The Carbon Trust
2006/07
Performance Assessment Methodology

July 2007

Contents

1 Introduction

The Carbon Trust undertakes an annual assessment of its impact at the end of the financial year. This assessment reports the total CO_2 saved as a result of the actions our customers have taken, the potential CO_2 savings from our investments in developing low carbon technologies, and the efficiency with which these have been achieved. We also present highlights of our work helping organisations to respond to climate change.

The high level results of the impact assessment are presented in the Performance Assessment section of our Annual Report. In addition, the results help shape the business planning decisions we take throughout the year.

This document provides an overview of the impact assessment process for each area of our activity and in detail by product group. It also includes a brief comparison of our processes to other greenhouse gas reporting methodologies.

2 Carbon Trust Solutions

2.1 Methodology overview

In our Annual Report, we present CO_2 savings from our Solutions activities in five main product groups: services for directly delivered advice (including Carbon Management for large companies, local authorities and higher education institutions; Carbon Management Energy Efficiency services for large energy users; and on-site energy surveys); interest-free energy-efficiency loans to SMEs; general advice (including Carbon Trust website, helpline and publications); projects with Trade and Professional Bodies; and Salix Finance's support for the public sector. Highlights from our Energy Efficiency Accreditation Scheme are presented but not included in the main tables.

The primary sources for our impact assessment of services for large energy users and for on-site energy surveys are the detailed reports and advice prepared for each of our customers. We require our consultants to record all the recommendations that they have agreed with our customers during the year, and to provide important additional information on the company and/or site, such as its energy consumption, costs and fuel mix. This information is submitted to us through standardised tools and data capture templates and captured centrally in our systems (the Close Out database) for checking and analysis. For our main services, our Account Management team uses this information to contact customers from previous periods and determine implementation of CO_2 savings on a recommendation-by-recommendation basis.

Source information used to assess our general advice and our work with trade and professional bodies is derived from surveys of customers.

The basic source data for the financial incentives impact analysis was taken from the log maintained throughout the financial year by the scheme staff.

All the activities are assessed using four key metrics:
- Annualised CO_2 emissions saved in $MtCO_2$ or $ktCO_2$;
- Annual Cost Effectiveness (cost of programme/ annual CO_2 savings) in £/tCO_2;
- Lifetime Cost Effectiveness (cost of programme/ lifetime CO_2 savings) in £/tCO_2; and
- Lifetime Cost Benefit (customer capital expenditure + cost of programme – net present value of lifetime energy savings) / (lifetime CO_2 savings) in £, where a negative number indicates an overall saving benefit. Variable costs and benefits to the customer are not included in this calculation.

These metrics allow us to explain our total impact, the efficiency with which we spend our resources and the attractiveness of energy saving to business and the public sector in the UK due to the overall net benefit represented by the actions recommended.

In order to produce these metrics we quantify:
- Estimated CO_2 and £ savings from implementation of opportunities as reported to us by our Customers during the financial year;
- Estimated capital expenditure incurred by customers implementing those opportunities; and
- Costs of running the programme during the financial year, including allocated central costs. However, we exclude certain costs from our cost effectiveness and cost benefit calculations including:
  - Irrecoverable VAT (representing 8% of total Carbon Trust costs). We exclude VAT from our cost-effectiveness calculations in order to ensure comparability with other organisations operating in this area; public sector organisations are exempt from VAT, and other private sector organisations are able to recover VAT;
  - Central corporate costs which cannot be allocated to any of our business areas (representing 1% of total Carbon Trust costs);
  - Costs associated with running the offices in our devolved administrations (representing 2% of total Carbon Trust costs). As with our central corporate costs, these are costs not related to direct activity, but to similar corporate activities in the devolved administrations.

The approach to gathering this data varies by product, however, the output metrics remain the same.

2.2 Key assumptions

Data capture for Carbon Management, Carbon Management Energy Efficiency for large energy users and on-site energy surveys
Our consultants are required to complete pre-approved templates to record the recommendation outcomes for each of the customers that they work with. Details are captured only when the survey is completed or an action plan is agreed by the customer, and are reconciled with work done in our financial accounts, to ensure that we only recognise CO_2 savings at an appropriate point.

