



House of Commons
Environmental Audit
Committee

A Green Economy

Twelfth Report of Session 2010–12

Volume II

Additional written evidence

*Ordered by the House of Commons
to be published 30 April 2012*

The Environmental Audit Committee

The Environmental Audit Committee is appointed by the House of Commons to consider to what extent the policies and programmes of government departments and non-departmental public bodies contribute to environmental protection and sustainable development; to audit their performance against such targets as may be set for them by Her Majesty's Ministers; and to report thereon to the House.

Current membership

Joan Walley MP (*Labour, Stoke-on-Trent North*) (Chair)
Peter Aldous MP (*Conservative, Waveney*)
Richard Benyon MP (*Conservative, Newbury*) [*ex-officio*]
Neil Carmichael MP (*Conservative, Stroud*)
Martin Caton MP (*Labour, Gower*)
Katy Clark MP (*Labour, North Ayrshire and Arran*)
Zac Goldsmith MP (*Conservative, Richmond Park*)
Mark Lazarowicz MP (*Labour/Co-operative, Edinburgh North and Leith*)
Caroline Lucas MP (*Green, Brighton Pavilion*)
Ian Murray MP (*Labour, Edinburgh South*)
Sheryll Murray MP (*Conservative, South East Cornwall*)
Caroline Nokes MP (*Conservative, Romsey and Southampton North*)
Mr Mark Spencer MP (*Conservative, Sherwood*)
Paul Uppal MP (*Conservative, Wolverhampton South West*)
Dr Alan Whitehead MP (*Labour, Southampton, Test*)
Simon Wright MP (*Liberal Democrat, Norwich South*)

Powers

The constitution and powers are set out in House of Commons Standing Orders, principally in SO No 152A. These are available on the internet via www.parliament.uk.

Publications

The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the internet at www.parliament.uk/eacom. A list of Reports of the Committee in the present Parliament is at the back of this volume.

The Reports of the Committee, the formal minutes relating to that report, oral evidence taken and some or all written evidence are available in a printed volume.

Additional written evidence may be published on the internet only.

Committee staff

The current staff of the Committee are Simon Fiander (Clerk), Nicholas Beech (Second Clerk), Lee Nicholson (Committee Specialist), Andrew Wallace (Senior Committee Assistant), Anna Browning (Committee Assistant), and Nicholas Davies (Media Officer).

Contacts

All correspondence should be addressed to the Clerk of the Environmental Audit Committee, House of Commons, 7 Millbank, London SW1P 3JA. The telephone number for general enquiries is 020 7219 6150; the Committee's email address is eacom@parliament.uk

List of additional written evidence

(published in Volume II on the Committee's website www.parliament.uk/eacom)

1	Agri Energy	Ev w1
2	BSW Timber Ltd	Ev w3
3	Industry Council for Packaging and the Environment	Ev w5
4	Carbon Tracker Initiative	Ev w5
5	The Packaging Federation	Ev w8
6	UK Sustainable Biodiesel Alliance	Ev w11
7	National Federation of Roofing Contractors Ltd	Ev w15
8	Woodland Trust	Ev w17
9	RSPB	Ev w22
10	Paul Appleby	Ev w26
11	British Retail Consortium	Ev w32
12	Public Interest Research Centre	Ev w36
13	International Synergies Ltd	Ev w40
14	John Lewis Partnership	Ev w44
15	Wood Panel Industries Federation	Ev w47
16	Institute for Learning	Ev w49
17	Society of Motor Manufacturers and Traders	Ev w50
18	Royal Academy of Engineering	Ev w52
19	Microsoft	Ev w54
20	Farming First	Ev w57
21	Scottish Renewables	Ev w63
22	PowerPerfactor	Ev w66
23	Institute of Ecology and Environmental Management	Ev w68
24	EEVS Insight Ltd	Ev w71
25	INEOS	Ev w73
26	Environmental Treatment Concepts Ltd	Ev w76
27	Gentoo Group Ltd	Ev w80
28	Paul Crossley	Ev w82
29	Carillion Energy Services	Ev w82
30	Research Councils UK	Ev w85
31	Northumbrian Water Group	Ev w91
32	Office of the City Remembrancer City of London Corporation	Ev w92
33	Office for National Statistics	Ev w94
34	UK Sustainable Bio-Diesel Alliance	Ev w99
35	Combined Heat and Power Association	Ev w103
36	Imperial Centre for Energy Policy and Technology, Sussex Energy Group and UK Energy Research Centre	Ev w106
37	Air Products	Ev w113

Written evidence

Written evidence submitted by Agri Energy

1. INTRODUCTION TO AGRICULTURE ENERGY

1.1 Agri Energy is one of the UK's largest distributors of fresh cooking oil to the catering industry and is the largest collector of waste cooking oil, collecting from over 60,000 catering establishments in the UK. Agri Energy collects Used Cooking Oil (UCO) from food manufacturers and the retail and catering sectors, preventing it from being dumped illegally, and turns it into biodiesel for use as a renewable transport fuel. It has twelve depots across the UK, three bio-refineries capable of processing UCO into renewable bioliquid or biodiesel, and employs 350 people across the country.

1.2 Agri Energy has, in conjunction with its partners, been able to deliver a "closed loop" of sustainability which sees us deliver fresh cooking oil to our clients' premises, then collect the waste oil and turn it into sustainable biodiesel which is then used to fuel captive fleets. One project in particular has seen a reduction of 9,429 tonnes of CO₂ emissions per annum, as well as a saving of 5,000 road journeys through reverse logistics solutions. It has necessitated investment of £4.5 million and the creation of 40 full time jobs, and is exactly the sort of innovation that will be necessary if the Government is to meet its challenging targets for emissions reductions, renewable energy use and the creation of a green skills economy.

1.3 Agri Energy also offers a rapidly expanding Food Waste collection service for its customers. Food waste is taken for composting or as a feedstock for Anaerobic Digestors. Agri Energy is in the process of establishing its first Anaerobic Digestion plant.

1.4 Agri is fully supportive of the Government's emphasis on the green economy and its commitment to ensuring that the renewables industry becomes an ever increasing part of the UK's energy mix.

2. SUMMARY

2.1 This paper sets out Agri's submission to the Environmental Audit Select Committee's inquiry into how the Government can remove the barriers preventing the transition to a green economy and create the conditions necessary for investment in low carbon skills and jobs in the renewable energy sector to flourish. It is comprised of four sections and makes recommendations on how the tax and regulatory regimes in each of the following areas can be reformed to encourage greater take up and investment of renewable energy:

- The 20p fuel duty differential for sustainable biodiesel.
- The 2,500 litre fuel duty derogation for biodiesel producers.
- Bioliquids and the Renewable Heat Incentive.
- Anaerobic Digestion.

2.2 Our submission to the inquiry makes the following policy recommendations:

- The 20p fuel duty differential for biodiesel made from UCO should be extended beyond April 2012 to compensate for the inherent flaws in the Renewable Transport Fuels Obligation, and to ensure that the sustainable biodiesel industry retains a competitive price advantage against fossil fuels.
- The 2,500 litre fuel duty derogation for biodiesel producers should be abolished as it has driven the creation of a large black market biodiesel industry and led to increased theft of raw materials. It also undermines investment and job creation by legitimate sustainable biodiesel producers by subjecting them to unfair competition.
- The 0.5 ROC uplift for bioliquids in Combined Heat and Power should be abolished in favour of eligibility for the Renewable Heat Incentive. There also needs to be a greater appreciation within the Department for Energy and Climate Change (DECC) of the benefits of sustainable biofuels over those made from less desirable feedstocks.
- A ban on food waste to landfill, with a two year grace period to allow the supply infrastructure to be put into place, would ensure that more waste is effectively diverted into Anaerobic Digestion.

3. THE 20P FUEL DUTY DIFFERENTIAL FOR SUSTAINABLE BIODIESEL

3.1 Biodiesel made from UCO is acknowledged to be one of the most sustainable transport fuels. As a waste product, UCO avoids the negative indirect land use impacts traditionally associated with biofuels and is one of the only truly sustainable feedstocks that can help meet the Government's objective to increase the proportion of transport fuel made from renewable sources.

