

# Intellect input to the Low Carbon Industrial Strategy June 2009



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We are delighted to welcome the Low Carbon Industrial Strategy which we believe represents an exceptional policy convergence on an almost unprecedented scale – in effect, industrial and environmental policy are combined in an effort to stimulate the UK's transformation into the leading low carbon economy and to make the UK the best place for low-carbon businesses to locate and grow, mirroring the industrial revolution two centuries ago.

The UK is not alone in wanting to drive recovery through low carbon technologies. Not only the US but other countries around the globe have already begun competing in this space. All those able to do so will be strengthening their range of policy instruments – setting incentives like tax credits and R&D funding to maximum. In the UK, therefore, we have to be one step ahead, putting even more effort into developing and implementing policy instruments that will attract and retain low carbon businesses. This does not mean isolated approaches to specific economic sectors:- all relevant policy instruments will need to be fully deployed. It does mean that the limited financial resource we have must be used very wisely and that we will have to find more creative approaches to stay ahead of our competitors.

While the role of ICT is not explicit in the initial BERR strategy document, ICT and associated technologies are critical enablers of this transition. In fact, as this paper will demonstrate, information and communications technologies now form an integral part of the environmental services sector, complementing more traditional disciplines like engineering in the development of the products and services that will underpin a low carbon society.

For the purposes of this document, the technology sector comprises the Information and Communications Technologies (ICT) and Consumer Electronics (CE) sectors, including electronics manufacturing, defence and space-related IT. These broad titles, however, disguise a wide range of environmental offerings that include, to name but a few, virtual conferencing and collaboration tools, satellite broadcasting systems, intelligent transport systems including transport telematics, logistics and satellite navigation tools, building and energy management systems, photovoltaics, in-silico modelling, testing and CAD and carbon auditing and accounting systems.

The objective of this short contribution is three-fold: Firstly to make the role of technology explicit, secondly to identify additional incentives that we believe will be important in realising this vision and thirdly to present our wider view of the various policy instruments that must be optimised if we are to make a rapid transition to a genuinely low carbon economy.

For ease of reference we have structured our response around the strategy document published in March 2009. This set out four key areas and we have addressed each in turn. The first, improving energy efficiency across the economy, has significant implications for our sector. Although the second and third areas deal with specific industry sectors, achieving the vision in both these areas will, to a considerable extent, be enabled by the application of our technologies. Therefore we briefly explain the role of technology in these areas too.

The fourth area of the LCIS, in which the objective is to make the UK the best place to locate and grow successful low carbon businesses, is more strategic. In this case we have set out, from the perspective of the technology sector, the generic factors we believe are important in making the UK the best place to do low carbon business and we have assessed the strategy against these criteria. We identify two factors that we believe are critical to achieving the vision set out in the low carbon industrial strategy, yet are missing from it. These are the creation of a market for low carbon goods and services and recognition of the need for an appropriate digital infrastructure. This completes the second part of our response.

In the third part of our response we expand on the previous section by looking in more detail at eight different policy instruments that we believe need to be fully optimised if the UK is to become a successful low-carbon economy. We briefly analyse each in turn, assessing how each policy lever is currently "set" – i.e. whether it is only being weakly applied or whether it is being strongly applied but not having the desired effect and then suggest what we need to do to improve the effectiveness of that policy instrument. The final part of the response, the conclusion, draws together the points made and identifies ways in which the technology sector can contribute further. This is not meant to be a comprehensive approach - instead we use examples to illustrate our points and two appendices of relevant case studies is attached for this purpose.

### a) Energy efficiency to save businesses, consumers and the public services money

Professor Chu, the Nobel prize-winning physicist appointed to steer US energy and environmental policy, stated recently that "The quickest and easiest way to reduce our carbon footprint is through energy efficiency. Energy efficiency is not just low-hanging fruit; it is fruit that is lying on the ground." We would support this view and are therefore very pleased to see this strong policy emphasis on energy efficiency, partly because of its potential to create significant business opportunities for the technology sector, from smart metering and smarter grid applications to building management systems and intelligent transport technologies. However, we would prefer to see the very important role of technology made explicit in the final strategy because there is a considerable challenge in ensuring that these opportunities, many of which will also make a substantial contribution to long term economic growth, are taken up.

Climate change presents a mixture of challenges and opportunities to the technology sector, which is in a unique position. On the one hand our products and services have an energy requirement, and are therefore responsible for a proportion of global emissions (around 2% according to Gartner), which we must do our best to minimise. On the other hand, our offerings help other sectors work more efficiently and reduce their emissions – for instance logistics software optimises fleet movements, electronic communications reduce paper use and travel.

In the short term, these ICT solutions will help to cut emissions associated with everyday processes and provide virtualised substitutes for high impact activities. In the longer term, technology will be a critical enabler of the transition to a genuine low-carbon economy. Smart buildings, intelligent transport and a distributed, smart grid are all ICT-enabled – and therefore ICT dependent.

This view is supported by a number of independent bodies. A report from the WWF identifies ten uses of ICT that could together save at least a billion tonnes of carbon dioxide by 2020. Analysts McKinsey estimate that 7.8 billion tonnes could be saved by the use of ICT in buildings, power, transport, manufacturing and teleworking, and GeSI, the Global eSustainability Initiative, estimate that the intelligent use of ICT could reduce overall emissions by 15%, dwarfing the 2% emissions directly attributable to ICT. There is no other sector that offers anything like this capability.

The European Commission has recognised the role that technology can play in its March 2009<sup>1</sup> Communication to the Parliament, but no equivalent acknowledgement has been made by BERR, DECC, DEFRA or the Prime Minister. Although the Green Delivery Unit in Cabinet Office has recognised the capability of ICT "to successfully stimulate other sectors of the market such as renewable energies and smart electricity grids"<sup>2</sup> as yet this has not been followed up by action – the current Greening Government ICT strategy, though welcome, focuses only on the direct effects of ICT and does not take a holistic view.

Unfortunately there is still a disproportionate focus on the 2% of emissions attributable to ICT rather than on the more significant emissions reductions that the application of ICT can effect across the wider economy. A current OECD study 'Towards Green ICT Strategies'<sup>3</sup> reveals that the vast majority of Green ICT initiatives focus on the direct impact of ICT and only a tiny percentage on the enhancing, enabling and transforming effects which we, and they, believe are much more important.

This is true in the UK where 98% of the attention seems to be focused on 2% of the problem and vice versa, particularly in the public sector. There is now growing concern that too much emphasis on reducing the carbon footprint of ICT could be harmful in that it is a barrier to implementing larger, organisation-wide carbon savings through investment in appropriate technologies. As the WWF observe: "a single-minded focus on absolute reduction targets of CO<sub>2</sub> from ICT would obviously not be very strategic and could be counterproductive"<sup>4</sup>.

