM TIER / AVERAGE PERFORMANCE  = LOW TIER / POOR PERFORMANCE						
Climate Change Mitigation Performance [60%]						
Emissions Trends						
Renewables Capacity						
Conventional Resources						
Demand Side Management and Energy Efficiency						
New Business and Products						

¹⁰ For more information see: www.defra.gov.uk/corporate/consult/cert2008-11/index.htm

- COMPANY RATING REVIEWS

3.1 Emissions Trends

Given the nature of its business and previous policy to invest in gas-fired assets, **Centrica** has consolidated its position as having the best-in-sector electricity generation carbon intensity (all other companies in the sector have significant coal-fired assets). It is also the only company that can report a reduction in carbon intensity on the previous year.

In 2006, all other companies in the sector review reported increases in carbon intensity on the previous year. This was largely due to economic decisions and the movement away from gas-fired generation assets to coal power (due to large increases in wholesale gas prices). The scale of increases varied, with **RWE npower** and **EDF Energy** showing minor increases. **SSE** reported the largest increase on the previous year but has recently released data for 2007 showing a decrease (although still a higher carbon intensity than 2005 data). There are a number of indications from other companies that 2006 emissions data will be reduced

With regard to longer term performance, **Centrica** and **Scottish Power** indicate significant reductions over the past four years.

With regard to performance against EU ETS requirements, all installations were compliant in 2006 but **Centrica** had the highest allowances/emissions ratio and **EDF Energy** the least. (See Annex 1 for emissions data).

3.2 Renewables Capacity

With regard to the analysis of current generation portfolios, both **Scottish Power** and **SSE's** capacities are higher than UK industry averages. All companies in the review indicate growing levels of renewable capacity through planned projects and high levels of investment. **ScottishPower** and **SSE**, and to a lesser extent **EDF Energy**, appear the best-placed to exceed government objectives for renewables growth.

In terms of renewable energy supply, **RWE npower**, **Scottish Power** and **SSE**, exceed UK industry averages. **Centrica**, **E.ON UK**, **Scottish Power** and **SSE** have the highest levels of compliance of RO in CP4.

3.3 Conventional Resources

SSE is making significant investments to upgrade its coal-fired generation to co-fire with biomass, and has begun work on an ash separation plant (as has **RWE npower**) which will bring further CO₂ reductions. **EDF Energy** is undertaking a five-year investment programme to improve efficiency of its coal-fired stations. While **Centrica's** tests into biofuels and **E.ON's** oxyfuel combustion tests were considered successful, there is no evidence that roll-out will occur in the near future. **RWE** has the largest proportion of CHP power in its portfolio.

The International Energy Agency has admitted that carbon capture and storage (CCS) technology will only be applied on a large scale with government support,¹¹ and the UK government's Energy White Paper in May 2007 has further delayed the process of securing support although it has launched a demonstration competition. As such, while all companies in the review recognise the enormous potential of CCS, the level support varies and direct involvement can be described as tentative.

Generally, the companies are relying on clearer regulatory frameworks and financial support before making significant investments and developments in CCS. **Centrica** discloses the clearest understanding of the capabilities of CCS solutions as well as admitting the limitations of 'capture ready'. Centrica's investment in the development phase of an integrated clean coal project appears one of the better placed to satisfy the demonstration competition. Although tangible outcomes appear limited, **E.ON UK** and **SSE** are members of the Carbon Capture Storage Association.

3.4 Demand Side Management / Energy Efficiency

To varying degrees, companies are offering wider energy service businesses. The clearest 'first-mover' is **Centrica** which has identified a consumer demand for low-energy services. Its current business model has been partly developed from a bespoke home energy efficiency audit which has been completed by over 1.5 million households and has already reported significant energy savings. **RWE npower** has strong monitoring of household energy savings (although it did not meet its own internally-set objectives).

However, levels of energy advice provision and energy audits undertaken (as a percentage of total customers) across the companies in the review are relatively low. **Centrica** and **EDF Energy** demonstrate extension of energy service provision to business customers. **RWE npower** has recently developed an energy management tool portfolio for its business customers.

All the companies allude to the importance of smart-metering, with **E.ON UK** reporting a successful trial. However, most energy efficiency initiatives and partnerships are in pilot or early phases and tangible outcomes within the whole review are generally limited.