3.2 Figures from the Renewable Fuels Agency based on a life-cycle analysis suggest UCO can deliver emission reductions savings of 84%. Our own measurements using ISO 14064 show savings of at least 95% for biofuel production when the required heat and power is provided by CHP run on a bioliquid. This is higher than any other biofuel feedstock. Agri is proud of this achievement and acknowledges that it has only been made possible by the variety of support mechanisms offered by government.

3.3 Biodiesel produced from UCO currently enjoys a 20p per litre fuel duty differential compared to regular diesel. This has been largely successful in promoting the use of waste derived bioliquids in transport fuel and ensuring that waste oil is not illegally poured down the drain. By creating stability and market certainty it has given investors the confidence to plan new projects, and the clear cost benefit has encouraged many large companies to switch their captive fleets to biodiesel. It has also helped drive waste collection and renewable energy creation, allowing businesses to research new conversion techniques and train employees in the green skills that will be required for future innovation.

3.4 However, this good work is in danger because of uncertainty over the future of the 20p duty differential. The differential is due to expire in April 2012. The Government has said it hopes double certificates under the Renewable Transport Fuels Obligation (RTFO) will become the main support mechanism for the sustainable biodiesel industry after the differential is abolished. However, the RTFO is a poor substitute for the duty differential. It is overly complex and bureaucratic, and is an expensive system to run. It is complicated to understand and requires significant time on the part of businesses to calculate estimated cash flows. Certificate prices are prone to significant fluctuations, making long-term planning and revenue forecasting extremely difficult, and this problem is likely to be exacerbated once UCO biodiesel becomes eligible for double certificates as the potential spread of incentive will increase from 20p–50p to 0p–60p.

3.5 As the European Commission is undertaking work on possible further legislation regarding the sustainability of biofuels and the RTFO is to be reviewed again in 2014, the regulatory environment for investors remains highly uncertain. This is acting as a barrier to investment and a disincentive to take advantage of the opportunities offered by the renewables sector.

3.6 There is a real danger that, when the differential is abolished in April 2012, biodiesel from UCO will suddenly become 20p per litre more expensive. Many captive fleets will simply find it cheaper to switch back to mineral diesel, negating all the work that has been done in promoting an increase in renewable transport fuel and potentially causing many biodiesel producers to go out of business.

3.7 As a solution, Agri would propose an extension of the 20p fuel duty differential for biodiesel produced from UCO until the Government becomes clearer about how it wishes to incentivise sustainable and renewable road transport fuel beyond 2014. Agri has set out a number of options to the Treasury and Department for Transport (DfT) on how this could be accomplished while still meeting the requirement to double count waste derived transport fuels under the Renewable Energy Directive.

4. THE 2,500 LITRE FUEL DUTY DEROGATION FOR BIODIESEL PRODUCERS

4.1 In 2007 the Chancellor announced that motorists who refine or use less than 2,500 litres of biodiesel per year to run their cars would be exempt from paying fuel duty. This was in response to unflattering news stories of police officers and tax inspectors staking out supermarkets and sniffing exhaust fumes to identify drivers that were buying cheap cooking oil and pouring it straight into their tanks without paying any duty.

4.2 However, this duty derogation has created a lucrative underground industry with black market producers selling their product illegally and ignoring the 2,500 litre limit. Moreover, the proliferation of unregulated biodiesel, which contains dangerous combustible elements and by-products, can pose a serious health and safety threat to those involved as well as to the environment unless it is produced as part of a strictly controlled and monitored process. The fuel duty exemption for those who produce less than 2,500 litres of biodiesel per year has also led to a spate of thefts of UCO from catering establishments. Agri estimates that 25% of all UCO is stolen, equalling 30 million litres of biodiesel with no duty paid.

4.3 Black market biodiesel is a profitable business. A small processor can be bought for as little as £995, or leased for £7 a week. It costs about 20p a litre to turn vegetable oil into biodiesel if you cut corners, use inferior elements and do not follow stringent regulations and processing methods. If a producer steals the UCO, it costs nothing to get the raw material, nor is VAT paid at 20%. Diesel currently costs about £1.32 per litre at the pump. The cost to produce sustainable and professional biodiesel from UCO is around £1.24 per litre, but producing black market biodiesel with stolen materials can cost just 20p a litre. It also creates unfair competition for legitimate biodiesel manufacturers, who adhere to strict standards for health and safety and fuel quality.

4.4 As a solution, Agri would recommend the abolition of the fuel duty derogation for those who refine less than 2,500 litres of biodiesel per year. Legitimate producers who meet environmental standards would still benefit from the 20p per litre fuel duty differential, should the Government decide to retain it, while black market producers would no longer fly under HMRC's radar and be able to undermine the sustainable biodiesel industry with poor quality fuel sold via the black market.

5. BIOLIQUIDS AND THE RENEWABLE HEAT INCENTIVE

5.1 One of the biggest problems is that current renewable energy policy sometimes fails to distinguish between "good" bioliquids, such as those produced from residues and waste like UCO, and "bad" bioliquid, such as those produced from virgin crops like palm oil. Bioliquids currently remain excluded from grandfathered support under the Renewables Obligation, excluded from the forthcoming Renewable Heat Incentive except in small scale domestic boilers, and excluded from Feed-in-Tariffs, largely because of concerns

that incentivising waste derived bioliquids may in some way lend support for non-sustainable bioliquids. We have found that the DECC will tell us that sustainable biofuels are best directed into transport, while at the same time the Department for Transport will suggest that such fuel is best used in heat and power.

5.2 Bioliquids currently receive an uplift of 0.5 ROCs through the Renewables Obligation when used in CHP and when 25% of the available heat is captured. However, this is due to be phased out once the Renewable Heat Incentive comes into being. As all bioliquids, regardless of sustainability, are to be excluded from the RHI, producers will again be placed at a competitive disadvantage.

5.3 We would propose that the benefits of waste derived bioliquids in producing renewable heat, particularly through CHP, should be recognised, and that the 0.5 ROC uplift should be abolished in exchange for the inclusion of waste derived bioliquids within the RHI. Any reward for waste derived bioliquids in the RHI should be granted in proportion of available heat which is successfully captured.

6. ANAEROBIC DIGESTION

6.1 Agri supports the Government's pledge to seek a massive increase in renewable energy generated from Anaerobic Digestion, and welcomes the broad range of incentives available to generators. However, the success of this will depend on the reliability of the food waste supply chain. The current system to promote the collection of food waste and convert it into renewable energy is not working for the catering sector, which is estimated to produce five million metric tonnes, or 25% of the UK's food waste. This is because the cost of smaller multi-site collections is more expensive than bulk collection from manufacturing sites, and because there are not sufficient disincentives to using landfill.

6.2 There are a number of ways that food waste could be more effectively diverted into Anaerobic Digestion. These include increasing the landfill tax faster than the current scheduled increases, banning food waste in commercial businesses, and giving more ROCs for food waste when used in Anaerobic Digestion. From a political perspective, we understand that it may be more desirable to avoid tax increases and so a more attractive option would be an outright ban on food waste from commercial businesses being sent to landfill. While this could be considered a bold move, with the right transition period of around two years we believe the industry would be able to respond to handle such a situation, and this would provide an incentive for them to take advantage of the most efficient collection and disposal technologies.

22 August 2011

Written evidence submitted by BSW Timber Ltd

EXECUTIVE SUMMARY

- BSW Timber is the UK's largest sawmilling group.
- The sawmill sector has a responsible attitude to sustainability of supply, and is a valuable component of the green economy.
- The sawmill sector is being undermined by the Government's policy of subsidising the energy sector to burn woody-biomass for renewable energy.
- In progressing towards a greener economy, the Government must take measures to ensure that existing green industries are not displaced or undermined.

BSW TIMBER

(1) BSW Timber supplies sawn timber products to customers in the construction, pallet and packaging, fencing, garden, and DIY sectors. The group has an annual production capacity of over 1,000,000m³ of sawn timber. Annual turnover is in excess of £163 million.