<sup>1</sup> Communication from the European Commission to the European Parliament on mobilizing Information and Communication technologies to facilitate the transition to an energy-efficient low-carbon economy

<sup>2</sup> UK Govt Deputy Champion Green ICT, Catalina McGregor presentation "the importance of Military Organisations to climate change" EPA sponsored event, Paris 2008

<sup>3</sup> OECD, Towards Green ICT Strategies, May 2009

<sup>4</sup> WWF, From Fossil to Future With Innovative ICT Solutions (increased emissions from ICT needed to save the planet), 2008

Intellect, on behalf of the sector, has been at pains to draw attention to the many ways in which our products and services can reduce emissions across the economy. We have classed these into three types of technology which contribute to an overall reduction in energy demand:

- a) **Enhancing technologies** make existing processes more efficient e.g. intelligent transport or LED lighting.
- b) **Enabling technologies** allow us to do things differently e.g. digital evidence seals which allow documents to be authenticated without ever being printed.
- c) **Transforming technologies** lead to alternative low-carbon business models e.g. broadband which has changed the telecoms market, facilitates electronic conferencing and creates new sectors like digital content.

### **b) Putting in place the energy infrastructure for the UK's low carbon future**

Again, we fully support initiatives to decarbonise our energy supply which has the largest share of carbon dioxide emissions in the UK, at around 38% (because the majority of energy is derived from fossil fuels and there are considerable inefficiencies in generating and distributing electricity). Because of the significant scale of these processes, even a fractional efficiency improvement will make a dramatic dent in UK emissions, and again, ICT related technologies have an important function and we would like to see some recognition of the important role that such technologies will play in moves to decarbonise our energy supply.

Our sector is already delivering improved efficiencies at the point of generation – for instance by implementing sophisticated control systems to monitor and reduce emissions, or by developing modelling approaches that identify the best way to add co-firing capacity (so plants can run on biomass as well as coal) or to optimise turbine efficiency.

Renewable power generation is no exception, where a wide array of ICT technologies are already improving viability – for example software employing complex algorithms to optimise wind farm operation.

As energy generation from renewables increases, ICT will also be an important enabler of the major grid reconfiguration that will be needed to cope with a more distributed pattern of generation: green energy sources like wind power tend to be intermittent and widely distributed, usually away from centres of population and there is an important balancing act involved to optimise the use of renewables within the grid without compromising reliability of supply. Moreover, successful integration of microgeneration and other renewable outputs into the national grid will also depend on technology.

The technology sector also manufactures and supplies technologies that capture solar energy – principally photovoltaics which are cells, usually using silicon, that turn light energy directly into electricity. Recent advances include thin film technologies which should improve efficiency and optimise the consumption of raw materials. Sadly, despite being one of the few clean energy sources that can get appliances off the grid altogether and without the disadvantages of large scale wind or wave power which will require extension and to some extent reconfiguration of the national grid, solar technologies are severely under-used in the UK. Solar power only delivers about 1.8% of the energy supply in the UK, as opposed to 7% across the EU, so there is significant scope for improvement here, simply by implementing existing technology.



But the area where we believe investment would reap the greatest rewards in terms of delivering business growth whilst reducing emissions is the smart grid. In their recent report<sup>5</sup>, ITIF and LSE point out that investment in new network infrastructures tends to create jobs for far longer than just building the infrastructure. Unlike mature networks such as roads, new networks like broadband and smart grids create new jobs and new industry sectors as their capacity increases. "The smart grid will enable a host of societal benefits including lowering peak demand and associated energy generation, enabling the greater use of clean energy. Moreover the smart grid will enable the use of new technologies including plug-in hybrid electric vehicles, distributed generation and energy storage solutions... to home automation and commercial building intelligence. In addition the smart grid will facilitate distributed generation and encourage the development of renewable energy sources such as wind farms. Eventually the smart grid will even create an energy marketplace where businesses and homeowners can sell energy back to the grid, enabling even more innovation. This will in turn spur consumer demand for products such as rooftop solar panels for their homes. Indeed the smart grid will likely serve as the foundation for the growth of many new industries much like broadband is creating new markets in e-commerce, telehealth and online banking."<sup>6</sup>

### c) Making the UK a global leader in the development and production of low carbon vehicles

We very much welcome this policy initiative because it takes a bold step beyond many others we have seen. For instance, even the European Commission's March 2009 Communication on using ICT to facilitate the transition to a low carbon economy<sup>7</sup> tends to focus on incremental emissions reduction opportunities rather than fundamental change.

We have four observations to make here: firstly to highlight the role that ICT already plays in the production of low carbon vehicles, secondly to mention several other subsidiary approaches that we think can help us achieve the transformation required in transport emissions, thirdly to draw attention to the important role of ICT during the transition phase to low carbon vehicles, and fourthly, we shouldn't forget that considerable effort will be needed to create a market for these products, which for the moment, is largely absent. These are covered in turn below.

**ICT and low carbon vehicles:** Although this strategy element is aimed squarely at the automotive industry, we would like to draw attention to the role that ICT and related technologies already play in the research, production and operation of low carbon vehicles. When it comes to low-carbon vehicles, ICT is involved at every stage. From CAD or in-silico modelling and testing in the R&D phase, process-optimisation in production to fuel balancing in the operational phase, ICT underpins the design, manufacture and use of low carbon vehicles.

**Subsidiary initiatives:** We believe that in addition to developing low carbon vehicles there are two other approaches that make a substantial contribution to our longer term emissions reduction goals. The first of these is the adoption of travel substitutes – for instance electronic conferencing – which replace travel, particularly long-distance travel, altogether. The second is a move away from business models that focus on products towards those that focus on service delivery, coupled with a much stronger emphasis on partnership approaches rather than on traditional customer-supplier and competitor relationships. (One possibility in this area could be for airport authorities to partner with electronic conferencing suppliers so that airports could become hubs for an array of virtual travel services as well as physical travel options– after all they are already well connected to existing transport infrastructures).

<sup>5</sup> LSE & ITIF – The UK's Digital Road to Recovery, 2009

<sup>6</sup> LSE & ITIF – The UK's Digital Road to Recovery, 2009

<sup>7</sup> Communication from the Commission to the European Parliament on Mobilising Information and Communication Technologies to facilitate the transition to an energy efficient, low carbon economy – March 2009

**ICT during the transitional phase:** During the transitional period while the market is developing for low carbon vehicles and while there is still a significant stock of traditional vehicles on our roads, we should not forget the role of ICT in optimising efficiency and reducing emissions in these existing vehicles, which should be fully exploited. ICT is already widely deployed in the transport sector with the objective of improving fuel efficiency and optimising fleets and existing infrastructures, mainly in the form of Intelligent Transport Systems (ITS). These are tools that combine computers, databases, maps and sensors to assist drivers and improve transport infrastructure.

