



National Audit Office

**THE CARBON TRUST**  
Accelerating the move to a  
low carbon economy

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# SUMMARY

**1** The Carbon Trust has an important role in meeting the Government's target to reduce carbon dioxide emissions by 20 per cent from 592 million tonnes a year in 1990 to 474 million tonnes a year in 2010.<sup>1</sup> Businesses and other organisations account for a large proportion of the United Kingdom's carbon dioxide emissions.<sup>2</sup> Fiscal and economic measures, such as the Climate Change Levy and Climate Change Agreements<sup>3</sup>, may provide an incentive for organisations to reduce carbon dioxide emissions, but businesses and public sector organisations often need help to achieve them. The Carbon Trust was set up to take the lead on low carbon technology and innovation in the United Kingdom.<sup>4</sup> Its aim is to accelerate the transition to a low carbon economy by helping organisations reduce their current carbon dioxide emissions and developing

commercial low carbon technologies. Examples of the Carbon Trust's work include providing advice to the John Lewis Partnership which has prompted it to begin a programme of energy efficiency measures including replacing its refrigeration and lighting systems to reduce its energy costs by five to nine per cent, and encouraging the development of wave power technology by supporting and funding small scale prototype models to demonstrate their potential.

**2** The Carbon Trust was established in 2001 as a private company with a remit covering the whole of the United Kingdom<sup>5</sup> and part of its role included taking over most of the Energy Efficiency Best Practice Programme previously managed by the predecessor to the Department for Environment, Food and Rural Affairs.

The Carbon Trust was set up as a private company, along the same lines as the Energy Saving Trust and the Waste and Resources Action Programme, to allow it operational flexibility and to enable it to adopt a business focus. The submission to ministers about the proposed Carbon Trust did not set out a full cost appraisal of the two potential models (those of a company limited by guarantee and of a non departmental public body); the value of the grant funding would have been the same under both approaches.

**3** The Carbon Trust used £77.1 million in funding from the Department for Environment, Food and Rural Affairs in 2006-07, plus £23.1 million from the Department for Business, Enterprise and Regulatory Reform and the devolved administrations. In 2006-07, the advice and financial support for measures to reduce carbon dioxide provided by the Carbon Trust resulted in an estimated reduction in carbon dioxide emissions by its customers of between 1.2 million and 2.0 million tonnes, equivalent to a projected net financial saving of between £222 million and £359 million in future reduced energy costs. In addition the Carbon Trust estimates that its work supporting the development of low carbon technology up to March 2007 could lead to an annual reduction of between 13.7 million and 20.7 million tonnes of carbon dioxide by 2050.

**4** The Carbon Trust had five subsidiary companies at 31 March 2007 to invest in low carbon technology companies, to advise on its investment portfolio, and to develop low carbon businesses, and had contracted out a large part of its administrative functions and the management of its 330<sup>6</sup> accredited energy consultants. Setting up a private company to design, develop and deliver programmes in order to meet objectives and targets agreed with central government is relatively unusual, and this report is the first substantive review of the Carbon Trust's performance. Our examination focused on the cost-effectiveness of the advice offered to businesses and the public sector and its programme to encourage the development of low carbon technologies.

## Overall conclusion

**5** In the last five years, the Carbon Trust has substantially revised and improved the earlier Energy Efficiency Best Practice Programme run by the predecessor to the Department for Environment, Food and Rural Affairs. On the basis of its estimated impact, it has secured a reduction in carbon dioxide emissions from businesses and the public sector which indicates it is likely to meet the expectation set out by the Department for Environment, Food and Rural Affairs in the Climate Change Programme 2006 that its actions will result in an annual reduction of 4.4 million tonnes<sup>7</sup> of carbon dioxide emissions by 2010 on levels in 1990. In financial terms the reduction in carbon dioxide emissions it achieved in 2006-07 has generated projected savings of over twice the amount of the costs incurred.<sup>8</sup> The Carbon Trust's support to commercialise emerging low carbon technologies could lead to further sizeable carbon dioxide emissions reductions in the future. While it remains very early to estimate the actual impact of these emerging technologies, the Carbon Trust's support of such enterprises has encouraged the private sector to invest £2 for every £1 it has committed to its Innovation Programme and £10 for every £1 committed to its venture capital investments. On this basis the Carbon Trust's advice to businesses has proved value for money and its Innovation Programme appears to be on course to do likewise.