EDF Energy and **RWE npower** exceeded their EEC1 commitments by significant amounts and all companies appear to be in line to complete their EEC2 commitments. During 2006, **Scottish Power** stated that it had completed enough work to meet its EEC2 target significantly ahead of schedule.

3.5 New Products and R&D

All the companies in the review are able to illustrate varying levels of investment in research and development (R&D) and technology projects.¹² Similar to energy efficiency initiatives beyond widely applied 'green energy' tariffs, tangible outcomes and clear, profitable products are presently limited.

¹¹ World Energy Outlook 2006, International Energy Agency, November 2006




¹² In some cases precise levels of R&D investment are not known, or R&D is undertaken by parent companies which makes a quantitative comparative assessment difficult

In addition to its green tariff, **EDF Energy** has developed one of the more innovative tariffs, *Read. Reduce. Reward*, which rewards customers for reducing their energy consumption. However, the company's final score is influenced by its limited direct involvement in microgeneration and other carbon-free technologies.

E.ON UK has one of the more wider-ranging R&D programmes which encompass micro-generation, micro-CHP and low carbon buildings. This is underlined by its R&D strategy to have a long-term development phase in order to build a wide product base.

Company Profile Summaries

Table (d). Final Assessment Ratings

	CENTRICA	EDF ENERGY	E.ON UK	RWE NPOWER	SCOTTISHPOWER	SSE
 = HIGH TIER / GOOD PERFORMANCE  = MEDIUM TIER / AVERAGE PERFORMANCE  = LOW TIER / POOR PERFORMANCE						
Overall (1 = highest)	1	5	3	6	2	4

This section summarises the overall analysis and findings which contributed to the company's final ranking position.

1 CENTRICA

Centrica's climate change strategy identifies both the risks and opportunities for long-term success. However, at present the company has limited quantitative targets driving its business agenda. These are based on reducing its internal footprint such as a year on year reduction in office energy consumption. In early 2006, the company strengthened its corporate governance structure with a corporate responsibility committee that oversees relevant climate change risks. Despite the relatively fledgling governance structure relevant, tangible outcomes have been swift.

Centrica's strategy over recent years has been to generate a growing proportion of its own electricity for British Gas customers. It has the lowest level of generating capacity compared with its sector peers, but as these are all gas-fired assets Centrica's CO₂ emissions profile has been historically low (compared with those companies with significant coal-fired assets). Consequently, its present renewable generation capacity is limited but it is on course to have interests in three operational windfarms which will improve its capacity to meet government recommendations.

Although Centrica's latest reported fuel mix figures indicate that the proportion of renewables is below the UK industry average, it demonstrates the highest level of compliance with the RO within this competitive set. The company also states that it is a strong supporter of the EU ETS which is reinforced through the highest allowances per verified emissions ratio.

The company's historical business model puts it in a good starting position regarding the movement towards wider energy services provision. Commitments and management structures are now in place but given that its Energy Services division is relatively embryonic clear outcomes and objectives are presently limited.

5 EDF ENERGY

Similar to Centrica, EDF Energy has made significant changes to its corporate governance structure over recent years and its climate change policy has now been formalised. As such its systems are relatively new and less mature than leaders within this competitive set. However, it has recently launched quantitative targets, of which its carbon intensity objectives appear quite strict. Furthermore, the CEO endorses the company's CO₂ reduction by outlining the competitive advantage of making such moves. In a valuable addition to its own governance structure the company has established an external advisory panel to inform and guide its business strategy.

There is evidence that EDF Energy's top-level commitment is adequately filtering throughout the company. Climate change roadshows have been conducted which have led to energy 'champions' putting themselves forward and the establishment of an innovative network.

The recent, positive steps taken by EDF Energy put the company in a good position going forward, and its overall scores and rating have improved on previous years. Compared with the other subsidiaries within its parent company, it appears to be taking a leadership position. However, it presently has the highest carbon intensity of its peers and has reported incremental increases in recent years. While the company has outlined a relatively strong renewable and fossil fuel efficiency investment programme, presently it has a low renewables capacity portfolio. Indeed, the company has predicted its own emissions will continue to rise in a limited period as it makes a shift to increased gas production.

Furthermore, its parent company EDF have recently announced plans for new nuclear plants in Britain, in conjunction with Areva. The two companies recently launched a website on which their EPR reactor is shown as part of the approval process for new nuclear facilities.