Technologies currently in use include fleet logistics and tracking which improve certainty, reduce vehicle miles and minimise fleet sizes. Telematics monitor driver behaviour and identify those in need of additional training, leading to improvements in fuel efficiency through better driving. Navigation tools like satnav, dynamic route guidance, location finders and routers incorporate real time factors such as congestion or roadworks in the information transmitted to users. Intelligent routing of road transport can cut fuel and emissions by 20-30%.<sup>8</sup> Solutions vary from route planning software that minimises cross-traffic turns to satellite monitoring and re-routing of aircraft and shipping. Advanced driver assistance systems like intelligent speed adaptation and adaptive cruise control smooth traffic flow and reduce emissions. Other approaches include software that monitors internal tyre pressure to optimise fuel efficiency and software that tracks vehicle emissions. And at an infrastructure level, demand management schemes like the London Congestion Charge (which is fully reliant on ICT) delivered between 15% and 20% emissions reduction, smart card systems like Oyster encourage the uptake of public transport and innovative technologies reduce the energy consumption of highway lighting. All these technologies are currently under-deployed.

These technologies will be particularly useful for damage limitation during the interim phase, when it will be essential for us to optimise efficiency from traditional vehicles before new technologies are fully deployed. They tend, however, to be incremental rather than transformational in nature and, alone, cannot be expected to deliver the scale of carbon reductions that we need in the longer term.

### **Creating a market**

Most of the major motor manufacturers have developed a low carbon vehicle of some type. The problem is that, with a few localised exceptions, sales have been very small, even miniscule. People simply are not buying them. Perhaps the problem is that, particularly with traditional vehicle types, there is an inevitable trade-off between performance and emissions. This goes against the grain since private cars in particular have been sold on the basis of power and handling, not on their environmental credentials. So some creative incentives will be needed here. While the current trade-in grants will stimulate the market to some extent, this may do more for imports than for domestic supply and it does nothing to discourage people from using cars in favour of public or virtual transport alternatives.

Finally, we have two other observations to make on low-carbon vehicles. Firstly the operation of electric vehicles will not be carbon neutral until electricity generation in the UK is decarbonised. Charging outside peak demand periods will help to smooth demand but this should not be confused with carbon neutrality. Secondly, we would urge policy makers to ensure that the definition of a low-carbon vehicle is set at the ultra-low end rather than the current DoT definition. We believe that funds would be more appropriately directed towards the development of new technologies that will deliver vehicles that can genuinely contribute to a low carbon economy than for incremental or end-of-pipe solutions that would be no more than a short term stop-gap. By doing so we would also ensure that funds are not used to prop up an old and declining industry but instead to stimulate a new and growing one.

<sup>8</sup> Case4space report, June 2006

## Part two: Making the UK the best place for low carbon businesses to locate and flourish

We are very pleased to see such a strong desire to put the right elements in place to make the UK the best place for low carbon businesses to locate and grow. We agree wholeheartedly that it is critical to our future prosperity that the UK can attract, support, and, more importantly, retain these businesses. We have an excellent record in attracting inward investment which we must do everything we can to maintain.

### What incentives are needed?

In general, factors that influence where modern, knowledge businesses locate their operations include ease of access to growth markets of demanding customers, political and economic stability, taxation, support for innovation, flexibility of labour market and availability of key skills, regulatory environment (especially employment legislation), openness of market, trade barriers and non-tariff barriers, quality, availability and cost of public services (eg health, education, transport), quality of technology infrastructures and services (eg broadband), opportunities for expansion (eg planning regime, restrictions on foreign ownership of assets), language, cultural issues and working environment<sup>9</sup>.

The factors influencing the location of low carbon businesses are broadly the same as those for any other businesses. And just like anybody else, the most important thing that low carbon businesses need are markets for their products, so they need customers (government, businesses and consumers), who are firstly able to make informed choices and secondly willing to buy these environmentally friendly options.

### What incentives are missing from the LCIS?

We believe that the principal factor missing from the LCIS is the creation of a market for low carbon goods and services in the UK. We all know from experience that environmental benefits are not enough to sell products. Government, consumers and businesses alike frequently opt for lower initial purchase costs than lower lifetime costs for devices and much stronger incentives, both economic and social, will be required to override this tendency. From the McKinsey Carbon Cost Curve, we also know that, even presented with a clear incentive to opt for carbon saving technologies, organisations and individuals still fail to adopt them, from a mixture of inertia and other factors like split or perverse incentives or cultural resistance. Much more work needs to be done to address these behavioural and cultural barriers if we are to create a flourishing market for low carbon products.

We believe that there are four main steps to creating this kind of market: the first three are education, social incentives and economic incentives. Education is urgently needed because we need consumers and businesses to be able to make informed choices. Economic incentives are needed to reward those choices and social incentives are needed to change social norms, particularly in terms of polluting behaviours and cultures. The fourth step to creating a market is for the public sector to lead the way in sustainable procurement by proactively seeking the best performing products and services. Consuming around 40% of GDP the public sector is the UK's single most powerful driver of change.

The second incentive that we believe is missing from the low carbon industrial strategy is the provision of the kind of advanced digital infrastructure that will be necessary to underpin an economy where low carbon, virtual technologies are replacing high impact physical processes – for instance video conferencing and Webex displacing expensive and polluting travel. Such a move will not only deliver environmental benefits, it will also lead to growth, which in turn will create high value, long-term jobs. Just like putting in physical infrastructure, as the bandwidth increases, people find innovative ways of using it and traffic increases. At the same time, so does productivity and growth, particularly the growth of completely new industry sectors such as digital content. In fact, broadband has already had a transformational influence on the telecoms marketplace.

With the recent publication of Lord Carter's Digital Britain report, we are very relieved to see that Government has now set out a clear strategy for the roll-out of this infrastructure and how it will be funded and has also acknowledged its importance to the UK economy. However, the report does not explore the opportunities for emissions reductions that such an infrastructure could deliver, or emphasise the importance of evaluating and harnessing this capability. We believe that it is vital that the LCIS and Digital Britain initiatives are explicitly linked and that policy effort is closely coordinated moving forward. If not, there is a risk that policy approaches will continue to be fragmented and contradictory.

We will look at both these factors in more detail in part three of this response.