The templates require:
- Completion of company/site profile – e.g. region/country location, energy bill, industry sector;
- Detailed description of recommendations being made;
- Classification of each recommendation by type according to a Carbon Trust agreed taxonomy;
- Estimation of potential kwh saving, CO_2 saving (using agreed conversion factors derived from independent analysis of best-practice and review of literature), and £ saving (using the customer's specific energy data) to be made for each recommendation; and
- Estimated capital cost required to implement the recommendation, where relevant. Note that in many cases, no Capex is required to implement savings. In some other cases, Capex may not be recorded because it is difficult in practice for our consultants to quantify.

Our recommendations can relate to both direct CO_2 savings made by customers (e.g. reduced on-site fuel consumption) and indirect savings (e.g. electricity imports).

Our methodology calculates savings from individual recommendations as a result of the Carbon Trust's intervention, using current emission levels as the baseline. This may give higher savings compared to savings measured against a business as usual trajectory for carbon emissions (as required by Defra's Guidance on Greenhouse Gas Policy Evaluation and Appraisal in Government Departments).

Definition of implemented CO2 savings
Our impact assessment process reports the estimated CO_2 saved, reported to us by our customers from recommendations implemented in the current year, or implemented in previous financial years but not previously reported to us. This is not necessarily related to the identified opportunities and the programme expenditure in the current year. Cost effectiveness is calculated using the programme costs incurred in the current year and the implemented savings reported in the current year.

Implementation by our customers is determined by our Account Management team through face-to-face or telephone contact, in which we ask about the progress of each CO_2 saving recommendation that we have made. We aim to contact all account-managed customers directly to establish what carbon-saving measures they have implemented. Our account managers enter data from customers on what carbon-saving measures have been implemented into our "Close Out" database. Our policy is to only recognise savings when the customer tells us they have implemented the carbon-saving recommendation. We estimate the carbon savings made by General Service customers, who are not account managed, based on a detailed telephone survey of a sample of these customers. The results of the survey are then independently analysed to provide an estimate of the carbon-savings achieved, and these estimates are scaled-up to the total population of our General Service customers.

Lifetime of CO_2 and cost savings
In order to determine the expected lifetime of CO_2 and energy savings, it is necessary to understand the particular technology being recommended by a measure and the nature of the type of action undertaken. To cater for this, each recommendation must be classified according to a predefined taxonomy which details the technology and action types relevant to the recommendation proposed. Each entry in the taxonomy has an associated specific lifetime 'persistence factor' that indicates the period over which it is expected to deliver savings.

The persistence factors are determined by:
1. Maximum lifetime of action / equipment;
2. Savings degradation rate (due to factors such as poor maintenance).

These inputs are used to calculate a decay curve, where the area under the decay curve represents the persisted (or lifetime) savings. This persistence factor is applied to the annual CO_2 saving figure to derive the lifetime CO_2 savings on a consistent basis, and is used across all our products.

We recognise that monetary savings for our customers in the future are not the same as savings that they can make now. We therefore apply a discount factor to the value of lifetime energy savings in £ to show them at their net present value. When calculating this, we adapt each persistence factor to take account of the chosen discount rate (currently 3.5% as per the Treasury Green Book).

The persistence factors used by the Carbon Trust are deliberately conservative and were reviewed in 2005/06 against both best available literature and the practical experience of technology experts to ensure that they remained appropriate.

Classification of technology and action types requires expert judgement by our consultants and as such is open to differences of opinion. As part of our impact assessment process we have reviewed the classification of:

- All recommendations with lifetime >15 years;
- All recommendations with >5,000 tonnes annualised savings;
- All recommendations with >20,000 tonnes lifetime savings;
- A representative sample of all other recommendations.

These reviews concluded that there was no material misstatement of lifetime CO_2 savings due to any such judgements.

In 2006/07 we commissioned a third party to visit a sample of our 2005/06 customers of directly delivered advice to verify the CO_2 savings that had been achieved compared to the data reported to us by our customers, and recognised in our 2005/06 impact assessment. Due to the large number of customers we would need to include to perform a statistically valid analysis, and the high cost to our customers and to the Carbon Trust of doing so, we deliberately designed the study to be a quick review rather than a statistically representative verification of our reported results.