(2) BSW Timber brings considerable environmental, economic and social benefits to the communities it operates in, and the UK as a whole. The company directly employs 800 people: indirect employment in timber harvesting and haulage accounts for another 2,500 jobs.

(3) The BSW group operates six mills across the UK: in Scotland, England and Wales; and one mill in Latvia. The group processes around 15% of the UK timber harvest annually. The business is currently implementing a five year capital investment programme, worth £52 million, to modernise the mills.

(4) The transition to a green economy should not be undertaken at the expense of existing industries which already make a positive contribution. The green economy should build upon the good work which many companies, including BSW Timber, have already begun.

THE SAWMILL SECTOR AS A MODEL FOR BUSINESSES IN THE GREEN ECONOMY

(5) BSW Timber is a long-term buyer of sawlogs from the Forestry Commission, and has invested in FC forests in the Lake District, the Yorkshire Moors, the Forest of Dean, and across South and West England. The

company annually spends over £20 million directly with the Forestry Commission, and a further £5 million through third party harvesting companies.

(6) The Forestry Commission manages the public forest estate to UK Woodland Assurance Standards (UKWAS).¹ Through this Standard BSW has a chain of custody accreditation to supply the market with timber certified as sustainably sourced.

(7) BSW Timber is a major producer of sustainable and low-carbon building materials. Wood is the least carbon intensive building material; every cubic metre of wood that is used in place of alternative materials saves between 0.7 and 1.1 tonnes of carbon dioxide.² By using a timber frame, it is possible to reduce the carbon footprint of a typical 3 bedroom house by approximately 3 tonnes.³ 4.2 tonnes of CO₂ can be saved per 50 square metre of wall element, by substituting timber frame and softwood weather boarding for brick and block. 13.85 tonnes of CO₂ can be saved when softwood weatherboarding is substituted for PVCU weather boarding. Encouraging greater use of wood products, and substituting wood for other materials in construction, is an essential component of moving towards a green economy, by helping to reduce carbon emissions and support sustainable industries.

(8) Over 97% of the softwood used in UK construction is sourced from European countries with strong forest governance and stable forest estates, ensuring a renewable line of supply. A healthy market for wood products can encourage the expansion of sustainably managed woodlands and forestry, increasing the carbon sink effect and reducing CO₂ emissions further.

(9) To maximise the carbon storage potential of wood, the lifespan of wood and wood products should be extended as far as possible, through good design and maintenance, re-use, and recycling. By turning wood into useable material, sawmill manufacturing performs a valuable carbon capture and storage function, sealing carbon in for the life-span of the product. In a modern green economy, wood should be utilised to its full potential before any energy-recovery procedure (such as burning for renewable energy) takes place.

THREATS TO THE SECTOR FROM CURRENT GREEN ENERGY POLICY

(10) As a large consumer of UK-sourced wood, BSW is a key stakeholder in biomass-for-energy policy. We rely on a sustainable supply of wood to enable continued capital investment and to maintain international competitiveness against timber imports.

(11) Demand for UK wood already outstrips supply. BSW Timber is deeply concerned about the Government's subsidisation of industrial wood-burning for electricity. Large-scale biomass electricity generators threaten to divert wood supplies away from saw mills, leaving us unable to compete on price for an increasingly scarce resource.

(12) The Government's policy of subsidising the energy sector to burn woody biomass for electricity—commonly in the form of virgin timber—is making it increasingly difficult for the sawmilling sector to compete fairly for its feedstock. A steady and sustainable supply of wood is vital to the sector. It is essential that subsidisation packages like the Renewables Obligation do not undermine existing industries which already play a significant role in the green economy.

(13) BSW Timber is not wholly opposed to using biomass for energy, and does appreciate the value of burning wood biomass for heat. The company has invested in biomass boilers to produce renewable heat. However, in a green economy, wood is only a suitable fuel for energy when it has reached the end of its useable life-span.

CONCLUSION

(14) The sawmill sector is an essential component of the UK's green economy. Its responsible attitude to sustainability of supply and efficiency of use embodies the principles of the green economy. The drive towards a greener economy must not see existing industries which already make a positive contribution, such as the sawmill sector, being displaced. Instead, those sectors should be valued and supported, for implementing the kind of green principles that other industries should adopt.

22 August 2011

¹ The Standard is independently accredited by the Forest Stewardship Council (FSC) and (PEFC) Programme for the Endorsement of Forest Certification

² Edinburgh Centre for Carbon Management

³ http://www.woodforgood.com/the_facts.html

Written evidence submitted by INCPEN, The Industry Council for Packaging and the Environment

BACKGROUND

INCPEN was established in 1974 to study the environmental and social impacts of packaging. It conducts scientific and social research into related issues. Recent research includes:

- Table for One—the energy cost to feed one person.
- Why products are packaged the way they are.
- Driving Sustainability: a survey of INCPEN members.

<http://www.incpen.org/pages/pv.asp?p=ipen10>

SUMMARY

1. INCPEN's members,⁴ who represent a large proportion of the UK's major manufacturers and producers, including food and drink, entirely endorse the need to move towards a green economy. In fact INCPEN members already make considerable but largely unrecognised contributions to such an economy and have been actively working towards it for a number of years, as evidenced by their annual reports and by the case studies set out in the Transition to a Green Economy documents, as well as by WRAP's findings on achievements via the Courtauld Commitment.

2. INCPEN welcomes the Committee's balanced focus on economic, social and environmental outcomes. We are often concerned that taking a narrower focus (on just environmental aspects for example) results in unintended consequences and poorer outcomes.

3. In the same vein, taking a narrow focus on packaging, rather than a broad view of the need to get goods through the supply chain in the most resource efficient way, is unlikely to deliver the best solutions. Packaging cannot be seen in isolation from the product it protects, and the transport and distribution systems that depend on it.

4. The term "environmentally friendly packaging"⁵ is misleading: no packaging of whatever material is, per se, better than another. The packaging must be individually chosen to match the specific needs of the product, the supply chain and the consumer, while taking into account resource efficiency and cost.

5. For that reason, if we are to achieve the Green Economy, policies must not be prescriptive. Policy measures which limit industry's ability to innovate, and to adapt to changing markets, could present barriers to a green economy. Similarly, policy measures which hamper industry's ability to be competitive will harm the UK economy.

6. The report⁶ rightly notes that "local" food is not necessarily more sustainable than that produced at a distance. Such information is not provided to consumers at present, and INCPEN believes the Committee will offer a valuable service by publicising such—perhaps counter-intuitive—truths.

7. In order to achieve a Green Economy, INCPEN believes it is important to offer scientifically sound information to the general public, and not simply to reiterate simplistic catch phrases which, while getting attention, do not actually enable people to understand the issues or to take action to improve their own environmental impact.

18 August 2011

Written evidence submitted by Carbon Tracker Initiative

SUMMARY

- The UK is a global financial centre, especially for natural resources companies.
- The fossil fuel reserves owned by listed companies globally exceeds the global carbon budget to 2050.
- The carbon dioxide potential of coal, oil and gas reserves listed in London (105 GtCO₂) is equivalent to ten times the UK carbon budget to 2050 (10 GtCO₂).
- The short-termism of incentives and benchmarks applied in the investment industry perpetuates investment in the fossil fuel industry, locking it into a high carbon portfolio.
- The UK market in particular is exposed to systemic risk from a carbon bubble, which is based on the assumption there is no limit to how much carbon can be emitted.

⁴ Amcor Flexibles, ASDA, Ball Packaging Europe, Boots, Britvic Soft Drinks, Cadbury, Coca-Cola, Colgate- Palmolive, Consol Glass, CROWN Europe, DS Smith, Diageo, Dow, Duracell, Elizabeth Arden, Gillette, Green & Black's, Kellogg's, L'Oréal, LINPAC Group, Marks and Spencer, Molson Coors, Nestlé UK, Procter & Gamble, Red Bull, Rexam, RPC, Sainsburys, TATA, Tesco, Trebor Bassett, UFLEX, Unilever, Warburtons

⁵ page 6, col 2 final para Enabling the Transition to a Green Economy: The Transition for the Food and Drink Industry

⁶ Enabling the Transition to a Green Economy: The Transition for the Food and Drink Industry

- UK Pension Funds have a large proportion of assets tracking the markets (passively and actively managed), exposing them to these risks.
- Asset owners are not actively challenging the business model of companies they hold share in which approves \$billions of investment in finding more reserves each year.
- Financial regulators need to tackle the short-termism and failure to address systemic risks which result in the capital allocation process perpetuating a fossil-fuel based economy.
- The UK has significant exposure to this issue which provides the incentive for leading on international solutions to deliver a global green economy.