3 E.ON UK

E.ON UK has recently increased its level of public disclosure on climate change issues (and has a high-profile media advertising campaign). In terms of reinforcing its public commitments, the company has established a new governance policy to establish clear line management responsibilities. Of the subsidiaries in the group, E.ON UK appears to be taking a leadership approach to climate change management. In the UK the CSR

council is supported by a newly created position, Head of Climate Change. This individual has a background in government which puts the company in a good position to understand and respond to regulatory changes, as well as implying adequate dialogue processes are in place.

It is clear that E.ON UK has implemented robust processes to formulate its targets. Analytical scenarios regarding time horizons and potential financial constraints have led to challenging targets being established. Further post-2012 targets are currently being reviewed at group level.

The company illustrates a number of proactive company initiatives aimed at improving employee awareness. These include the appointment of over 300 'low carbon champions', energy audits at five pilot sites, and green travel incentive schemes. E.ON UK has strong internal (business travel and office consumption) monitoring schemes.

In the last year, the company has been identified as the largest polluter in the UK of GHG in terms of absolute emissions. In 2006, its carbon intensity increased by 2.5% on the previous year (largely because of the increase in coal-fire generation). Despite the company's investment in renewables projects (approximately £200 million over the last five years) its actual wind farm capacity has been constant at 197 MW between 2004 and 2006. E.ON UK also recently announced plans to build an offshore wind farm, comprising 83 turbines, north of the Humber estuary.

Of the competitive set, E.ON UK demonstrates a leading approach to technology development with a wide-ranging R&D programme. Although precise levels of investment are not known, its power technology business (recently restructured under the label 'changing energy') provides specialist research, engineering and technical services. This includes its major low carbon initiative, 'e.Locator', which focuses on cleaner fossil fuel generation, renewables, nuclear power, and storage and transmission of energy. In addition, distributed generation is related to its retail business. Areas include micro-generation, micro-CHP, demand-side management and low carbon buildings. While tangible outcomes are minimal, E.ON UK's strategy appears sound – to have a long-term development phase so that it can build its product base to be considered profitable.

6 RWE NPOWER

RWE npower appears to have the least progressive and least mature climate change-oriented policies, governance structures and target-setting procedures of this competitive set. In contrast to other UK-based subsidiaries with European parent companies, it does not appear to be taking a lead on the issue within the group. Its objectives are less formalised but wide-ranging; it has indicated significant investments for renewable energy, energy efficiency in its coal-fired and gas-fired CCGTs, and CHP purchase. The company's targets for emissions reduction appear to be driven by expectations of the development of the EU ETS rather than a proactive business strategy.

In terms of analysing the culture of the company, the CEO appears to be the least vocal and visible within this peer group. Furthermore, RWE npower has employee

engagement exercises in place including CR surveys – but innovative, climate change-oriented internal awareness programmes appear limited.

In 2006, the company's level of renewable generation capacity increased significantly on the previous year although this was due largely to an increase in co-fire biomass generation. Consent for renewable generation achieved in 2006 was significantly lower than the company anticipated. Furthermore, the analysis of planned consent suggests that it will remain in the lower tier with regard to renewable capacity in the short term. Also, the company is in the lower tier regarding RO compliance and EU ETS allocated/emissions ratio. While it can demonstrate leading practices such as stakeholder identification and dialogues processes, the company's development and launch of relevant initiatives – e.g. progress in smart-metering – appears to be behind others in the competitive set.

2 SCOTTISH POWER

Iberdola SA is recognised as one of the leading companies in the global sector in terms of renewable energy commitment and growth. It has described its recent integration with ScottishPower as a 'strategic fit' and the analysis of the company in this review largely concurs with that description. ScottishPower illustrates one of the more progressive climate change business strategies. This is reinforced through a clear, mature governance structure whereby relevant issues appear to be incorporated into its overall internal risk control management procedures. Since 1999, the company has an environmental advisory forum in place which is considered to have weight by influencing senior management decisions. Given the advisory group's role, Iberdola has indicated that it is likely to adopt a similar system going forward.

ScottishPower has a high level of RO compliance, and is in the higher tier of allowances/emissions ratio under the EU ETS. The company is supportive of stricter governmental targets regarding renewable electricity supply. As a percentage of its overall capacity, Scottish Power's planned growth of renewables is the highest within the competitive set. Therefore, the company appears best placed to meet its own, and regulatory requirements for, renewables generation.