Overall the study concluded that whilst a large number of savings have been validated, there were a number of exceptions in the sample which confirmed that there are inherent risks relating to reliance on the data reported to us by customers. We therefore plan to identify ways of addressing this issue during 2007/08 and beyond, including greater transparency and checks on data reported to us by our customers.

2.3 Detailed description of methodology by product

This section sets out the approach that we took to assess CO_2 savings from each product area in 2006/07.

Carbon Management and Carbon Management Energy Efficiency services for large users (including local authorities and higher education institutions)
Using the details of action plans captured by our consultants, we reported the total new identified CO_2 and £ savings potential from our work with large energy users in 2006/07, and any progress made to date on implementation of these recommendations. We also extracted all the recommendation information for all our customers from previous financial years. We then contacted all of these customers in a follow up exercise to ask them which recommendations they had implemented during 2006/07 (or in prior years but which we had not previously reported) and the CO_2 savings, cost-savings and capital costs arising. We asked for actual data where available, otherwise we have assumed the estimated savings and costs from the consultant reports. Our account managers entered the data directly into our Close Out database.

We aim to contact our entire customer base within a selected period for these services, and in 2006/07 we reached ~95% of all our customers from 2006/07. Implemented savings were recorded for each company individually and we did not recognise any savings from the customers that we could not reach.

Both identified and implemented savings were checked internally for exceptions, errors and anomalies to ensure that the results we reported were consistent and prudent. Examples of checks included agreed expectation ranges for energy prices and CO_2 emission factors and for energy savings as a proportion of total site consumption.

We also routinely conduct technical reviews of a sample of 30% of consultant reports. This exercise is performed by independent consultants. We use this as a control over the quality and consistency of our consultants work. Those consultants performing below expectations are monitored through additional reviews until their work improves.

Lifetime savings were calculated for each recommendation using the persistence factors applicable to each technology and action type.

On-site energy surveys
As with our products for large energy users, we reported the total newly identified CO_2 and £ savings potential from the reports delivered through our on-site energy survey work with customers in 2006/07.

We follow-up with customers 6-18 months post-survey, as there may be a time delay before recommendations are implemented. In this year's assessment we followed-up surveys completed after 1st October 2005 (no savings had previously been reported from these surveys). Some reported savings may therefore have been implemented towards the end of the last financial year, but never previously reported. Our account managers tried to contact all customers. We managed to speak to ~60% of these customers and captured data on implementation of recommendations directly into our Close Out database. This year, we are only reporting results that have been directly reported to us as implemented by our customers, whereas in previous years we extrapolated the impact of our on-site energy surveys based on results from a sample.

Similar technical reviews and checks for errors and exceptions as made on the data from our Carbon Management and Carbon Management Energy Efficiency services were also made for these products.

Trade and professional bodies
Each year, we fund projects delivered by trade and professional bodies to reduce CO_2 emissions among their members and customers. These projects produce emissions reductions in the years following funding, and hence we are reporting emission reductions made in 2006/07 from projects funded in 2005/06, and incremental emissions reductions from projects funded in earlier years.

As part of their agreement with us, projects are required to report emission reductions implemented for two years following the funding year, in a format agreed with the Carbon Trust. Due to the variety of projects funded, reported savings are estimated in a variety of ways, including the use of direct reporting from participating member organisations and benchmark estimates based on extrapolated data from representative samples of the bodies' memberships. This is different from our account managers obtaining information directly from customers of the Carbon Trust's directly delivered activities (e.g. on-site energy surveys). We have reviewed all reporting from participants and, where necessary, adjusted to ensure the results we report are conservative.

We have used benchmarks from our directly delivered services to estimate the costs and cost-savings associated with these projects.

General advice
Our General advice comprises the Carbon Trust website, helpline and the publications that can be ordered from them.