This submission is made by James Leaton, Project Director of the Carbon Tracker Initiative—a non-profit think-tank working to align financial markets with climate change objectives.

UK ECONOMY

1. The UK is a global financial centre and the financial sector forms a significant part of the UK's economy, (over 12% of GDP and employing over 1 million people). The footprint of the financial services provided in London is felt globally, with the city providing services to link capital to economic activities around the world. Indeed the impact of the finance delivered through London is far greater than the impact of domestic activities in economic, social and environmental terms.

OUTCOME REQUIRED

2. The UK has established some leadership in climate change through the adoption of carbon budgets under the Climate Change Act. However the financial services sector is not aligned with the emissions reduction trajectory outlined in UK regulation or required for the international objective to limit global warming to 2 degrees agreed in Copenhagen and Cancun Conferences of the Parties. The orientation of the financial markets towards a fossil-fuel based economy indicates that the framework is not in place to deliver the outcome required.

BARRIERS TO THE TRANSITION TO A GREEN ECONOMY

3. Our research has analysed the carbon dioxide emissions potential of the fossil fuel reserves owned by companies listed on the London Stock Exchange. This found that in February 2011, the largest coal, oil and gas extraction companies which raise capital through listing their shares in London have fossil fuel reserves which would release 105.5 GtCO₂ if burnt unabated. London has one of the highest absolute levels of reserves of any stock exchange, with total listed reserves equivalent to 745 GtCO₂.

4. At a global level this compares to a remaining global carbon budget (as calculated by the Potsdam Climate Institute) of 565 GtCO₂ for the 40 years to 2050 to limit the probability of exceeding 2 degrees of global warming to 20%. And total proven reserves (owned by governments, private companies and publicly listed companies) are equivalent to 2795 GtCO₂. This means that only around 20% of proven reserves can be burnt unabated over the next 40 years if we are to have a reasonable chance of staying below 2 degrees of warming.

5. The full analysis behind these figures is available in the report “Unburnable Carbon—are the world's capital markets carrying a carbon bubble?” by Carbon Tracker which is provided as supplementary material.

6. London has become a world centre for natural resources companies. 70 % of new share listings in London in the first half of 2011 were from companies in the extractives sector. As a result the UK's financial sector is particularly exposed to commodity risk, and therefore carbon risk. Around one third of the market capitalisation of the FTSE 100 Index relates to oil, gas and mining companies. At present this is at risk of getting worse, with more extractives companies in the pipeline for new listings in London.

7. To put the scale of the potential impact of London's listed reserves in context, the 105.5GtCO₂ listed is 10 times the expected carbon budget for the UK over the next 40 years to reach its 2050 target. The UK's domestic carbon budget to 2050 is 9.5–10.5 GtCO₂—the figure is a range as the rate of reduction that will be achieved over the decades is not yet known.

8. At present the market is not reflecting any significant climate change risk in terms of emission restrictions as it does not deal in the timescales required. This is a consequence of what Andy Haldane, Executive Director of Financial Stability at the Bank of England refers to as “market myopia”. This focus on short term rewards is a barrier to capital being switched to cleaner energy alternatives and energy efficiency opportunities.

THE APPROACH REQUIRED TO DELIVER A GREEN ECONOMY

9. The capital markets continue to be driven by short term investment approaches, which reward quarterly performance of companies and fund managers. Unless investors and regulators drive forward a more long term model, the status quo of using capital to find more and more fossil fuel reserves will be perpetuated. As long as investors can switch out of equities at any time, they will continue to invest in fossil fuels to reap short term rewards, at the expense of long-term sustainability.

10. This assumption that there is no limit to how much carbon can be burnt is creating a carbon bubble of the stock markets. It is akin to assuming that house prices would always keep rising. The markets have demonstrated that they are not good at regulating this kind of systemic risk during the financial crisis. Looking at individual companies it is not clear that together the companies have more reserves than we can afford to burn. It is only when someone adds it all up and takes a portfolio or market view that it becomes obvious that the numbers do not add up.

11. The significance of the constituents of the UK indices such as the FTSE100 is that these are used as the benchmarks for fund manager performance and pension fund returns. Pension funds continue to allocate assets to passive funds which track the market. Even actively managed funds are tied into the benchmarks as there is no incentive to deviate significantly from the sector distribution of the market, as this increases the risk that those with fiduciary duties, (fund managers, pension fund trustees) will underperform the market. 72.6% of corporate pension funds in the UK used an index benchmark as the primary performance objective in 2009. This means that UK pensions are significantly exposed to the carbon bubble risk that the stock markets are building up.

12. The government has recognised the importance of shifting capital to finance a low carbon economy through agreeing to establish a Green Investment Bank in some form. The government has also announced a Capital Markets Climate Initiative which aims to make London a hub for green finance. However these initiatives are currently dwarfed by the fossil-fuel intensity of the London Stock Exchange. The Government needs to find practical ways to decouple the links between the investment banks bringing fossil fuel IPO's to the London Stock Exchange and the requirement of over two thirds of UK investors to automatically buy at the float, for index tracking reasons. Only then will investors looking to buy into energy, be incentivised to look further afield into non fossil fuel components of the energy mix on London's capital markets.

13. There is very limited discussion of the barriers that the financial markets currently contribute to delivering the government's Roadmap to a Green Economy. Given how critical it is to redirect capital to deliver any part of the green roadmap, it is essential that this is addressed. We believe this is entirely consistent with the approach outlined for the roadmap, in terms of long-term sustainable growth; using natural resources efficiently; and being more resilient by reducing reliance on fossil fuels.

PRIORITIES FOR ACTION AND THE ROLES OF DIFFERENT ACTORS

14. The government needs to recognise the market failure to align with climate change objectives and work internationally to create markets which can deliver reduced emissions. We believe this will require a more forward-looking approach at how fossil fuel reserves are treated by accountants, investors, financial regulators and extractives companies. The assumptions behind valuing all reserves as assets when the total exceeds carbon emissions limits need to be challenged and addressed by regulation, reporting requirements and valuation models. The market is currently aligned to IEA growth predictions of traditional energy demand increasing, rather than low emissions scenarios.

15. As part of its consideration of how asset owners should be more active and fulfil their fiduciary duty, the government should consider how the theoretical long-term investment strategy of many funds can be translated into practice. For example, what would make shareholders question the business model of an oil corporation approving \$25 billion in capital expenditure each year to find more fossil fuel reserves, despite the fact that the world has more than enough to exceed its climate change objectives?

16. To amend the current system will require the capital and debt raising systems to work together to create a more long term approach. This means all the players including asset owners, fund managers, analysts, brokers, investment banks, accountants, and companies need to be involved to create the solution rather than blaming other parts of the investment chain for their focus on short term results.

17. This current situation of a carbon bubble sitting on the financial markets represents a test for regulators—how can they gradually release the bubble and tackle the systemic risk it poses? It is surely preferable to act now and prevent a crisis, rather than leaving it to explode later, despite the warnings that were given. This is an extension of the principle established by Lord Stern's review of the Economics of Climate Change which calculated that it would be much less of an economic burden to act now, than to act later.

INDICATOR OF A GREEN ECONOMY

18. The level of fossil fuel reserves sitting on our stock exchange should become a key indicator of the direction our economy is headed. It would be misleading to suggest we have a green economy if we continue to be the leading centre for providing capital to finance fossil fuel extraction.

CREATING A GLOBAL GREEN ECONOMY—2012 RIO SUMMIT

19. We believe this issue also needs to be explored in the context of international climate change negotiations. It should become transparent where the capital is coming from to finance the exploitation and combustion of fossil fuel reserves in countries we are seeking to persuade to agree emissions reductions targets. This should be debated at the green economy discussions at the Rio 2012 summit.