<sup>9</sup> A Flourishing Innovation Economy: How the UK must attract and retain knowledge-based businesses, EURIM, 2007

We believe that a successful low carbon economy cannot be achieved unless three criteria are met. Firstly we need to have the right technologies developed and fully deployed. Secondly we need enlightened customers (consumers, businesses and government), who are equipped with the right information to make informed choices. Thirdly we have to reward environmentally friendly behaviour. In other words, it is not enough for people to identify environmentally friendly products, they will not buy them if there is an additional cost attached and they cannot buy them if they are not readily available (for instance if the technologies are not fully developed, not reliable or the market is constrained in some way).

Under current conditions, we all accept that we are not going to meet any of these criteria or achieve the vision set out in the LCIS through market forces alone. Significant policy intervention will be needed and the LCIS is a major step in the right direction. We also accept that we cannot rely on just one or two policy instruments - in fact a whole range of levers and incentives will be needed if we are to achieve anything like success. Moreover, all relevant policy instruments will need to be fully deployed. So in other words, a range of policy instruments will need to be applied, all set to maximum strength.

In this section we identify eight policy instruments that we think are vital to achieving the vision set out in the low carbon industrial strategy. Four are factors that help ensure that the right technologies are fully developed and available and the other four are factors that help create a market. Those that help ensure the correct technologies are ready for deployment are support for innovation (including R&D funding), regulation and minimum standards, access to key skills and availability of a 21st century digital infrastructure. Those that help create a market are: better information, economic incentives, social incentives and sustainable public procurement.



### The right technologies fully deployed

	Policy instrument	Rationale
1	<b>Support for innovation/R&amp;D funding</b>	Encourage and accelerate the development of more environmentally friendly products.
2	<b>Regulation and minimum standards</b>	Use command and control instruments to drive manufacturers and service providers towards more sustainable business processes and products.
3	<b>Access to the right skills</b>	Companies cannot compete successfully unless they have the right staff with suitable skills.
4	<b>Availability of high capability digital infrastructure</b>	A low carbon economy will be underpinned by a digital rather than physical infrastructure - and investment in new networks tends to have a cumulative and long term effect of wealth creation.

## Creating a market

	Policy instrument	Rationale
1	<b>Better information</b>	Well informed customers can distinguish environmentally products.
2	<b>Financial incentives - rewarding customers for making the right choices</b>	Use command and control instruments to drive manufacturers and service providers towards more sustainable business processes and products.
3	<b>Social incentives</b>	Change social norms so that good environmental behaviour becomes socially desirable.
4	<b>Sustainable public procurement</b>	With 40% of GDP the public sector is the most powerful driver of change in the UK.

We take each of these policy instruments in turn and assess how effectively they are being deployed and what needs to be done to strengthen them. The list is not exhaustive – there are many policy instruments to choose from but we believe that these eight are important.

### The right technologies fully deployed 1 – Support for innovation/R&D funding

Rationale: Encourage and accelerate the development and delivery of more environmentally friendly products

#### What's the score?

Innovation is another pre-requisite of the UK's success as a leading low-carbon economy, but innovation itself is not enough – ideas have to be exploited commercially in order to create wealth. There has been a tendency in the UK to associate academic status (and therefore funding status) with publications and citations rather than innovation, patents granted, prototypes or spin-offs generated. Similarly we have been inclined to measure R&D funding success by input rather than output. So we are pleased to see the TSB investing in new challenge-led funding mechanisms, innovation platforms and technology demonstration projects. We also welcome improved access to funding opportunities for small businesses, the establishment of the Strategic Investment Fund and the increase in R&D funding available for the development and implementation of low carbon technologies.

However, it is not clear to us that current funding streams are oriented to best effect. Although 75% of the UK's wealth is generated by service industries and only 13% by manufacturing, the majority of R&D funding remains targeted at manufacturing. Innovation is equally applicable to service-based processes but current funding mechanisms do not seem to accommodate this.

#### What needs to happen?

- ▶ While much is happening, more could be done. For instance more investment could be targeted at supporting high-tech start-ups and government tax on intellectual property could be reviewed. Current funding structures seem to overlap and could benefit from greater clarity and transparency.
- ▶ Much stronger incentives are needed to encourage engagement and knowledge transfer between business and academia. Successive UK Innovation Surveys<sup>10</sup> show that a mere 2% of companies regard universities as highly important sources of information, and place the UK nearly last in the EU15 on successful innovation activity. We also need to find ways to refocus the academic reward structure from volume of citations and publications to support excellence in innovation and exploitation.

<sup>10</sup> Community Innovation Survey 3 (CIS3)

### **The right technologies fully deployed 2 – Regulation and minimum standards**

Rationale: Use command and control instruments to drive manufacturers and services providers towards more sustainable business processes and products.

#### **What's the score?**

With the four pillars of environmental legislation now fitting into place, and with ambitious carbon reduction targets, the UK is finalising some of the most comprehensive climate change legislation in the world. There are concerns, however, that some of this legislation will actually act as a barrier to the UK's success as a low-carbon economy. The CRC, as proposed, is a case in point:

The CRC league table will rank companies according to changes in their absolute carbon outputs without taking account of changes in their operations or structure such as significant business growth. This effectively means that the CRC is discouraging growth. Companies come to expect that growth involves increased costs such as premises and staff, so paying for additional emissions, whilst unwelcome, is not the key issue. The problem is that because they drop down the league table, companies also look bad as a result of growth.

A second problem is that a company with consistently high revenue and low carbon emissions will achieve an identical ranking to a company with consistently low revenue and high carbon emissions. This may well mean the league table will be represented as misleading. Moreover, there will be strong incentives for companies to perform very badly at the beginning of the process so that they can record large improvements and thus move up the table. This also means that companies which have already done a great deal to reduce their carbon emissions will not be recognised, nor will they be able to deliver such large-scale savings as those who have lagged behind the process. Effectively the best performing companies will be punished.

Unlike a genuine cap and trade scheme, the CRC does not encourage carbon savings to be made in the most efficient way possible - the UK would see a quicker and more significant reduction in total carbon footprint if the legislation encouraged the movement of work to those who could do it in the most carbon efficient way. Instead it does the opposite. For example, work moves from carbon inefficient company A (either customer or competitor) to carbon efficient company B, who then go on to perform this same work in a more carbon efficient manner.

In this situation the CRC league table and financial penalties will show company A as having achieved significant improvement whilst company B will be penalised in both reputation and financial terms. So, while the overall carbon footprint of the activity has reduced, company B is discouraged from taking on further similar work and continue to reduce the UK's total carbon footprint. In fact, the only way for such a company to perform better in this league table is to offshore its activity – escaping the net, completely contradicting the objectives of the LCIS and of course harming the UK's growth.