In order to conduct the evaluation of general advice we required a list of unique users of the services. The source data was extracted from our CRM system and from our web registration records. These records were filtered so that they contained the complete set of companies / sites that had made use of the website, helpline and publications but which had not worked with other Carbon Trust services, so duplication of reported savings was avoided. Secondly we filtered the list to exclude duplicate users and all consultants, engineers, architects, students etc. who use the helpline/ website for professional or study purposes, but who do not themselves make energy savings. The final edited list comprised the estimated total unique customers of general advice in 2006/07.

To estimate carbon-savings made by these customers, we applied a series of savings factors relating to industry type and location to the total population of users. These factors were developed in conjunction with independent experts, and based on a comprehensive telephone interview with a statistically significant proportion of users of the General Service, carried out in 2004/05. The telephone interviews allowed us to quantify the energy usage and energy savings of the companies surveyed. The survey sampled a number of contacts within each of 30 company types (due to the different energy usage profiles of these different company types). In addition the survey sampled a significant number of contacts within each of the countries (England, Northern Ireland, Wales, Scotland) within broad categories of Industry, Commerce and Public bodies. Overall the survey contacted 900 customers out of a possible total of 3,700. This resulted in a set of factors we have applied to the unique population of General Service users in 2006/07. Review with our independent experts has confirmed that these savings factors are still appropriate.

In order to scale up to the total population, we used industry sector information.

Savings were attributed to the Carbon Trust using two methods:
- High method: 'graduated basis': savings achieved by the company were attributed to Carbon Trust if they rated the Carbon Trust energy efficiency services 5 out of 10 or higher. The attributed level of saving was based on the score, i.e. 5 = 50%, 7 = 70% etc;
- Low method: 'consulted basis': savings attributed if the client said that the Carbon Trust was directly responsible for the company taking energy savings measures.

These two methods produced a high case and a low case result, which represent the difference between the high and low estimates of CO_2 savings and cost effectiveness metrics in the Annual Report results for the General Service, and for Carbon Trust Solutions as a whole.

Financial incentives: energy efficiency loans
The source data for the energy efficiency loans impact analysis is taken from the loans log maintained throughout the financial year by the scheme staff. The loans log contains critical data such as expected annual saving (tCO_2) by loan, expected £ saving and the value and term of the loan. The energy savings data in the log is submitted by the loan applicant and each is checked for technical feasibility by a team of independent consultants, who also calculate the CO_2 savings. The savings may be calculated using current or future energy projections as the baseline. This is appropriate in this case as the loan, and the resulting cost savings, may enable the recipient to e.g. expand production.

Lifetime CO_2 savings are determined by using the Carbon Trust's standard persistence factors. The log also contains a detailed description of the technology being funded, which is matched against the standard taxonomy to derive a persistence factor for each loan.

A model was used to work out the opportunity cost to the Carbon Trust of providing an interest free loan (at the Treasury 3.5% discount rate). The calculation is performed at a detailed level using the Net Present Value (NPV) of the monthly repayments of each loan according to the loan repayment terms. Note that the full capital value of the loan is not a cost as this is repaid, currently with a very low level of defaults.

The model also worked out the savings in £ associated with the energy savings, again based on the 3.5% discount rate. Note that for the sake of simplicity, the calculation assumed that the first year's savings occurred in 2006/07 and therefore did not discount them for the purposes of calculating NPV.

Salix Finance
The Carbon Trust also provides funding to Salix Finance Limited to provide interest-free loans to public sector bodies to enable them to invest in energy-efficient equipment.

The methodology used to report results for this activity was the same as used for the Carbon Trust energy efficiency loans. However, the Salix Finance version of the model has been slightly modified to allow for:
- 6 monthly repayment schedule (rather than monthly); and
- Loans with periods from 1 – 7 years.

Highlights of the Salix Finance impact assessment were reported in the Performance Assessment section of our Annual Report.

The Energy Efficiency Accreditation Scheme (EEAS)
Accreditation under the scheme is achieved by organisations meeting set standards that are independently assessed and moderated by the Energy Institute. A key element of the EEAS is that organisations must demonstrate during the accreditation and the three-yearly re-accreditation process that they have delivered savings in energy use. To estimate the annual savings achieved by the EEAS members we used the energy savings data submitted on accreditation for a sample of customers currently accredited and for all new accreditations in 2006/07. To ensure there was no double-counting of savings made under other Carbon Trust services, we did not include any of these CO2 savings in our overall reported figures for helping organisations to reduce carbon emissions.