RECOMMENDATIONS

20. We would make the following recommendations for government action:

- The UK listings authority requires companies to disclose their reserves and the potential carbon dioxide emissions that would result from unabated combustion of those reserves.
- The financial regulator tracks the levels of fossil fuel reserves owned by companies listing on its exchange in order to assess the level of systemic risk.
- The recently formed Financial Policy Committee and the Kay Review of UK Equity Markets look at the systemic risks, bubble effects, and short-termism that this issue demonstrates and recommend measures to tackle them.
- The UK leads an international process for all stock exchanges to take similar measures through the Financial Stability Board (G20), and international accountancy standards organisations (IASB/IFRS) and securities commissions associations (IOSCO).
- The UK convenes a discussion at the Rio 2012 summit to consider this international issue and acknowledge the changes that are required.

18 August 2011

Written evidence submitted by The Packaging Federation

The following submission is made by Dick Searle (Chief Executive) on behalf of The Packaging Federation, a not-for-profit organisation representing the UK Packaging Manufacturing Industry. As a manufacturing sector this Industry comprises some 3% of UK manufacturing with approximately 85,000 employees and a turnover in excess of £11 billion.

EXECUTIVE SUMMARY

- There is a real lack of clarity on the vision of a Green Economy that is being pursued. Whilst the achievement of dramatically reduced levels of carbon emissions and resource usage would logically suggest the full engagement of consumers in identifying appropriate “behaviour”, current policy appears to be focussed on expecting UK business to “compensate” for the impacts of unrestrained consumer demand. Pursuit of this “model” of a Green Economy has the apparent advantage of avoiding unpopularity with consumers (voters) but is much less likely to reduce impacts to targeted levels. At the same time it will place UK business at a very substantial disadvantage to its international competitors.
- We are clear that there needs to be considerably more dialogue between industry and Government if we are to avoid indiscriminately sacrificing manufacturing industry on the “altar” of low carbon. In our view, there is a real danger of a fundamental incompatibility between UK climate change goals and economic growth (for most of manufacturing industry) and we see very little sign that this is well enough understood within Government.
- Carbon demand is created initially by consumer demand for goods and services—and industry does not have an infinite capacity to compensate for this but there appears to be little political recognition of this. Despite claims to the contrary, the global carbon footprint of UK (consumer) demand has actually increased by some 30% in the period from 1990–2006 and it is only a substantial shift in the manufacturing of goods away from the UK that has enabled the claim that the UK’s “local” carbon footprint has actually reduced. Any policy that expects industry to reduce UK industrial carbon impact whilst the impact of consumer carbon demand is ignored can only lead to a further and substantial erosion of the UK’s manufacturing base.
- The setting of a UK *unilateral* floor price for carbon, as recently announced, will have a highly damaging effect on UK industry and business as it will have far reaching implications for its ability to compete in the UK and globally.
- Much of UK manufacturing industry, and certainly a significant proportion of our own industry, is owned by companies based outside the UK. The acid test for future policy will be whether or not it describes an industrial scenario that is likely to encourage investment into UK based businesses.
- The current UK political focus is on “localism” in areas including waste management, recycling and broader resource use and husbandry. Achievement of a successful Green Economy *will* require clear National strategies to guide appropriate local implementation.
- There is a clear lack of (political) leadership for consumers on issues of the environment and resource efficiency and there is an overwhelming need for a policy that bases consumer “education” on sound science and information. Failure to address this will lead to a continued mismatch between the nature of consumer demand and the industrial strategy that seeks to fulfil it. It is absolutely essential that policies directed at the achievement of a Green Economy are based *only* on sound scientific facts.

- As an Industry, we can clearly demonstrate that our products make a substantial contribution already to minimising ghg emissions by preventing substantial product wastage (far more than any impacts from our products at “end of life”) and also to enhanced resource efficiency by saving far more resources than we use. It is, therefore, particularly galling to see our “profile and credibility” undermined by the continuing focus on perceived negative aspects of our products. If the Green Economy is to be taken seriously, it must support those industries, like ours, that enable effective resource use, minimised waste and reduction of greenhouse gas emissions.

DETAILED SUBMISSION

(1) We fully support the EAC’s aim to examine the concept of a Green Economy in the UK. However, we do not believe that the outputs to date, including the recently published “Enabling the Transition to a Green Economy: Government and business working together” (attached as Appendix 1), have yet defined what is really meant by a Green Economy. To date the context of a Green Economy has been inextricably linked with the steps that are being taken to re-balance the economy and support a regeneration of private sector growth and the focus is almost entirely on the behaviours of this sector. If the twin challenges of Global Warming and Resource Efficiency are to be robustly addressed however, it will require dramatic changes across the behaviour of the whole of society not just that of business. In essence we believe that there are two alternative visions of a Green Economy:

- (a) A scenario where there is full engagement with society (consumers) at large about the way in which we live and consume resources, if reductions in greenhouse gas (ghg) emissions of 80+% by 2050 are to be accomplished. Any such scenario would describe a very different world which will clearly require “seismic changes” in demand profiles and the ways in which this demand is satisfied. It would also require frank and honest exchanges between consumers and government on such changes and the reasoning and science behind them. Clearly, such a scenario would be politically unpopular and would require a high degree of international co-ordination but it would leave UK business far less vulnerable to the unilateral nature of current UK “carbon policy” and would have a much greater chance of delivering the actions needed to meet ghg and resource efficiency targets.
- (b) The second scenario is much closer to current thinking which appears to lack any significant level of positive or scientifically based engagement with consumers. In essence, consumers are expected to continue to behave within current patterns whilst UK business is expected to compensate for the carbon, environmental and resource efficiency impacts of such behaviour. Whilst this has the apparent advantage of avoiding unpopularity with consumers (voters), it is much less likely to reduce impacts to targeted levels whilst, at the same time, putting UK business at a very substantial disadvantage to its international competitors.

At present, it looks highly likely that the second scenario will be the basis on which future policy is decided and, accordingly, we have made the rest of our submission based on this assumption.

(2) As an industry, we are very concerned that the challenges of global warming are met in a way that does not disproportionately penalise much of UK manufacturing industry and so we are anxious to play the fullest part in any discussions on “low carbon strategy” and we certainly welcome the opportunity to comment at this stage on the Green Economy and the attendant Roadmap. In so doing, it is inevitable that we will be critical of some of the positions taken to date but we do want to make it clear that we do so in the spirit of finding the right answers not because we are, in any way, seeking to deny the need for clear leadership and courses of appropriate action in tackling climate change. We are clear that there needs to be considerably more dialogue between industry and “Government” if we are to avoid indiscriminately sacrificing manufacturing industry on the “altar” of low carbon. In our view, there is a real danger of a fundamental incompatibility between UK climate change goals and economic growth (for most of manufacturing industry) and we see very little sign that this is well enough understood within Government. We believe that there are paths that should be followed to find the best ways to address this and these include fostering a much better understanding of the issues involved and the constraints under which goods are made and used—and we are ready and able to assist in achieving this and “educating” both policy makers and those tasked with articulating and implementing these policies. What none of us can do is change the laws of physics or international competitiveness and yet, so far, parts of policy and the Roadmap appear to assume that this is possible.

(3) Successive Governments have laid great emphasis on the role that the UK should play in reducing ghg emissions and providing leadership to the wider world. Apart from the huge dangers that this poses to the competitiveness and continued existence of UK based manufacturing, such a policy is deeply flawed if it continues to ignore the impact of UK consumer demand on *global* ghg emissions. Carbon demand is created initially by consumer demand for goods and services—and industry does not have an infinite capacity to compensate for this. And yet, there appears to be little political recognition of this. Despite claims to the contrary, the global carbon footprint of UK (consumer) demand has actually increased by some 30% in the period from 1990–2006 (Policy Exchange Report: Carbon Omissions—attached as Appendix 2) and it is only a substantial shift in the manufacturing of goods away from the UK that has enabled the claim that the UK’s “local” carbon footprint has actually reduced. Any policy that expects industry to reduce UK industrial carbon impact whilst the impact of consumer carbon demand is ignored can only lead to a further and substantial erosion of the UK’s manufacturing base. As a matter of urgency, a parallel roadmap for consumer demand/

behaviour (a “Green Consumer Roadmap”) needs to be prepared. Whilst there appears to be little political will to do this, it is absolutely inevitable that it will be necessary sooner rather than later if UK and global targets are to be met—and failure to do so now will lead to policies for UK business that could be highly inappropriate and damaging in the future.