This issue is perhaps best illustrated by a case study. Memset is a fast-growing SME that provides managed hosting services to business. It is one of the Deloitte UK Tech Fast 50, and became Britain's first Carbon Neutral accredited ISP in August 2006. Memset has won numerous awards for quality of service and environmental innovation, especially within the data centre. Memset had been planning to invest in a semi-experimental super-efficient data centre in Surrey, but as a direct result of the Carbon Reduction Commitment legislation they have shelved those plans. The CRC means that it makes no sense for them to own a data centre. It is better for them to outsource that element to a third party who can then bear the reputational damage of the proposed league tables.

The CRC encourages companies like Memset to consider a different business model in which data centre capacity is rented from an offshore provider. Data, of course, can be housed anywhere but if it goes overseas, high value-add jobs and expertise go with it.

Other regulatory approaches might benefit from review – for instance, utilities are obliged to offer insulation at reduced prices to households. The insulation industry in the UK is currently operating at around 60% of capacity. Anecdotal evidence from those within this sector suggests that because utilities are working to set targets, they have no reason to offer this service once they have met the requirement, irrespective of demand. Another obligation for utilities is to distribute low-energy light bulbs. Compliance is measured by the number distributed, not whether they are actually deployed by householders.

### What needs to happen?

- ▶ Regulation needs to be consistent – so that, for instance we don't implement legislation like Sarbanes Oxley before considering its environmental consequences (it requires immediate access to data for many years which necessitates live rather than archived storage).
- ▶ Regulation should not act as a deterrent for companies, particularly knowledge businesses or green businesses, from locating in the UK. The CRC in its current form may do exactly that.
- ▶ Legislation should be implemented in ways that will be effective rather than in ways that are easy to measure.

### The right technologies fully deployed 3 – Access to the right skills

Rationale: Companies cannot compete successfully unless they have the right staff with suitable skills.

### What's the score?

A skilled workforce is critical to attract businesses, and much could be done to encourage skills development in the UK, where there is a mismatch between the demands of industry and the outputs of universities. Without action, the situation can only deteriorate: "the UK will not be competitive in the global economy in 10 years time if we continue with the level and type of skills being relied on by business today. There is a tendency to dismiss the subject of skills as a 'soft' issue with no real impact. To do so would lead to catastrophic damage to the UK economy"<sup>11</sup>.

A quick look at the ENDS (Environmental Data Services) Directory reveals that the delivery of environmental services is dominated by businesses from the engineering and technology disciplines. A large proportion of green collar jobs therefore require classic STEM (Science, Technology, Engineering and Mathematics) skills – skills we are all too aware are lacking in the UK.

In fact, the Leitch Review of Skills<sup>12</sup> predicted that the demand for science and technology professionals and associated staff would rise by 18% to 30% between 2004 and 2014 - compared to 4% for all other occupations. At the moment we rely on imported skills from abroad.

Like any knowledge business, environmental businesses also rely on a flexible labour market and if necessary import specific skills in the short term or train people in the UK for ultimate redeployment. Current policy is actually a barrier to growth – for instance the new points system operated by the Home Office is already having a disastrous effect on the UK service sector. As the world's largest exporter of services this could have significant consequences for the UK. Ironically the new rules create more problems for UK companies with operations abroad than for their overseas competitors.

### What needs to happen?

- ▶ Encourage the development of a sustainable skills base in the UK with fiscal incentives for training and skills development.
- ▶ Foster the uptake of STEM skills by encouraging pupils to take individual science GCSEs, by weighting STEM subjects in performance tables and by fully funding teaching costs for STEM subjects at universities.
- ▶ Develop a more coherent approach to STEM skills policy by improving coordination between STEM skills bodies including professional bodies, universities and research councils.
- ▶ Ensure that regulations don't inadvertently penalise UK companies trying to grow.



<sup>11</sup> Karen Price, Chief Executive, e-Skills UK, quoted in press release on publication of their report: "IT Insights, Trends and UK Skills Implications", November 2004  
<sup>12</sup> The Supply and demand for Science, Technology, Engineering and Mathematics Skills in the UK Economy, DFES, 2006

### **The right technologies fully deployed 4 – Availability of high capability digital infrastructure**

**Rationale:** A low carbon economy will be underpinned by a digital rather than a physical infrastructure – and investment in new networks tends to have a cumulative and long term effect in terms of wealth creation.

#### **What's the score?**

The UK's communications infrastructure is a vital asset that underpins activity across the whole of the economy. In particular broadband is a critical enabler for a whole host of low-carbon technologies that provide alternative approaches to traditional high-impact activities. This includes transport substitutes like video conferencing and online access to content which has removed the need for the physical production and distribution of CDs (i.e. the virtualisation of products that were previously manufactured).

We need a complete transformation of the UK's communications infrastructure if we are to make a successful transition to the next generation networks that will underpin the emergence of entirely new businesses and sectors. With this in mind we were encouraged to see that the Digital Britain report has prioritised the creation of this vital infrastructure – firstly the commitment for universal service of 2Mbit/s to households across the UK and secondly the necessary upgrade to superfast broadband.

We now know that finance is in place for the former and that, via a levy, the Next Generation Fund (subject to Parliamentary approval) will finance superfast broadband to that significant percentage of the population who would not be reached if things were left to market forces. However, we would have liked to see the Low Carbon Industrial Strategy and Digital Britain initiatives explicitly linked and cross referenced and more evidence that these important policies are closely coordinated moving forward. If not, there is a risk that policy approaches will continue to be fragmented and contradictory.

Next generation broadband will deliver a number of positive benefits. Firstly it will drive growth because we will benefit from the network effect mentioned earlier. This means the creation of long term, high value jobs and new industries. We therefore strongly support the view of the LSE: "Broadband creates jobs by enabling the emergence of new businesses or other organisations developing a wealth of innovative new services, including electronic commerce, telemedicine, VoIP, video on demand, smart homes, telework and access to electronic government ... the network effect as it pertains to broadband is not simply about the value of the network increasing as more people join, it is also that by providing an architecture for the seamless and instantaneous creation, distribution and consumption of information it enables forms of commerce on a national and global scale previously impossible, transforming whole industries from retailing to financial services to manufacturing."<sup>13</sup>

Access to next generation broadband will not only drive growth, it will also offer a critically important opportunity to do things in different ways, replacing high-impact processes with virtual, low carbon alternatives and offering all parts of the economy an opportunity to move away from traditional carbon intensive platforms and infrastructures. It will be key to facilitating some of the adaptations that we will have to make if we are to flourish in a lower carbon world. What is perhaps most exciting about the potential for next generation broadband to act as a catalyst for change is that it can do this at a scale and in the timescales that will be necessary to meet national and global carbon reduction targets. However, slow or partial deployment of next generation broadband will reduce the potential for such innovation, limiting the opportunities to drive low carbon adaptations across the economy.