Similar to the majority of companies in the competitive set, Scottish Power is involved in micro-generation (although its key projects are still in monitoring and pilot phases). However, the company is one of the least proactive towards wider energy services. Furthermore, while it actively supports the development of low carbon power generation through pilot and demonstration projects, it is not one of the leading companies in terms of commitment and involvement in CCS technology.

4 SSE

SSE's environmental policy has recently been reviewed, which has relevance for climate change management in terms of understanding the science and supporting precautionary actions to minimise the release of carbon from the use of fossil fuels. Stricter, quantitative targets have recently been established. Furthermore, SSE indicates a clear strategy for involvement in industry initiatives and partnerships.

In 2006, SSE reported the largest increase in its carbon intensity on the previous year compared with the other companies in this competitive set. The company also has had a year-on-year increase in the last four years. Consequently, SSE has a low score under the emissions trends indicator. However, recently disclosed data for 2007 suggests that its 2006 carbon intensity represents a peak, and that SSE is now on a downward trend. SSE is in the second tier of this competitive set with regard to RO compliance and allowances/emissions ratio under the EU ETS.

The company's growth in renewable capacity has slowed in recent years but the amount of wind energy planned, consented or under construction suggests that SSE will remain one of the leading players in the near-term.

Conclusions

The nature of the utilities sector, particularly in the UK, is one that is highly regulated. In addition, in terms of long-term asset infrastructure investment, companies are guided to a certain extent by the overall UK government energy strategy. This is illustrated by the government's ambiguous commitments to the role of nuclear fuel in the UK energy mix.

Recognising this, combined with conclusions of previous *Generating Climate Change* reports, means that there is often little to distinguish between companies in a number of key areas. Therefore, the main aim of this year's review was to identify areas of climate change policy, management and performance where leading companies can differentiate themselves from their peers and go beyond legislation and regulatory requirements, and government objectives. These 'first-mover' companies are adaptable and better placed to respond to consumer demands, and have ultimately identified the competitive advantage of a shift towards a low-carbon economy.

The past 18 months have seen a step-change in public awareness, media attention and government intent (UK, European and international) regarding climate change. Similarly, for a number of companies in this review there has been a step-change in the level of disclosure of the issue, both in public reporting focus and advertising campaigns. By formalising policies; implementing clearer, specific governance structures; and demonstrating top-level commitment, companies can demonstrate that addressing climate change is not simply a public relations exercise.

However, one of the most significant challenges for the UK utilities sector is to demonstrate progress towards meeting its commitments regarding GHG reduction, and renewables capacity growth. Given that policies, systems and initiatives take time to mature and filter throughout an organisation, there is a certain amount of respite regarding the dichotomy between policy commitment and performance. This may go some way to justify the worrying trend of increasing carbon emissions. Consequently, if commitments are to be realised, then 2006 should represent a peak.

While all companies can provide evidence of where they are providing wider energy services, there is a large variation within the competitive set. Although Centrica is

considered the leader in terms of a formalised business model, since it is a recent development, progress and effectiveness is difficult to ascertain. This area in particular will receive increasing attention in forthcoming reports.

Finally, it is interesting to note that in the two assessment work-streams carried out in parallel by Innovest and WWF-UK, there are striking symmetries between the overall findings in both reports. There are also some marked differences found between what a given company states it is planning to do in its public reporting, and what it is lobbying for in government. For more of an insight into each of the six power companies' public policy positions on important energy and climate change issues, see the 'sister' report written by WWF-UK.

Glossary

Carbon Capture and Storage (CCS): The process of capturing and storing carbon burnt from fossil fuels. Carbon stored in soil, underground, ocean water or vegetation to prevent/slow down its release into the atmosphere is also referred to as carbon sequestration.

CERs (Certified Emissions Reduction Units): Credits received for investing and implementing a CDM project. The number of CERs received from a project is proportional to the number of tons of CO₂ equivalent prevented from being emitted in the course of project realisation.

Clean Development Mechanism (CDM): Denotes project-based emissions reduction activities carried by various commercial entities from emissions-capped countries in developing, non-capped states.

Defra: The Department for Environment Food and Rural Affairs.

Demand Side Management: Measures established and financed by energy suppliers to induce more efficient energy use on the part of utility customers. (See also Energy Efficiency Commitment below).

Emissions Reduction Allowance: The unit of emissions trade in a 'capped' system, which entitles a polluter to emit a given quantity of a specific discharge.