**6** The Carbon Trust has worked with a relatively small proportion of businesses and wider market penetration could generate greater reductions in carbon dioxide emissions. The Carbon Trust has worked with at least 12 per cent of companies with energy bills of over £50,000 a year. As a private sector organisation, the Carbon Trust's business-led approach has helped it to build a strong brand and market position, and encouraged innovation amongst its staff to adapt to changing market conditions and develop services to meet customer demand. Its funding from central government, however, has restricted its ability to target specific organisations because of European Union rules on state aid. Any step change in take up without a corresponding increase in government funding depends upon companies being willing to pay for advice. One option might be to explore how the Carbon Trust might franchise certain services for accredited third parties to market competitively. This could also lead to a greater ability to target those organisations where the greatest emission reductions are possible. Any resources freed up could potentially be used to lever further private sector investment in emerging low carbon technologies.

## Our key findings

**7 The Carbon Trust has built up a strong brand image and raised awareness in the business community and the public sector of the need to reduce carbon dioxide emissions.** Market researchers commissioned by the Carbon Trust established that some 53 per cent of people in business were spontaneously<sup>9</sup> aware of the Carbon Trust in 2006 and its role in helping to reduce carbon dioxide emissions.

**8 The Carbon Trust has drawn on its business experience to develop advice on carbon dioxide reductions that offer a financial benefit to businesses, and to lever private sector investment in low carbon technology.** The Carbon Trust has developed the services previously provided by the predecessor to the Department for Environment, Food and Rural Affairs and has created new ones in order to better meet customer requirements. In most cases these services are provided free of charge.<sup>10</sup> Over 80 per cent of organisations were satisfied with the service they received.<sup>11</sup> The Carbon Trust estimates that all its services offer a net financial benefit to organisations over time, although the changes made by organisations can take longer to accrue financial benefits than investing in business development. The company has also secured £2 from the private sector for every £1 it has committed to its Innovation Programme and £10 for every £1 committed to its venture capital investments.

**9 The credibility of the Carbon Trust depends on the business experience of its staff.** To attract and retain suitably experienced staff the Carbon Trust pays salaries which are broadly similar to corporate and energy company rates for comparable staff posts. The average salary cost is currently £50,000. However, 80 per cent of staff in the Carbon Trust operate at a managerial or more senior level as most operational and administrative work is done by contractors. Staff at a managerial or more senior level within the Carbon Trust currently receive an average salary of £56,000<sup>12</sup> which is the same amount as the average salary received by staff within the Department for Environment, Food and Rural Affairs working at Grade 7 and above in 2006-07.<sup>13</sup> This does not take account of the performance related bonus paid to Carbon Trust staff or the impact of the non-contributory final salary pension scheme which is provided for staff at the Department for Environment, Food and Rural Affairs but not for staff at the Carbon Trust. The remuneration package of the two venture capital employees of the investment advisory subsidiary includes an incentive element in line with venture capital industry practice.

**10 The Carbon Trust has significantly developed its methodology for measuring its impact.** In 2006-07 it sought independent assurance under International Standard on Assurance Engagements (ISAE) 3000 over the processes in place for reporting its impacts. To its knowledge it is the only public body which has sought independent assurance under such an international standard. In 2006-07 KPMG provided assurance that, with the exception of two qualifications, the Carbon Trust was calculating its impact for directly delivered advice and interest free loans and the additional carbon dioxide savings for 2010, 2020 and 2050 from the Carbon Trust's Innovations, Enterprises and Investments activities in accordance with its methodology. This work included a review of the methodology, including challenge to the assumptions and limitations.

