Centre for Carbon Measurement set to deliver large carbon reductions

February 21 2013

The Centre for Carbon Measurement at the National Physical Laboratory (NPL) will deliver eight megatonnes of carbon emissions reductions and over half a billion pounds in economic benefit over the next decade, according to an independent report. This is a level of carbon saving is equivalent to 2% of the UK's annual carbon footprint.

The Centre was launched in March 2012 at NPL, the UK's National Measurement Institute. An independent report was recently commissioned by NPL to evaluate the impact of projects under the Centre's remit. It shows that measurement plays a significant role in reducing carbon emissions whilst contributing to economic growth.

The Centre was set up to consolidate and expand NPL's work on climate data, carbon accounting and low carbon technologies.

The report evaluated the Centre's portfolio of projects which includes projects to improve the accuracy of climate data from satellites, assess the potential to use biomass in end-of-life coal power stations, and create a temperature based control circuit to make energy efficient lighting even more efficient. It looked at results already achieved as well as anticipated results over the lifetime of the innovations.

Energy and Climate Change Minister Greg Barker, who recently visited the Centre, said of the report: "The Centre for Carbon Measurement at NPL has supported businesses large and small with their innovations and in some cases has even designed its own emissions savings technologies.

This work is essential in ensuring the effectiveness of energy reduction initiatives, for example the Government's Green Deal, which lets householders and businesses pay for energy-saving technology over time through their energy bills.

"For programmes like this to be effective – for the individual and the environment - we need accurate ways to measure energy savings, and assurances that the technology we install does what it says on the tin."

Whilst all projects assessed will have some impact on carbon emissions reductions, actual quantifiable impact varied substantially. Measurement had the biggest impact where a lot of energy is involved - often where a major technology transition is yet to occur, such as domestic heating; power stations; fuel cells and the smart grid. Where a technology transition is already underway, such as LED lighting, measurement can enhance the significant savings being created by these technologies, though the main savings from such technologies are less attributable to individual measurement projects.

Examples of projects analysed by the report include optimising a new design of electrode for organic photovoltaic cells – cells that turn sunlight into energy. The work underpinned the design of flexible electrodes which are essential if the promise of organic photovoltaics – initially in areas such as wearable electronic devices – is to be realised. The specific project studied is estimated to reduce carbon emissions by 257 kilotonnes over 8-10 years.

In other projects it was not possible to specifically quantify the carbon savings resulting from the work. This was the case in projects that contribute to our understanding of climate change, for example 'TRUTHS', a project which aims to calibrate earth observation satellites in order to provide more accurate climate data. Here the report highlighted that even small improvements in our climate predictions,

could lead to better international consensus on the actions required and hence an increased likelihood of global agreements on climate change mitigation.

The methodology

The research was carried out by Technologia, a consultancy that assesses the impact of scientific projects. The aim was to understand and demonstrate the Centre's benefit and inform its future focus.

Technologia assessed twelve projects in detail and then applied these analyses to the entire portfolio of the Centre's projects to reach the final savings figure. Projects were explored using NPL sources, conversations with NPL scientists, project partners or clients, and industry users, and wider research into relevant markets. The assessments undertook estimations of energy savings, direct and indirect emission reductions, development of new technology, increases in staff employed at client organisations, and cost savings.

The report included projects which were already underway when the Centre launched, but are now under the Centre's remit. Bringing these projects into the Centre has helped to streamline their management and coordinate activity to advance NPL's expertise, thereby improving opportunities for future impact.

Moving forward

The report confirmed that measurement plays an important and economically advantageous role in carbon reduction. It concluded that measurement adds value across many areas and all the current areas of the Centre's focus play a useful role. The report advises that the Centre will deliver most impact by maintaining a balanced portfolio, rather than

trying to focus further into certain areas.

Jane Burston, Head of the Centre for Carbon Measurement, says "We are only one year in but already the Centre is showing its value. This analysis confirms we are on the right track and that carbon measurement brings a clear, quantifiable economic and environmental benefit. We can now assuredly forge ahead with a diverse range of projects that use our measurement expertise to provide vital support to climate science, low carbon technologies and carbon reduction initiatives."

Provided by National Physical Laboratory