(4) UK manufacturing is subject to intense competitive pressure from economies around the world. Any consideration of the impact on it from the move to a Green Economy must consider the cost burdens imposed by Government policy in the UK (covering not just the direct and indirect impact of energy and climate change measures but other environmental measures as well) and the extent to which these will not impact on our non UK based competitors. We believe that such an assessment is a vital part of the Roadmap particularly as current Government policy appears to be determined to impose cost and taxation burdens that will not be imposed elsewhere in the world.

(5) The of a UK *unilateral* floor price for carbon, as recently announced, will have a highly damaging effect on UK industry and business as it will have far reaching implications for its ability to compete in the UK and globally. This is particularly the case for Energy Intensive Industries (EII) which form an important part of our supply chain. Energy Intensive industries are governed by the laws of physics and chemistry and energy intensity is an inevitable and immutable feature of their operations. Their investment cycles are generally substantially longer than most government policy documents assume and they need great certainty to enable sound decisions to be made. It is unrealistic to expect quantum improvements in energy use—competitive survival has ensured that all the major gains have already been made and even incremental improvements are increasingly harder and more expensive to achieve. The UK Government really does need to decide if it does want to continue to support EIIs in the UK despite its obsession with the carbon agenda—and a failure to do so would cost up to one million jobs. Where processes could change their energy profile, this will have a highly significant impact on government forecasts so it is imperative that there is a proper dialogue on this as soon as possible. It has been postulated by DECC that “The Decarbonisation of energy will require a cost of £200 billion to replace infrastructure and meet Renewables Targets”. If the cost of this is to fall primarily on industrial consumers, it will impose a further substantial cost burden and further erode international competitiveness. The investment may provide an opportunity for some but it will be a far greater cost burden for most others! It has also been suggested that the total cost of meeting the Carbon Budget in the UK is estimated at between £324 billion–£404 billion. We question how much—if any—are competing nations (EU and non EU) having to spend to meet their country’s own Carbon Budgets?

(6) Much of UK manufacturing industry, and certainly a significant proportion of our own industry, is owned by companies based outside the UK. The acid test for future policy will be whether or not it describes an industrial scenario that is likely to encourage investment into UK based businesses. In our experience, there is a growing trend to avoid investing in UK based business—primarily as a result of grave concerns over the impacts of Government Policies on energy taxation, carbon pricing and a perceived obsession with being the leader in de-carbonising its industrial economy (at a time when its international competitors are not following its lead). Any policy that fails to recognise and address these current perceptions will fail the “acid test” and inward investment will continue to fall with all the attendant impacts on policies which expect the private sector to compensate for loss of employment in the public sector.

(7) Any consideration of the future health of UK manufacturing (whether or not this is in the context of a move to a Green Economy) must address the ability of industry to access labour from a suitably educated labour pool. Whilst we welcome the recent budget announcement to move towards more technical training in schools, it is sadly true that our major international competitors enjoy education systems that are much fitter for purpose. In particular, the considerable investment in vocational education by most of our competitors host countries is a pathway that we will have to follow if economic regeneration of UK manufacturing is to be achieved.

(8) Environmental challenges and their recognition in the developed economies have moved from local to regional to national and to global and the controls have evolved with them. More and more, economic instruments rather than prescription are used to control behaviour. Despite this, the current UK political focus is on “localism” in areas including waste management, recycling and broader resource use and husbandry. Achievement of a successful Green Economy *will* require clear National strategies to guide appropriate local implementation.

(9) Frequent references are made in Government documents to consumer concerns about the environment and resource efficiency. In our experience, as an industry whose products are subjected to closer consumer scrutiny than most, these assumptions are frequently very wide of the mark. We see little evidence, particularly in the current economic environment, that most consumers allow such issues to influence their purchasing decisions. Indeed, there are many instances where the use of “totemic issues” and “nudge” are leading consumers to make poor overall environmental choices. There is a clear lack of (political) leadership on such issues and there is an overwhelming need for a policy that bases consumer “education” on sound science and information. Failure to address this (as part of a “Green Consumer Roadmap”) will lead to a continued mismatch between the nature of consumer demand and the industrial strategy that seeks to fulfil it. It is absolutely essential that policies directed at the achievement of a Green Economy are *only* based on sound scientific facts. There can be no place in this policy making for political or media myths. We still see far too much credence given to consumer perceptions which are mostly shaped by highly inaccurate media reports. In

an era where issues of climate change and resource use & scarcity are now centre stage, there is no room for assumptions which are not based on verifiable facts. Failure to address this fundamental pre-requisite to appropriate policy and decision making will lead to decisions that would be highly damaging to UK business and, indeed, the whole credibility of the concept of a Green Economy.

(10) In its request for evidence, the EAC has asked for “priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy”. Given the constant external focus on the environmental performance of our products, it is fair to say that our awareness of environmental issues is second to none and this includes a full appreciation of the challenges of climate change and resource efficiency. Indeed, it a matter of pride for us that we can clearly demonstrate that our products make a substantial contribution already to minimising ghg emissions by preventing substantial product wastage (far more than any impacts from our products at “end of life”) and also to enhanced resource efficiency by saving far more resources than we use. Indeed, in so doing, we make a very positive contribution to the Green Economy scenario which relies on industry to compensate for consumer demand and profligacy and yet we continue to receive a wholly disproportionate degree of attention from parts of Government that still adhere to the mistaken and wholly scientifically inaccurate, consumer led view that our products are a major environmental problem. At the same time, food waste (which *is* a major environmental problem) can be substantially reduced by the increased use of appropriate packaging. In less developed countries, food waste in the supply chain ranges from 40–60% against some 3% in the UK. The “exporting” of modern packaging products, techniques and systems to these countries provides a significant Green Economy growth opportunity for our industry which is recognised as the world leader in packaging innovation. It is, therefore, particularly galling to see our “profile and credibility” undermined by the continuing focus on perceived negative aspects of our products. If the Green Economy is to be taken seriously, it must support those industries, like ours, that enable effective resource use, minimised waste and reduction of greenhouse gas emissions.

23 August 2011

Written evidence submitted by the UK Sustainable Biodiesel Alliance

1. OVERVIEW

This paper has been prepared by the UK Sustainable Biodiesel Alliance (UKSBA) as a submission to the Environmental Audit Select Committee’s inquiry into the green economy. The UKSBA is the representative body of the sustainable biodiesel industry in the UK.

This submission has been put together to highlight the potential of the sustainable biodiesel industry to contribute to the growth of the green economy and outlines UKSBA members’ concerns about the impact of the Government’s decision to end the fuel duty differential currently available to producers of sustainable biodiesel in April 2012 on this nascent industry.

2. SUMMARY

The current 20p duty differential for biodiesel produced from Used Cooking Oil (UCO) has been a tremendous success in providing stability for the sector, promoting investment, training, employment and technical innovation in a vital part of the renewable energy industry. It has also had the added effect of helping to reduce the UK’s carbon emissions and increase effective waste management. It provides value for money well beyond its modest £10 million cost to the Exchequer, and serves as a case study of how well targeted fiscal measures can drive behavioural change, private sector innovation and job creation. Energy Secretary Chris Huhne has previously stated the benefits of the duty differential in making “a valuable contribution to the Government’s renewable energy targets and waste strategy, and to the growth of the low carbon economy”.