3 Carbon Trust Innovations, Enterprises and Investments

This area of activity is assessed on a very different basis from our activities helping organisations to reduce carbon emissions now, as the projects funded are not designed to deliver any carbon savings for several years. By definition these projects are high risk and the range of possible outcomes is large.

As a result, we use a model of future impact, which assesses the potential CO_2 savings from projects funded by the Carbon Trust in 2010, 2020 and 2050. In 2006/07, we implemented a new Future Impact Estimation (F.I.E.) Methodology and Tool to improve the robustness of the carbon case for each project and ensure consistency across all future projects. This tool uses our Low Carbon Technology Assessment (LCTA) analysis of the carbon saving potential of various technologies. We updated the LCTA in 2006/07 based on a comprehensive review of international literature, working in conjunction with independent experts. The tool enables a top-down or bottom-up approach to estimate the potential UK CO_2 saving. We then estimate the impact of the Carbon Trust's involvement in the project on the probability of success (the 'uplift'). This is done either by considering the probability of reaching each of 6 defined milestones, or by identifying likely barriers to success and the probability of overcoming these barriers.

This model generates total potential CO_2 saved and cost efficiency metrics based on our funding provided to date and known ongoing commitments. This is not comparable with the metrics from our Solutions activities.

Given the inherent uncertainties of predicting future CO_2 savings, the model uses high and low end predictions of market potential to produce a range within which CO_2 savings are anticipated to fall.

As part of the Carbon Trust's assurance process, we commissioned independent consultants in May 2007 to review the Carbon Trust's overall approach, assumptions used, and a representative sample of individual projects. The review made some suggestions for clarifications in our analysis. We have now completed these, and as a result the review concluded that the methodology is fit for purpose, and our estimates of future savings are not unreasonable.

3.1 Detailed description of methodology

Our activities in this area are currently assessed based on three metrics:

- Potential annual CO_2 impact in 2010, 2020 and 2050 in $MtCO_2$;
- Cost effectiveness in 2010, 2020 and 2050 in £ / tCO_2; and
- Leverage expressed in £m.

The source data used was a list of all projects in which the Carbon Trust has invested already or to which we have committed funds from 2002 onwards. This covered:

- Our Research, Development and Demonstration activities carried out in the Open Call and Carbon Vision initiatives;
- Venture Capital;
- Incubators; and
- Technology Acceleration projects.

Costs for the calculation of cost effectiveness comprised the total committed funds plus an assumed level of 13% for Carbon Trust programme costs (calculated as programme costs in 2006/07 as a percentage of total funds committed to ongoing projects in 2006/07).

We report leverage in £m, which is a simple comparison of funds attracted from other sources into low carbon technology vs. funds from the Carbon Trust. This is also measured on a cumulative basis and includes all our activities in this area with the exception of technology acceleration projects which are designed to be mainly funded by the Carbon Trust.

The model considers the potential impact of each project and is based on three underlying drivers:

- The technical potential CO_2 savings in the UK of the specific low carbon technology related to the project at 2010, 2020 and 2050. The data in the model are based on our Low Carbon Technology Assessment, which defines the total CO_2 emission reduction potential of 54 technologies in the UK. These data were reviewed in conjunction with independent technology experts in 2006/07 against latest available data and savings;
- The market penetration potential of each project compared to the total technical potential;
- The Carbon Trust's impact in realising these savings. These data represent likely success rates, with and without the Carbon Trust's intervention, and are based on benchmark data from other high technology industries (in particular the pharmaceutical industry, for which significant data are available), moderated through a series of workshops.

The reported savings are gross additional savings attributable to the Carbon Trust; they do not take into account either displacement or multiplier effects. The savings are those directly attributable to the Carbon Trust's activities and we do not seek to estimate any indirect benefits, such as from dissemination or market transformation. These effects are explained in section 3.1.1 below.