**11 The Carbon Trust estimates that it helped its customers reduce carbon dioxide emissions by up to two million tonnes in 2006-07.** Drawing upon the advice it had offered and confirmation of actions subsequently taken, the Carbon Trust estimated that organisations had reduced their carbon dioxide emissions by between 1.2 million and 2.0 million tonnes in 2006-07 alone as a result of its support. Seventy six per cent of respondents to our census confirmed that they would not have implemented the same level of carbon savings without the Carbon Trust. However 68 per cent responded that they would have implemented some of the changes to a lesser extent although it is possible that, without the Carbon Trust's intervention, some of these organisations would not have prioritised those changes which would be most effective at reducing their carbon dioxide emissions.

**12 Organisations could achieve much greater reductions in carbon dioxide emissions, as less than 40 per cent of the carbon savings identified by the Carbon Trust between 2003 and 2006 have so far been realised.** The Carbon Trust does not anticipate every recommendation being implemented in the short term: some advice is deliberately more challenging in order to encourage organisations to undertake ambitious energy saving projects. Our census found that 60 per cent of organisations had only implemented up to five recommendations, however, compared to an average of 11 recommendations made to a typical client. The main reasons for not implementing recommendations were competing investment priorities, and difficulties in securing senior management commitment in some organisations.

**13 Only a relatively small proportion of businesses have sought specific advice from the Carbon Trust on how to reduce carbon dioxide emissions.** In 2006-07 the Carbon Trust worked directly with nearly 4,000 organisations to reduce carbon dioxide emissions, a further 35,000 sought the Carbon Trust's advice through its telephone advice service and support was provided to a further 9,000 organisations through the Carbon Trust website. In the last five years it has worked with at least 12 per cent of organisations in the UK with an energy bill of over £50,000 a year,<sup>14</sup> 30 per cent of local authorities, 40 per cent of universities and 12 per cent of hospital trusts. The Carbon Trust has a rolling programme of work with public sector bodies and at the current rate covering them all would take several years. The Carbon Trust runs an Energy Efficiency Accreditation Scheme to enable organisations to demonstrate that they are tackling climate change. However, the scheme is not currently widely publicised to Carbon Trust customers as a potential mechanism for gaining some business benefit in terms of demonstrating their efforts to become more energy efficient to their own customers.

**14 As demand has increased for energy advice, the Carbon Trust has been able to reduce its funded support for advice to companies using larger amounts of energy and it keeps the market under review to ensure that public funding is still required. However, it has not developed quantitative measures to determine the impact of reduced funding support to other organisations.** The Carbon Trust has been able to reduce the funded proportion of its 'Carbon Management' service for larger energy users to 30 per cent in 2007-08, from 50 per cent in 2006-07 and 100 per cent in 2005-06. The 'Standard Site Survey' remains fully funded by the Carbon Trust as it believes that charging a fee could deter many organisations, and particularly public sector and small organisations, from taking up the service. However, standard surveys do encourage expenditure on carbon saving measures by the customers that receive them and in 2006-07 the amount spent by standard survey customers on putting in place such measures was just under twice the amount spent by the Carbon Trust delivering the surveys. Until the Carbon Trust undertakes market research to explore the potential impact on demand if it required organisations to contribute towards the cost, however, it is difficult to quantify the potential costs and benefits of such an approach.

**15 The demand for site surveys from the Carbon Trust increased by 83 per cent between 2003-04 and 2006-07, but much larger scale interest from businesses in reducing carbon dioxide emissions is partly dependent on the growth of the paid-for energy efficiency consultancy market.** It is not clear to what extent businesses would be willing to pay for advice

and the Carbon Trust remained a significant source of income for many energy efficiency consultancy firms in 2006-07.<sup>15</sup> The Carbon Trust is constrained by the funding it receives on the extent to which it can offer site surveys to organisations. It therefore focuses its funding on overcoming the barriers which inhibit market take up of energy efficiency advice by providing for free services which it hopes will stimulate organisations' interest in the business benefits of energy efficiency. Encouraging organisations to seek fee-based advice depends upon the credibility, quality and consistency of the advice available compared to the cost. The Carbon Trust has not yet fully explored the feasibility of enabling accredited third parties to use the Carbon Trust brand name and associated services to generate business.