Latest reports from the Renewable Fuels Agency⁷ show that in just over a year, used cooking oil has become the primary fuel source for biofuel used in UK transport, delivering one third of the volume of biofuel used on our roads. As UCO is a waste product it avoids a host of contentious and negative effects traditionally associated with biofuels, such as Indirect Land Use Change and the displacement of agricultural land for the growth of food crops. Its benefits should therefore be considered independently of any analysis of the environmental impacts of biofuels, which have tended to focus exclusively on first generation fuels made from virgin crops. Almost 75 million litres of UCO—approximately a third of the total UCO produced in the country each year—is collected from restaurants, food manufacturers and caterers across the UK and being recycled for fuel for our roads, supported by a growing industry of oil collectors and producers spread across industrial areas of the UK. It estimated that 250 million litres of UCO is generated across the UK each year, demonstrating the potential growth opportunities for this industry to expand given adequate support.

However, in the 2011 Budget the Government announced that the differential is to be abolished from April 2012 and the industry is increasingly concerned about the severe negative impact this will have on the sustainable biodiesel industry. The Government’s present position is that biodiesel made from waste will receive double certificates under the Renewable Transport Fuels Obligation (RTFO) which will act as a replacement for the differential. The large fluctuations in certificate values under the scheme mean that the mechanism is

⁷ Renewable Fuels Agency, Year Two of the RTFO (2011)

not adequate or stable enough to replace the tax differential. For many producers future revenue streams would become highly uncertain and many small producers would go out of business under the RTFO alone, negating the investment that has been made in rolling out the use of sustainable and renewable transport fuels. Indeed the RTFO was never designed to support sustainable biodiesel, high blend fleet operators or UK producers since its primary aim was to deliver a very small percentage (maximum target of 5%) of renewable fuel in to the UK market.

The UKSBA was very pleased to see the Environmental Audit Committee's recent report in Environmental Taxes and Budget 2011 highlight the benefits of the duty differential in promoting the use of waste derived bioliquids while describing the Government's decision to remove the incentive as a "*strategically retrograde act*". The UKSBA also welcomed the Committee's reference to the evidence which the UKSBA submitted to the inquiry which highlighted the lack of joined up thinking across Government in regard to supporting the sustainable biodiesel industry. The UKSBA is concerned that, as incentives for waste derived biodiesel fall under the remit of four different departments—the Treasury, Defra, the Department for Transport and the Department for Energy and Climate Change—there is a lack of policy coordination and joined up thinking on support for the sustainable biodiesel sector. This has created an uncertain tax and regulatory landscape which acts as a barrier to investment in green jobs and growth and poses a threat to the future of the industry and the UK green economy.

In summary, the UKSBA is calling on the Government to urgently extend the duty differential for Used Cooking Oil beyond March 2012 to allow time for further consideration as to how the RTFO can best be used to support sustainable biodiesel going forward.

3. BIODIESEL FROM USED COOKING OIL: A CLEAN AND SUSTAINABLE FORM OF RENEWABLE ENERGY

There are around 250 million litres of UCO produced in the UK every year. The UK currently has no collection of UCO from domestic premises provided by a national body or by a majority of local authorities, and so a high proportion of this oil is disposed of down the drain or sent to landfill. Defra estimates that 150,000 blockages per year are caused by fat, oil and grease being poured into the drains, at cost to utility companies of £15 million per annum. Meanwhile, landfill sites produce 40% of the UK's methane emissions and 3% of the UK's greenhouse gas emissions.

Biodiesel manufactured from UCO is one of the most sustainable fuels available for transport and heat and power systems. Its use can reduce lifecycle carbon emissions by up to 90 and its widespread use has enabled the Government to exceed its greenhouse gas savings target in road transport by 5%. The use of UCO in biodiesel is already making a valuable contribution to meeting the UK's stringent renewable energy targets and is helping to reduce the amount of waste disposed of illegally or in an unsustainable manner. Some 34 million litres of biodiesel were manufactured from UCO sourced in the UK and then used in road transport in 2009–10, delivering a carbon saving of 82 million Kg of CO₂. With the potential to access 250 million litres of UCO in the UK, more can be done if the industry is given adequate support.

4. THE 20P FUEL DUTY DIFFERENTIAL FOR BIODIESEL PRODUCED FROM UCO

Currently, biodiesel produced from UCO enjoys a 20p per litre duty differential when compared to mineral diesel. In 2008, the Government announced that it intended to abolish this differential from April 2010. This was done, not out of economic considerations, but out of a fear that tax incentives for biofuels were encouraging deforestation, land use change and rising food prices in the third world. However, as a waste product, these concerns do not apply to biodiesel produced from UCO. Following an extensive campaign by the UKSBA, it was announced that the differential would continue until April 2012 for biodiesel produced from UCO.

The relatively modest cost of maintaining the tax differential for biodiesel made from UCO, estimated at some £10 million in the March 2010 budget, has provided excellent value for money and been successful in providing stability for the biodiesel industry. It has had the effect of: increasing UCO collections and driving the retrieval of other forms of waste; encouraging vehicle fleet managers using high blends of biodiesel to increase their use and so reduce transport emissions; and helping drive employment, research and the creation of a "green collar" skills base in a sector that is expected to be worth some £150 billion to the UK economy in the coming years.

5. THE RENEWABLE TRANSPORT FUELS OBLIGATION

The previous Government announced its intention to replace the duty differential with the Renewable Transport Fuels Obligation (RTFO), a scheme which obliges the larger fuel providers to source 5% of the fuel they use from biofuel by 2014 or buy out of the requirement by purchasing tradable certificates from biofuel suppliers. However, owing to the requirements of the Renewable Energy Directive, the RTFO is currently under consultation. Further EU reviews of the RED will mean more revisions of the RTFO up to 2014 and continuing uncertainty. A drafting error in the initial RTFO meant that an incorrect obligation level was set in 2008, causing certificates to trade at near zero value.

In the recent consultation, the DFT proposed to award double certificates to biodiesel made from waste. This is in order to meet the requirements of the RED that energy from waste be counted twice towards the UK's

renewable energy target. However, certificates traded under the RTFO fluctuate in value, revenue streams are highly volatile and can be as low as zero—double nothing is still nothing. The market value of certificates is affected by a myriad of global factors, for example when obligated suppliers import biodiesel and bioethanol from countries where the fuels are subsidised to meet their obligation, rather than purchasing certificates in the UK.

In the last few years, certificates have been trading at well below expected value, and several UKSBA members have been unable to sell any certificates even through brokers and auctions. One member had certificates relating to production of over three million litres of biodiesel, but was unable to obtain any value for them from the obligated suppliers. Another member, who produces approximately 300,000 litres per month, was receiving £25,000 per month in 2008, but nothing at all in 2009, and went from profit to a loss on the production of biodiesel. An additional impact for producers will be the proposal under the revised RTFO that certificates will only be able to be traded once they have been independently verified. This adds to producer cost, but also impacts cash flow as there will be several month delay on cash received to fulfil that requirement.

The uncertainty surrounding the RTFO makes long-term planning in the industry difficult and creates a lack of market certainty that discourages the capital investment and skills training necessary for renewable energy projects to get off the ground. Without the stability offered by the differential or a minimum certificate price, the investment climate and prospects for the biodiesel sector will be extremely challenging.

In addition, the DfT states that the duty differential is a matter for the Treasury, and so is outside the scope of the consultation, while the Treasury has said that any representations on the RTFO are a matter for the DfT. This indicates that policymaking is not being carried out in a holistic manner in cases where environmental taxes cut across different departments.

6. THE DANGERS OF REMOVING THE FUEL DUTY DIFFERENTIAL

If the 20p fuel duty differential is removed in early 2012 the impact on obligated suppliers using less than 5% bio-fuel will be minimal. However, for high-blend users—captive fleets such as McDonalds, 3663 and the Environment Agency—who use much higher blends (up to B100), biodiesel will suddenly become 20% more expensive, and so more expensive than mineral diesel. These high-blend users, operating on a 2% margin, will not be able to absorb this huge increase in fuel costs and will be left with no choice but to abandon their green commitments and return to fossil-based fuels. With this fall in demand, the RTFO far from embedded, and with certificate prices fluctuating, many producers will come under cost pressures or close, shedding jobs and reducing the opportunities for practical skills and training in green skills, as demand for fuel expires. As there are no vehicle adjustments necessary for captive fleets, this could happen literally overnight.