3.1.1 Underlying assumptions

There will inevitably be a degree of uncertainty in estimating future impacts and assumptions need to be made. Predicting events as far ahead as 2020 and 2050 comes with increasing uncertainty and estimated savings for this period therefore need to be treated with a degree of caution.

On a general level, a reasonably supportive environment (e.g. favourable economic and political circumstances) is assumed and certain technological barriers are anticipated to be overcome by 2050.

Our methodology calculates additional savings from individual projects as a result of Carbon Trust intervention, using current emission levels as the baseline. This may give higher savings compared to savings measured against a business as usual trajectory for carbon emissions. Our current approach is consistent with that used by other DTI R&D programmes, and with the approach of the US Department of Energy in evaluating its programmes.

We also highlight the following effects that could have a positive or negative impact on the savings estimates, but which are not taken into account in the model, due to lack of suitable data or other complexities:

- Persistence effects, including the maximum lifetime of a particular technology or degradation due to poor maintenance;
- Other effects, including positive/negative rebound effects, effects of demonstrations or potential transformation effects.

Each technology area within our Low Carbon Technology Assessment (LCTA) has potential carbon savings associated with it, based on analysis of available market data. These assumptions will be monitored and reviewed every 2-3 years.

The probability of successfully reaching each milestone is based on data from other high technology industries, the most comprehensive of which comes from the pharmaceutical industry. The independent review of the F.I.E. Tool identified a possible under-reporting of savings due to reliance on the pharmaceutical data. The Carbon Trust will look to identify more suitable information if it becomes available.

Overall, the independent review found the assumptions to be comprehensive, coherent and sensible.

3.1.2 The F.I.E. model

To calculate the UK CO_2 saving potential for 2010, 2020 and 2050, one of 2 options is used:

- A bottom-up approach, which uses aspired market volumes and estimated CO_2 savings per unit (e.g. kWh, number of wind turbines etc);
- A top-down approach, which uses estimates of the % of total UK technical potential from a selected technology area that could be impacted by the initiative.

A bottom-up approach is used wherever possible (and is also sense-checked with a top-down approach). For either approach, high and low value estimates are entered, to provide a range within which savings are anticipated to fall.

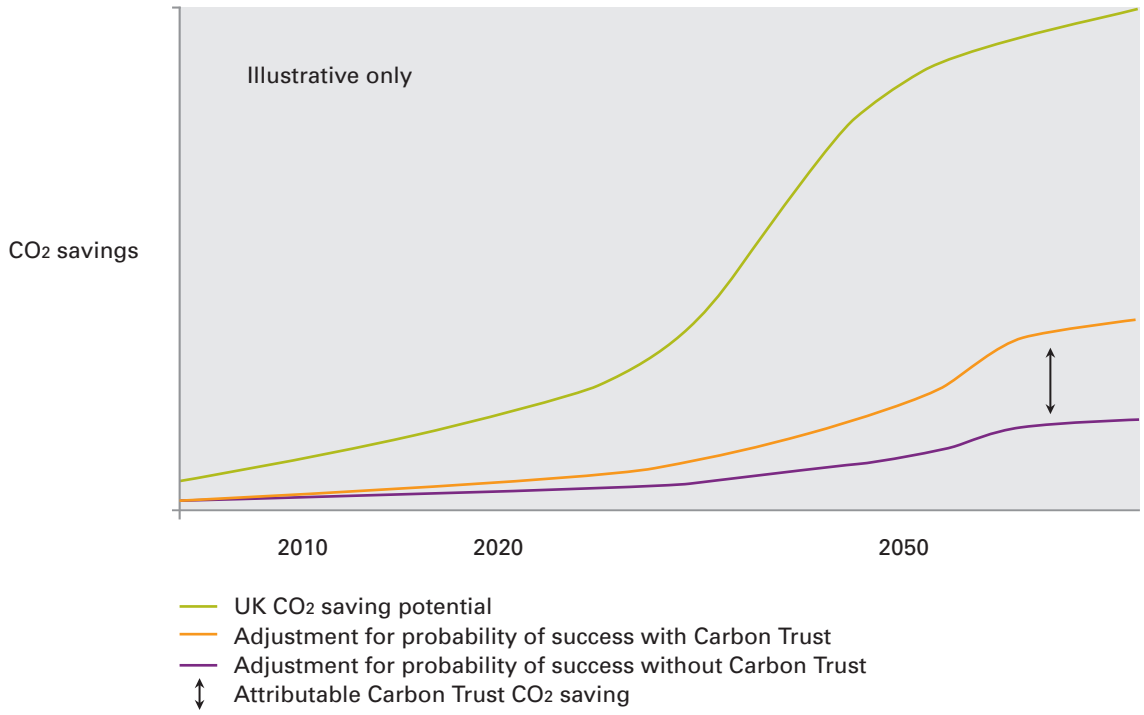
The probability of achieving this saving is then calculated, again using one of two methods, depending on the type of intervention:

- A "Milestones" approach, which involves assigning the probability of the CO_2 aspirations being achieved with and without Carbon Trust intervention at each of 6 defined milestones that must be reached for a project to successfully reach commercialisation. This approach is generally preferable for projects relating to particular companies/ research groups;
- A "Barriers" approach, which involves identifying the barriers that must be overcome to achieve the CO_2 aspirations and the probability of this happening with and without Carbon Trust intervention. This approach is generally preferable for projects impacting multiple companies or whole markets.

Once these probabilities have been entered, the uplift of the Carbon Trust's contribution is calculated by subtracting the probability-adjusted carbon savings with the Carbon Trust's intervention from that without the Carbon Trust's intervention.

Figure 1 provides an illustration of the calculation which takes place in the F.I.E. model for an individual technology project.

Figure 1 – Calculation of Carbon Trust contribution to CO_2 savings in 2010, 2020 and 2050



3.2 Future improvements

The following improvements will be addressed in 2007/08:

- Periodic review of the assumptions for each funded project to ensure they remain appropriate, including a more pro-active approach to ensuring the carbon case of projects is reviewed at key milestones as a matter of course, rather than by exception;
- A general review of verification processes to ensure consistent, defined checks take place on recorded data;
- Improve the transparency of assumptions by further documentation in the tool.

4 Carbon Trust Insights

4.1 Methodology overview

We do not formally measure our impact in potential CO_2 emission reductions for our activities helping organisations to respond to climate change. Our current view is that it is difficult to estimate these impacts accurately due to uncertainties relating to: identifying the population that has taken action as a result of these activities; understanding what actions have been taken, and quantifying the resulting CO_2 emissions reductions; and estimating the degree to which these savings are additional. We will continue to work on methodologies that can reduce these uncertainties, and may estimate savings from these activities in future impact assessments. The results presented in our Annual Report are therefore conservative.

We conduct an annual survey on business attitudes to climate change mitigation issues and the Carbon Trust in this context to help ensure our relevance and to inform our work. We also carry out pre- and post-communication campaign surveys to measure the success of our work and help plan further relevant and successful campaigns.

In 2006/07 our survey covered the following areas:

- Current business and environment issues;
- Recognition and effectiveness of Carbon Trust advertising;
- Familiarity and favourability of the Carbon Trust; and
- Recognition of and propensity to act on business and environmental issues.

The survey conducted over 550 interviews across all groups of our target audiences. The benchmark used to assess progress was a similar study carried out in 2005/06. Highlights of the results have been presented in the Annual Report.

5 Carbon Trust reporting and other methodologies

5.1 Comparison to other greenhouse gas reporting methodologies

In general terms, there are a number of common elements to most internationally-recognised standards for greenhouse gas reporting; such as baseline development, monitoring and reporting plans and independent verification of CO_2 savings. Existing frameworks for verification are designed to operate at a much larger scale than the average individual Carbon Trust recommendation, and therefore the Carbon Trust processes for impact assessment, as described in this document, are less onerous than each of these requirements. Reporting methodologies which deal with very large projects (typically 50,000 tCO_2 and more) can afford to use independent verifiers for each project. It is not cost effective for us to use independent verifiers as we make a large number of recommendations (~33,500 in 2006/07 across our services for large energy users and on-site energy surveys), the majority of which are individually small in scale relative to other greenhouse gas saving initiatives, such as the Clean Development Mechanism. For example, the average recommendation size for our largest customers is ~700 tCO_2.