Emissions Reduction Credit: An emissions reduction unit denoting discharge reduction in excess of the allowance. Credits are usually generated as a result of implementing an emissions reduction project.

Emissions Trading: A regulation allowing companies to trade emission reductions with another facility/company or within the marketplace subject to the presence of emissions reduction price differentials between facilities or companies involved. The EU Emissions Trading Scheme (ETS) places a CO₂ emission cap on all participant sectors. Under the cap, each respective sector receives a quota of emissions allowances. Emissions trading allows commercial entities with higher emissions abatement costs to stay under the cap by purchasing emissions reduction allowances and/or emissions reduction credits from the entities with lower marginal emissions abatement costs.

Energy Efficiency Commitment (EEC): The UK regulation requiring electricity/energy suppliers to achieve a certain target in domestic/residential customer energy efficiency. The regulation is aimed at reducing carbon emissions from British households. The first phase of the EEC is operational in 2002-2005, where the overall Energy Efficiency (EE) target is set at 62 TWh over three years, which corresponds to the cumulative household emissions reductions of 1%. To ensure that low-income customers can benefit from EE measures promoted by energy suppliers, at least 50% of all energy savings have to be achieved from households in the low-income group (a 'Priority Group' receiving income-related tax benefits and credits).

Energy Services: A combined provision of products accompanying the basic 'heating and powering' services of the UK utilities, such as metering of energy use, energy efficiency premise auditing, premise insulation, energy service billing and other products bundled into one 'service provision basket'. Energy service customers can range from individual households to large commercial entities.

EUA: Emissions Reduction Allowance specific to the EU ETS. This emissions allowance is unique to the EU ETS since AAUs allocated to countries under the Kyoto Protocol are not directly traded in the European system. The EUAs were 'separated' from Kyoto's allowances as

Europeans decided that the EU ETS would be implemented regardless of whether the Kyoto Protocol went into effect.

Grandfathering: Process of assigning individual company GHG emissions allowances on the basis of historical level/ intensity of GHG emissions.

Green Tariffs: Tariff when an electricity supplier matches all energy used by its customers (or a percentage of such usage) by renewable energy. Under 'green tariffs', electricity consumers pay a premium for their electricity use, and the energy supplier invests such a premium in new renewable energy developments. Certain utilities match consumers' premiums by investing an equal share of corporate funds in new renewables capacity; others use purely the premium supplied by the customers.

Joint Implementation (JI): A project-based policy allowing companies from the GHG emissions-capped countries within the OECD to invest in emissions reduction in capped states in Eastern Europe and the former Soviet Union. By exercising this form of 'FDI', emissions-capped companies in the OECD can claim emissions reduction rights on the projects achieved with lower emissions abatement costs.

National Allocation Plan: A regulation assigning specific amounts of carbon allowances to companies falling within the EU-ETS capped sectors.

Ofgem: The Office of Gas and Electricity Markets.

Power Generation Capacity: The maximum amount of electricity production possible by a given power station or a strictly specified type of power generating technology per specified unit of time.

Renewable Obligation: Legislative order (came into force in April 2002), which requires licensed electricity suppliers in the UK to source at least part of their electricity from renewable generation. The Renewable Obligation (RO) starts at 3% of total electricity supplied to customers in the UK in 2002/2003 and reaches 10.4% in 2010/2011. Any licensed electricity supplier can meet its Obligation by producing ROCs (Renewable Obligation Certificates) or by making a 'buy-out' payment to the fund re-investing such a payment back into the UK renewables system.

Renewable Obligation Certificate (ROC): a certificate guaranteeing that a given generating station has produced a specified 'unit' (amount) of electricity from an approved renewable energy source and that such power station has supplied the specified amount of renewable electricity to the UK power consumers. In Scotland ROCs are called SROCs, or Scottish Renewable Obligation Certificates.

Smart Metering: System for measuring electricity with the aim of providing customers with clearer information on their consumption.

About WWF-UK

WWF-UK is part of the WWF global network. Its mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with the nature by:

- conserving the world's biological diversity
- ensuring that the use of renewable resources is sustainable
- promoting the reduction of pollution and wasteful consumption.

About Innovest Strategic Value Advisors

Innovest Strategic Value Advisors (Innovest) is an international investment research and advisory firm specialising in analysing companies' performance on environmental, social and strategic governance issues, with a particular focus on their impact on competitiveness and profitability.