**16 To date, the Carbon Trust's support of emerging low carbon technologies appears to have helped overcome many of the barriers that researchers typically face and has levered private sector investment to develop the commercial potential of such work.**

The Carbon Trust's focus on the commercialisation of such technologies differentiates it from other sources of funding, such as the Research Councils, and has enabled it to lever in £2 of private investment for every £1 it has committed. The Carbon Trust estimates that investments made to date could lead to a reduction of between 13.7 and 20.7 million tonnes of carbon dioxide a year by 2050. Although these estimates remain very uncertain, these savings appear to be significantly higher than those achieved from its advice to organisations by March 2007. However, the Carbon Trust believes that, in order to maximise the chance of realising future carbon savings, it is necessary for it to achieve a balance between its work supporting emerging low carbon technologies and its work encouraging organisations to reduce their current carbon dioxide emissions. The Carbon Trust's existing focus has been on development work within the United Kingdom and it has made few attempts to actively scout for promising intellectual property overseas to bring to the UK because it believes that this would not be a cost effective use of limited resources.

**17 The Carbon Trust's Research and Technology Accelerators appear to be particularly well designed to fill what could otherwise be a barrier in the development of commercially viable low carbon technologies.** Our consultants noted that the Carbon Trust's coordination of businesses and researchers to collaborate on these accelerator projects appeared to be unique and that the Carbon Trust's focus on applied research and commercial development rather than on pure research and academic achievement meant it supported a different range of projects from other sources of grants.

## Recommendations

**18** To achieve a higher implementation rate for its recommendations, to encourage the expansion of the energy advice market, and to ensure that the public funding which the Carbon Trust receives can be used to reach a wider range of organisations, the Carbon Trust should:

- a** Develop and expand its Energy Efficiency Accreditation Scheme to enable organisations to demonstrate that they are taking climate change seriously. This would involve:
  - Using future marketing campaigns to raise public awareness that the accreditation scheme demonstrates businesses' commitment to reducing carbon dioxide emissions.
  - Linking the accreditation scheme to implementation of the recommendations made by the Carbon Trust, while still offering the scheme as a stand alone service to non Carbon Trust customers.
  - On this basis further encouraging accredited organisations to display the logo and to utilise it in their future marketing campaigns which could allow them to generate commercial benefits from being able to demonstrate they are reducing their carbon dioxide emissions.
- b** Undertake market research to assess the impact on the take up of the Standard Site Survey if customers were required to fund part of the cost.
- c** Based on the findings of the market research conducted in (b), explore the potential for developing a franchise model which will maintain or increase existing demand for energy advice but will enable accredited third parties to offer organisations advice which:
  - Retains the credibility of the Carbon Trust brand and expertise.
  - Builds on the new consultant accreditation system to allow accredited third parties to build up expertise in and market themselves to specific business sectors.

- Will allow the Carbon Trust to focus its public funding on other areas, possibly to lever further investment into low carbon technologies.

Any business case for the development of a franchise model would also need to weigh up the cost and benefits of alternative methods for achieving the above aims. The model would also need to retain the benefits of the Carbon Trust's quality assurance procedures and ability to track carbon savings whilst taking a less prescriptive approach to the management of consultants' day to day work.

- d** Continue to explore the feasibility of using private sector funding to increase the availability of interest free loans to small and medium sized enterprises otherwise reluctant to provide the upfront cash injection required to implement energy saving measures. The extra funding could also be used to offer a loan to small companies wanting to implement capital projects recommended by one of the Carbon Trust's surveys.

**19** To further accelerate the development of new technologies that could both save carbon and be of benefit to the UK the Carbon Trust should:

- a** Build stronger links with overseas organisations to collate better information on international progress in developing low carbon technologies that could be used to improve support to work being done in the United Kingdom, or to bring into the UK viable projects lacking overseas support.
- b** Use any additional resources freed up from organisations paying for energy services to lever additional private sector investment in emerging low carbon technologies.