Unfortunately, the Digital Britain report does not sufficiently explore the opportunities for emissions reductions that next generation broadband could deliver, or emphasise the importance of evaluating and harnessing this capability. It also seems apparent that, to date, environmental considerations have formed no part of OFCOM's decision-making criteria. This needs to change and we hope that the recent report "Understanding the environmental impact of communication systems"<sup>14</sup> will help.

<sup>13</sup> LSE & ITIF, The UK's Digital Road to Recovery

<sup>14</sup> Efttec and Plectek, Understanding the environmental impact of communication systems, June 2009

We need to pay particular attention to two aspects of an upgraded digital infrastructure: Firstly we must carefully evaluate environmental impacts during the implementation phase so that the roll-out of next generation services is as sustainable as possible. Secondly, and probably far more importantly, we must with real urgency start to think far more deeply about how services will be used and the kinds of behaviour they generate. Broadband is a disruptive technology and like all disruptive technologies, its effects can be unpredictable. So we need to take careful account of the ways in new services, markets and behaviours develop. In short we need to constantly seek the most energy efficient solutions in terms of network equipment, in the personal devices of users and in the activities that the new infrastructure will enable.

This last aspect is of Byzantine complexity, involving a huge array of variables and an almost infinite number of interactions and feedback effects, many of which will be indirect and unexpected. With this in mind, Intellect is keen to promote a new "Greening Digital Britain" initiative to explore these effects and interactions in more depth and would welcome an ongoing dialogue with all relevant departments on this topic.

### What needs to happen?

- ▶ More explicit acknowledgement of the opportunities that a next generation digital infrastructure offers in terms of emissions reduction across the economy.
- ▶ More explicit policy co-ordination and cross-referencing between the Low Carbon Industrial Strategy and the strategies to deliver Digital Britain.
- ▶ Much more attention should be paid to ensuring that the deployment of next generation broadband takes into account environmental impacts both in the way that it is rolled out and how it will be used when implemented.

### Creating a market 1 – Better information

**Rationale:** Well informed customers can distinguish environmentally friendly products.

#### What is the score?

In the business environment, information provision is relatively good for large organisations, who can call on the Carbon Trust for bespoke advice on emissions reduction or on a growing array of consultants. However, there is a striking gap in provision for SMEs, principally, we suspect, because of the cost of addressing different small company needs on an individual basis and the difficulty in aggregating demand for more general information. For small businesses there is a bewildering array of advice delivered in a fragmented way by an equally bewildering range of organisations (The Carbon Trust, Envirowise, WRAP, etc.).

For consumers, information is inconsistent and confusing: even those individuals willing and able to make environmentally friendly choices are faced with conflicting advice. Through the very successful public campaigns of bodies like the EST there is enormous emphasis on the energy use of domestic devices, particularly consumer electronics and IT equipment. While this is understandable in the light of the rapid growth in power demand from this equipment, this focus is disproportional to energy use. For instance the average standby consumption of the ten best selling TVs in the UK is now under 1W<sup>15</sup>, yet it is common for a device like a washing machine or microwave to be drawing 10W or more all the time it is not in use (measure yours with a portable appliance tester and see for yourself). In turn, the emissions associated with power consumption of domestic devices are utterly dwarfed by those associated with domestic heating or with travel. Yet the majority of consumers are blissfully unaware of this fact, and will rush out to buy low energy light bulbs or standby busters at the same time as booking their family holiday in Thailand. Unless consumers are educated about the different levels of emissions associated with different activities, the prospect of behavioural change is as dead as a nail. Messages from government need to be much more consistent - in DECC's Road to Copenhagen<sup>16</sup> report for instance, turning off devices is top of the list for individual action, not reducing air travel, car travel or domestic heating.

<sup>15</sup> Source MTP

<sup>16</sup> DECC, 30 June 2009, The Road to Copenhagen, Taking international Action on Climate Change

Conflicting advice is another problem – DEFRA’s high profile “Switch it Off” campaign on TVs coincides with a need, recognised by BERR, for digital TVs to be left on standby during switchover<sup>17</sup> to enable some temporary technical issues to be resolved in the transitional phase. Only the most sophisticated consumer will not be left in confusion by the conflicting advice he is bound to receive.

Another classic example of the mixed messages signals being sent to citizens relates to waste, where incentives are both confusing and non-sensical – rewarding householders for recycling neglects the far more important priorities of reducing and reusing (recycling is an energy intensive process) and it confuses people because it is not sufficiently distinguished from climate change policies (recycling, particularly plastic, has little impact on carbon emissions). It also encourages people to buy goods with packaging for which there is no current market (the UK has to ship all its recyclable plastic bottles to China for processing) instead of putting in place a different form of encouragement – for instance to use either biodegradable or reusable containers for large volume perishables like milk – or to create a market for recycled waste.

### What needs to happen?

- ▶ We need much better information, not just more information. Tools like DEFRA’s Carbon Calculator need to be much more transparent if they are not to be misleading.
- ▶ Emphasis should be proportional to energy use so there must be much greater emphasis on those activities that are the most environmentally damaging.
- ▶ Support should be provided for the development and dissemination of standards or tools, such as the PAS 2050, that provide consistent and systematic approaches to measuring life cycle or embodied carbon.

### Creating a market 2 – Financial incentives – rewarding customers for making the right choices.

**Rationale:** Customers may be able to identify the most environmentally friendly choice but may be discouraged from buying it by its higher cost.

### What’s the score?

Some progress is being made here – consumers are now rewarded for trading in older cars for less polluting models, and we were pleased to see an increase in capital allowances for firms investing in relevant high-tech and green-tech equipment, but such incentives are thin on the ground. The scrappage scheme also seems to be aimed at the market for traditional vehicles (albeit those that perform slightly better) than for ultra-low carbon vehicles. And even genuine incentives may not be enough. As mentioned above, the McKinsey Cost Curve showed very elegantly that between one-third and one-half of all carbon reduction opportunities were at nil or negative net cost. Yet it also showed that these win-win options, these no-brainers, were not being taken up. The question is: why not? Some of the reasons relate to cash flow – lower total cost of ownership is not always more attractive than lower up-front costs to a consumer with limited disposable income or a business with cash flow concerns. Or the payback period is too long. As the CBI Task Force pointed out: “Even where cost savings can be achieved they are not taken up, “because the payback period is too long. Government and business must look for creative ways to bridge this gap”<sup>18</sup>. For instance, energy savings from installing double glazing may take 25 years to realise, yet few individuals remain in the same house for this length of time. Even much shorter payback times are beyond the effective ROI horizon for many businesses.