As a result, whilst our impact assessment reporting is based on detailed bottom-up information and is designed to be conservative, there are some differences between our impact assessment processes and common elements of other methodologies. In outline these are:

Element	Carbon Trust approach
1. Definition of action/ recommendation	We ask our consultants to record and calculate the CO_2 savings of the recommendations that they make using standard reporting tools and consistency in critical assumptions (e.g. fuel emission factors). However, we do not impose standardisation on the detailed assumptions and methodologies that they use to assess the impact of recommendations that they propose. We are investigating ways of defining our recommendations more formally to ensure that the method of quantification is consistent across all our customers and products.
2. Establishment of additionality and baseline development	The figures that we show are the CO_2 savings that our customers have made and reported to us compared with a baseline of their current energy use and CO_2 emissions. We only report CO_2 emissions savings due to actions taken by our customers based on the specific recommendations that we have provided to them. We do not seek to analyse the regulatory or other drivers that might have induced them to take the actions we recommended to them, either now or in the future.
3. Development of monitoring and reporting (M&R) plan	The baseline that we use to estimate the CO_2 savings against is specific to each customer's circumstance, and is derived from their current energy usage. Again, this represents the best quality information that we have, but will not take account of potential future changes in the customer's energy usage or purchasing decisions that might have taken place anyway.
4. Follow-up on M&R plan and determination of actual savings	We do not require the preparation of a detailed monitoring and reporting plan from our customers.
5. Independent verification of savings achieved each year	We do not require independent verification of our customers' savings by an external assurance provider or other independent expert.

5.2 Comparison to Defra's guidance on greenhouse gas policy evaluation and appraisal in government departments

There are some differences between the methodology that we use to report our CO_2 savings in our Annual Report and Defra's Guidance on Greenhouse Gas Policy Evaluation and Appraisal in Government Departments. The aim of Defra's guidance is to enable appraisal of the effectiveness of different policies. The purpose of our Annual Report is to report our performance as a company in the financial year to our stakeholders, as measured against our key indicators.

The key differences are:

- We report our results in CO_2 not carbon. In order to convert the CO_2 figures shown in our Annual Report to their carbon equivalent, they should be divided by 3.66 (44/12);
- We report the impact of our customers' actions as reported to us in the current financial year. These actions may have been implemented in the current or previous years and arise from the specific recommendations that we have provided to them using their current emissions as a baseline. We do not consider an alternative baseline of what CO_2 savings might have been made by our customers anyway in the absence of our intervention (i.e. 'business as usual');
- We report all CO_2 emission reductions that can reasonably be thought to be due to specific recommendations made by the Carbon Trust, and are deliberately conservative in estimating the value of each activity. We do not attribute the CO_2 savings that we report between our advice, regulations, policies or other factors that may have driven them to be realised, whereas Defra's guidance recommends the removal of policy overlap for appraisal purposes; and
- We do not report the projected cumulative impact of Carbon Trust activities at a future point in time (e.g. 2010), as our Annual Report is not intended to track progress towards Government targets.

In addition to the Performance Assessment section of the Annual Report, we report our results separately to Defra in a format consistent with the IAG guidelines to enable it to perform policy appraisal.

The Carbon Trust is a UK-wide company, with headquarters in London, and bases in Northern Ireland, Scotland, Wales and the English regions.

The Carbon Trust is a private company set up by Government in response to the threat of climate change, to accelerate the move to a low carbon economy.

The Carbon Trust works with UK business and the public sector to create practical business-focused solutions through its external work in five complementary areas: Insights, Solutions, Innovations, Enterprises and Investments. Together these help to explain, deliver, develop, create and finance low carbon enterprise.

The Carbon Trust is funded by the Department for Environment, Food and Rural Affairs (Defra), the Department for Business, Enterprise and Regulatory Reform, the Scottish Executive, the Welsh Assembly Government and Invest Northern Ireland.

Printed on paper containing a minimum of 75% de-inked post-consumer waste.

Published in the UK: August 2007.

CTC724

CARBON TRUST