Innovest is dedicated to the production of high-quality, value-added research and advisory services in the field of sustainability and finance. Due to the potential financial implications of climate change and the cross-sector nature of this risk, it founded a specialised carbon finance practice in order to obtain a detailed understanding of the financial, and other, implications of climate change.

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Acknowledgements

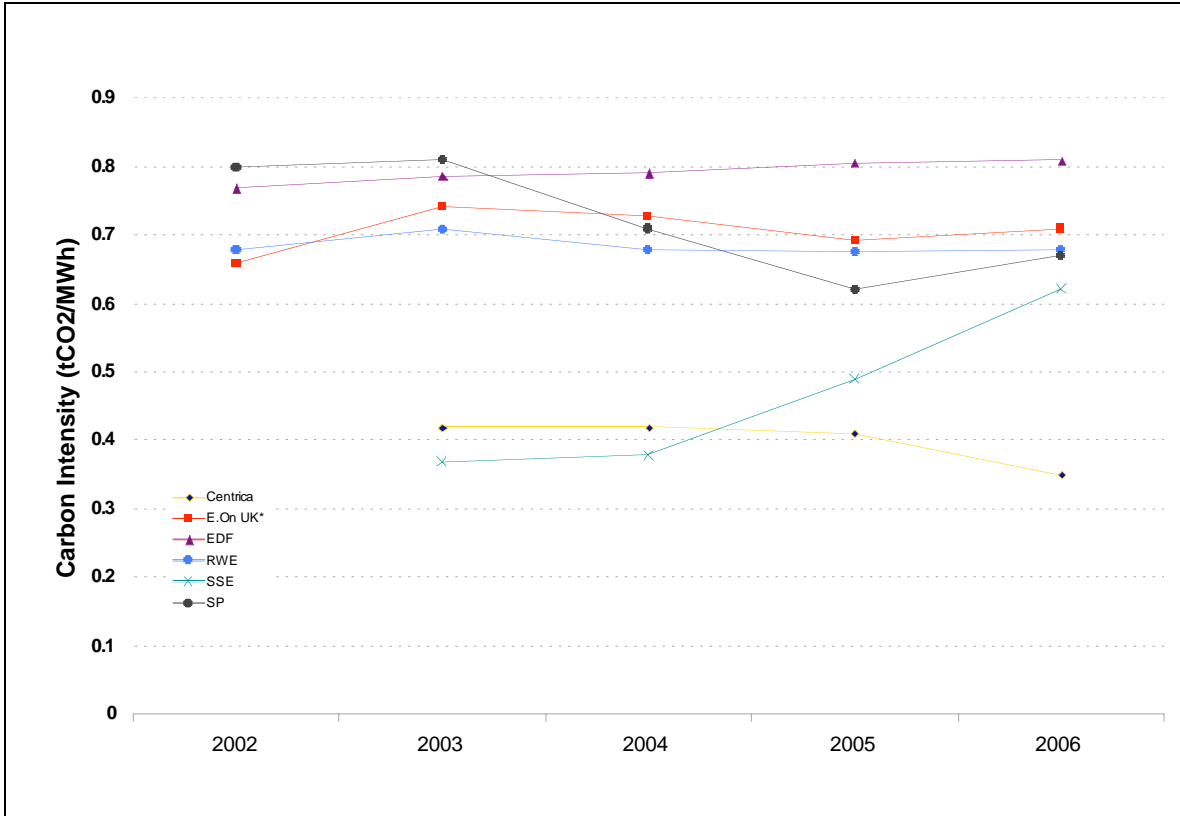
WWF-UK and Innovest thank the six companies featured in this report for their participation and timely feedback. Their continued input ensures informed, balanced analysis and is an integral part of stakeholder dialogue.

Disclaimer

The evidence referenced in this report is based on research undertaken by Innovest Strategic Value Advisors (Innovest) on whom WWF-UK has relied for its accuracy. The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of WWF-UK.

Appendix 1

Graph 1: a graph to show how the carbon intensity (tCO₂/MWh) for each of the main six UK power companies has changed with time (2002-2006).



(Source: this graph has been produced by Innovest Strategic Value Advisors using data from the annual reports, the EU ETS and other official emissions data registries).



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UK Power Giants: Generating Climate Change 2007
visit wwf.org.uk/researcher/issues/climatechange

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