There are also behavioural, cultural and management barriers which are often more significant than cost issues alone. Traditional accounting structures in large organisations mean that in many cases those responsible for capital purchases are not accountable for the running costs of products or services, which may rest with facilities management. And on a domestic level many people have not taken up the seemingly irresistible offer to re-lag their loft at minimal cost because they cannot bring themselves to tackle the pile of junk that they will have to clear out first.

<sup>17</sup> The switchover from analogue to digital TV in the UK is taking place from 2008 to 2012. For more information go to [www.digitaluk.co.uk](http://www.digitaluk.co.uk)  
<sup>18</sup> Climate Change: Everyone’s Business, CBI Climate Change Task Force, November 2007

### What needs to happen?

- ▶ Financial incentives are needed either at point of sale so that customers are rewarded for making environmentally-friendly choices or for manufacturers to enable them to offer environmentally friendly products and services at more attractive prices.
- ▶ Better information on the total cost of ownership will be needed at point of purchase so that any financial rewards from lower running costs can be factored in by the customer.

### Creating a market 3 – Social incentives

**Rationale:** Changing social norms so that good environmental behaviour becomes socially desirable and bad environmental behaviour becomes socially unacceptable.

### What's the score?

Behavioural change takes a long time – usually a generation. Tackling climate change requires far more rapid and radical behavioural change than any other challenge we have faced. Economic incentives are one way to encourage behavioural change but it is evident that long term rewards are not enough to outweigh short term benefits (see above). The other problem with economic incentives is that in an era when people have significant disposable income, they may choose to pay and therefore feel that by doing so they have paid for the right to pollute. Taxing bad behaviour is not necessarily successful – for instance, a Saturday night spent people-watching in Reykjavik will show just how successful the Icelandic government's attempts have been to price alcohol out of the market.

Social incentives, however, can be fast and powerful drivers of behavioural change. A social incentive is something that genuinely changes social norms so that a change in behaviour is needed in order to be socially acceptable – and socially acceptable could mean ethical, smart or cool – or all three. Hectoring citizens about their behaviour is unlikely to change social norms, as the most cursory glance at the UK's long term campaign to stop people smoking will demonstrate. So social incentives have to be much more creative. Interestingly, in Ireland – the last place on earth that one might expect a restriction on smoking or drinking to be successful, the 'none-for-the-road' campaign on drink driving and the smoking ban have both worked surprisingly well.

Anecdotal evidence suggests that the Irish government has somehow succeeded in making smoking in particular a socially disgusting thing. This approach might bear further investigation.

At the moment, we see no policy emphasis on social incentives and no evidence of any significant initiatives to drive behavioural change through social incentives.

### What needs to happen?

- ▶ A much more creative approach is needed here, both in terms of messaging and media. Some very interesting developments are found in the domains of social networking and serious games (serious games use gaming techniques and technologies for purposes other than pure entertainment). One example is the BBC's Climate Challenge, a game where players have to act as statesmen and address climate change without becoming so unpopular with voters that they lose their seats. This game already has over two million players. Another example is BLOOM, which helps users to find out the emissions they are responsible for and identify ways to tackle them.
- ▶ In terms of messaging, NESTA (the National Endowment for Science, Technology and the Arts) did some excellent work on "selling sustainability" in which they explained how advertising techniques could be used to effect behavioural change<sup>19</sup>. They set out seven criteria to help sell low carbon living, as follows: To be effective, messages have to be 1) clear, 2) compelling, 3) connected (meaningful to the target audience), 4) creative (capturing imagination, engaging individuals positively), 5) configured (matching message to appropriate media and using different media in an integrated way), 6) consistent and 7) confident (being sure of the target audience and tailoring the message accordingly). We would be pleased to see more evidence that lessons like these are being implemented in public campaigns.

<sup>19</sup> June 2008, NESTA, Selling Sustainability: Seven lessons from advertising and marketing to sell low-carbon living

### Creating a market 4: Sustainable public procurement

**Rationale:** With 40% of GDP the public sector is the most powerful driver of change in the UK

#### What's the score?

There is a plethora of initiatives, policies and guidance aimed at sustainable public procurement. These include the OGC's Centre of Expertise for Sustainable Procurement and the MTP Quick Wins Database. The problem is that they are not being implemented. For instance The MTP 'Quick Wins' database lists minimum standards for products procured by government departments, including ICT equipment. From 2008 it also lists more stringent 'best practice' targets. However, a 2007 report by the Sustainable Development Commission noted that 9 of 21 departments do not include Quick Wins as part of their procurement contracts, despite it being mandatory since 2003.

The Cabinet Office's Greening Government IT Strategy<sup>20</sup> seems to be more successful. Early sight of feedback from public sector bodies on progress made in its 18 target areas reveal high reporting rates and a good level of granularity which suggest that this voluntary process has had the benefit of exceptional leadership. Although this is very welcome because it helps to drive demand for the best performing equipment, we would like to see similar attention extended to the use of ICT to deliver efficiency savings across the rest of the public sector estate.

Back in 2005 the NAO report on Sustainable Procurement in Central Government identified a "gap between commitment and implementation" and identified a number of barriers including lack of leadership, lack of integration, decentralisation, ignorance and difficulty in balancing cost with sustainability<sup>21</sup>. The depressing news is that four years later in 2009 they said almost exactly the same:

"At an operational level there was often a gap between high level commitment and operational practice. More work is needed to ensure that sustainability is integrated into departmental procurement processes: departments are not prioritising the provision of training on sustainable procurement; few departments are undertaking environmental

risk assessments of procurement activity; and departments' approaches to monitoring and evaluation of sustainable procurement activity could be more comprehensive. Members of procurement teams we consulted told us that the main barriers to sustainable procurement were: a conflict between sustainable procurement and the focus on reducing costs; a lack of leadership on these issues across government and within departments; a failure to integrate sustainability into standard procurement processes; decentralisation of procurement within departments; and a lack of training and guidance about what sustainable procurement is and how to achieve it. Uncertainty in departments regarding what can and cannot be done under the European Commission's rules on public procurement was rare, despite the fact that this is often cited as a key barrier to sustainable procurement."

Suppliers to the public sector observe that significant barriers to the take-up of solutions that would deliver both improved energy efficiency and cost savings include the diverse and decentralised nature of public sector operations, the outsourcing of services, long term contractual arrangements and lack of leadership.

A number of government departments are producing sustainability Charters, and there is a concern within industry that each department will produce its own unique charter and suppliers will be required to comply with a different set of criteria for each government department. It is important that departments share information and agree on standards and criteria for suppliers that are common across government.

Another area of controversy lies within the procurement standards for ICT where different countries continue to issue different sets of sustainability criteria which requires industry to continually provide equipment built to a "different standard or label in every country." This has a two fold impact: firstly it is not cost effective for business in an economic downturn and secondly, without trusted consistent long term criteria businesses will be discouraged from investing in R&D for sustainable ICT.

<sup>20</sup> In July 2008, the Cabinet Office published the government's strategy on 'Greening Government ICT'. This sets a target for energy consumption of government ICT to be carbon neutral by 2012, and the whole lifecycle by 2020. Key targets of the strategy are to: Extend the life of ICT products, reduce the number of computers to one per head, implement active power management, reduce the number of printers and replace them with multifunctional devices with green defaults, increase average server utilization. The strategy also lists 18 specific simple but high-impact actions that departments could implement to make immediate savings.

<sup>21</sup> National Audit Office, Sustainable Procurement in Central Government, September 2005

We know anecdotally that a great deal of good work is already going on within the public sector but we have repeatedly been rebuffed when trying to develop case studies or publicise these examples so that best practice can be shared, particularly within central government. Our interpretation of the reasoning behind this unwillingness to share best practice is that to do so would mean that the department or agency would be disclosing a benefit or cost saving which might undermine its future funding awards. This approach cannot be justified in terms of public interest or value for money.

Other barriers relate to culture or accounting structures within departments – for instance we know that many departments have a compelling financial and environmental case for implementing video-conferencing or other forms of electronic conferencing. Judging by the number of DEFRA employees travelling long distances on the East Coast Main Line this department should be a prime candidate to benefit from such a system. The barrier is that the cost would be borne by the IT department and the travel savings would be realised elsewhere and there is no scope for setting one against the other. Such illogicalities must be reconciled.

### What needs to happen?

- ▶ Policies and guidelines need to be implemented, and implementation needs to be enforced if necessary.
- ▶ Departments need to get real about benefits and publicise their good practice. Failure to do so firstly slows progress because other parts of the public sector do not have the opportunity to share this best practice and instead have to waste resources reinventing wheels. Secondly it reinforces the public sector's "Sir Humphrey" image of inefficiency and resistance to change in the public eye. Private sector businesses who gain competitive advantage from using new technologies innovatively might be forgiven for a reluctance to divulge exact details (for example Google's unique approach to data handling which delivers unrivalled server efficiency) but it is not acceptable behaviour for departments who are effectively sharing a common resource – public money.
- ▶ Accounting structures within government in particular need to come out of their silos and recognise overall savings.



There is global recognition that intelligent investment in green technologies is the best way to tackle the economic crisis and the problem of climate change simultaneously. We are delighted that UK Government is taking proactive steps to stimulate the growth of a low carbon economy in the UK through the Low Carbon Industrial Strategy, which we believe is a significant and very positive policy development. We, would, however, welcome more explicit recognition of the role that ICT will play in effecting this transition.

There is a slowly growing awareness among businesses, policy makers and observers that in the short to medium term ICT is of fundamental importance in delivering emissions reductions through energy efficiency. In the longer term ICT will also be a critical enabler of the transition to a low carbon economy, where energy supply is decarbonised, where virtual processes replace traditional, high impact ones and where sophisticated infrastructures are digital instead of physical.

Unfortunately, this message is only penetrating the policy agenda at glacial speed. As the OECD<sup>22</sup> analysis showed, policy is still disproportionately focused on the relatively small area of ICT related emissions and not on the wider potential of intelligent investment in ICT and associated technologies to drive growth and emission reductions. We would like to see this important role universally acknowledged and to achieve this there must be much greater rationality and consistency in the messaging coming from Government.

We would also like to see more emphasis on measuring and benchmarking the embodied carbon in devices and services to give individuals and organisations alike greater transparency on the environmental consequences of the choices they make. Support for standards and tools that develop systematic and consistent criteria would therefore be welcome.

We also believe that a strategy that stimulates industry to invest in and deliver low carbon products and services will not lead to the UK's pre-eminence as a low carbon economy unless the right demand mechanisms are in place.

The existence of low carbon products and services will not guarantee their uptake without compelling economic incentives to reward good behaviour. Social incentives will also be needed to overcome the behavioural, attitudinal and cultural barriers that prevent people exploiting even the lowest hanging fruit, the fruit that according to Professor Chu is lying on the ground.

Developing social incentives depends on much greater creativity in approach. We can learn a lot from NESTA's lessons in applying advertising techniques to environmental messaging, but the importance of positive messaging should also not be underrated. As a number of commentators have recently observed, most recently Richard Lambert of the CBI, "no approach based mainly on threats and deprivation is going to work. Martin Luther King did not inspire the world by proclaiming: "I have a nightmare". We must create a positive model of a low carbon future – and one that connects with ordinary, every day life in the present."

The recent OECD conference on ICT and Climate Change<sup>23</sup> made several policy recommendations of relevance to the Low Carbon Industrial Strategy. The first was that green ICT should be perceived as a cross-sectoral rather than a single-sectoral issue, because ICT is now an integral part of everyday processes in almost every sector of the economy. The second was that technology will be so essential to economic restructuring and recovery that economic policy and technology policy should no longer be distinguished as separate strands. Thirdly they recommended that approaches should be integrated – objectives like those of the LCIS will be achieved through multi-disciplinary and multi-sectoral partnerships and alliances, rather than through unilateral approaches.

With this final point in mind, the members of Intellect, both collectively and individually, would be very happy to co-operate in the continued development of this policy agenda which we believe is a major step forward and which we wish very much to succeed.

<sup>22</sup> OECD, Towards Green ICT Strategies, May 2009

<sup>23</sup> OECD conference, ICTs, the Environment and Climate Change, 27-28 May, Helsingør, Denmark



Intellect's mission is to use our expertise and knowledge to provide the highest quality of service and intelligence to our members in the information and communications technologies (ICT), electronics manufacturing and design, and consumer electronics (CE) sectors, including defence and space-related IT industries, helping them to make the right business decisions to deliver commercial solutions and achieve growth and profitability.

We do this by fostering improved business performance, encouraging thought leadership, and making the shaping of markets and influencing of policy possible.

We are constantly striving to provide work environments where our members can meet their potential and thrive in an atmosphere of excellence through working closely with the government, regulatory bodies, policy makers and businesses.

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