This lack of certainty makes business planning impossible and denies the sector vital investment opportunities. In August 2010, the CBI estimated that the UK is missing out on some £150 billion of investment owing to a lack of policy certainty, and the Secretary of State for Energy and Climate Change, Chris Huhne, has said that the global, low carbon economy will be worth some £4 trillion by 2015 with one million people in the UK potentially employed in the sector by the end of the decade.

7. THE BENEFITS OF THE DUTY DIFFERENTIAL AND THE GREEN ECONOMY

The production of and research into biofuels is a new and rapidly changing area. UKSBA members have built up considerable levels of green skills in the workplace, but with the removal of the differential, some 3,000 direct and indirect jobs could be lost over a five year period. The loss of these green collar and low carbon skills from a developing industry with much higher levels of research and development and training than most traditional industry sectors would seriously impede the development of the renewable energy sector in the UK, and consequently the growth of the green economy.

7.1 CHEMISTRY SKILLS

The chemistry skills required to produce biofuels and meet quality standards is a complicated and developing area of expertise. Even chemists who have qualified in green and organic chemistry need to be trained for up to six months to operate an on-site laboratory. At present, all training is in-house within the private sector, with only general courses publicly available.

7.2 RESEARCH AND DEVELOPMENT

The methods of producing biodiesel and associated products are continually developing. Several companies have research and development arms which are looking to extend the associated products manufactured and types of feedstock capable of being processed into sustainable biofuels. This research is dependent on the cooperation of different organisations and the funding from profitable biodiesel companies to continue. If the duty differential is removed, many companies will no longer be profitable and research and potential advances in new technology will be lost.

7.3 BIODIESEL PRODUCTION

All production personnel in the biodiesel industry are required to undergo extensive training to produce biodiesel and understand the factors which affect the quality of production. Almost all employees involved in production are trained in-house as external courses are not available on the specific requirements of the industry. This is unlikely to change any time soon as the specific requirements required by producers can vary dramatically from company to company. The full training of production staff will usually take six to nine months.

8. THE BENEFITS OF THE DUTY DIFFERENTIAL: REDUCING WASTE AND INCREASING RECYCLING

From an initial base of UCO collection, customers will often demand more extensive waste collection as part of their service—for example, glass, cardboard and food waste. In Cheshire, Cheshire East and Cheshire West local authorities are now offering waste oil collection vessels at their recycling centres for domestic customers to dispose of their waste cooking oil—a scheme which other local authorities are now expressing an interest in developing. The stability offered by the tax differential has created a platform for growth, which allows producers the certainty to invest in new services and respond to market demand.

9. THE BENEFITS OF THE DUTY DIFFERENTIAL: MEETING CARBON REDUCTION TARGETS

The UK is currently ranked 25th of the 27 EU member states in the production of renewable energy and the Public Accounts Committee have commented that meeting EU targets is “unacceptably slow”. The Secretary of State anticipates that sustainable bioenergy, including UCO based biodiesel, could contribute up to half of the UK’s target of 15% renewable energy by 2020—a greenhouse gas saving of 20 million tonnes of CO₂ equivalent by 2020. He also states that sustainable bioenergy is vital to the UK’s security of supply, as bioenergy is one of the few renewables that can generate energy on demand. The tax support offered to UCO based biodiesel is already working to achieve that aim.

10. THE BENEFITS OF THE DUTY DIFFERENTIAL: SMALL OUTLAY, BIG RETURNS

While the Treasury estimated the cost of the 20p fuel duty differential at £10 million per annum in the March 2010 budget, industry estimates in 2009 suggest that, as a result of enforced business closures, some £36 million in VAT, corporate and personal tax revenues could be lost each year if the differential was to be removed. Over the next five years, based on the planned increase in production capacity, the expected tax revenues lost to the Government could increase three-fold, meaning £100 million would be lost to the Treasury.

11. ABOUT THE UK BIODIESEL INDUSTRY

There are some 37 medium and large biodiesel producers in the UK using waste products such as UCO to produce fully sustainable biodiesel for use in transport and in heat and power generation. Customers include larger petrol companies who use low blend biodiesel, to large organisations such as the Environment Agency, McDonald’s and 3663, who run their captive vehicle fleets on high blends of biodiesel with mineral diesel. Power customers include NHS trusts, which use on-site micro generators, run on UCO based bio-fuels, to power their buildings. These customers are also able to become suppliers of renewable energy to the national grid.

Biodiesel producers create local employment opportunities and are developing the green skills vital to the UK’s low carbon economy, including green chemistry, research and development and specialist production skills. As customer demand for the retrieval of other waste streams increases, these skills are being adapted to drive future renewable energy development from waste, such as anaerobic digestion from food waste. In addition, producers are working with local authorities to set up waste oil collection and recycling centres for domestic households—a new service.

The majority of biodiesel producers are based in traditionally industrial areas of the UK. One example of a larger producer would be Argent Energy Ltd, based in Motherwell, Scotland, with a production capacity of 50 million litres per annum and employment of 88 people, while an example of a medium sized producer is Convert2Green Ltd, with a production capacity of 13.2 million litres and employing 30 people in Middlewich, Cheshire.

12. CONCLUSIONS AND RECOMMENDATIONS

The Government has expressed its desire to be the “greenest government ever” and to facilitate the growth of the low carbon economy. The sustainable biodiesel industry, which has been driven by the market certainty and stability of the duty differential, is currently playing a key part in meeting these objectives and in generating the green skills, jobs and investment necessary for the growth of the green economy.

We are now just nine months away from losing an industry which is uniquely well placed to help the UK deliver the significant carbon reduction savings required of it from transport emissions by 2020 and to contribute to the growth of the low carbon economy. The Government’s own Growth strategy recognises that there is a cost associated with developing sustainable forms of energy but their unwillingness to extend the 20 pence per litre duty differential for biodiesel made from Used Cooking Oil—an excellent example of the tax system being used to encourage, or nudge, sustainable behaviour—suggests that the policy is spin over

substance. With biodiesel costing significantly more to produce than conventional fossil fuels there will be no incentive for companies to invest in new technologies, leaving the UK in the unenviable position of having to import biodiesel to meet stringent European targets. As has been seen in other countries, once the biodiesel industry has been killed-off it is extremely difficult to resurrect. 2011 is a make or break year for the industry and the Government's plan to end the 20 pence per litre duty differential for Used Cooking Oil suggests that it does not take seriously its rhetoric of stimulating a vibrant, domestic green economy.

When considering the remit of the Environmental Audit Select Committee's inquiry, the following conclusions can be drawn from the evidence submitted above:

- The Government's decision to end the duty differential for used cooking oil biodiesel goes against the Government's object to move towards a green economy. By adding an additional 20p per litre fuel duty onto the greenest and most sustainable forms of renewable transport fuel, it threatens to cripple a nascent industry that is driving the way forward in promoting low carbon transport, green skills and growth, and a reduction in carbon emissions.
- The RTFO will not act as an adequate replacement to the duty differential in supporting the growth of the sustainable biodiesel industry and subsequently the green economy.
- The lack of coordination across Whitehall is hindering a coordinated approach to the growth of the green economy.

Going forward, the UKSBA believes the duty differential is the most simple, effective and transparent tool to support sustainable biodiesel producers in the UK. However, we are disappointed that the division of interest in sustainable biodiesel policy between the Treasury, Defra, the DfT and DECC continues to inhibit coordinated policy development, preventing a coordinated and effective policy framework to support the growth of the green economy.

With this in mind, the UKSBA would therefore suggest that the Environmental Audit Committee make the following recommendations to the Government:

- The UKSBA is urgently calling on the Government to urgently extend the duty differential for Used Cooking Oil beyond March 2012 to allow time for further consideration as to how the RTFO can best be used to support sustainable biodiesel going forward.
- The need for greater collaboration between all relevant departments involved in securing an effective transition to a green economy including DECC, Defra, DfT, HM Treasury and BIS to ensure a coordinated policy framework.

13. ABOUT THE UKSBA

The UK Sustainable Biodiesel Alliance is the representative body of the sustainable biodiesel industry, led by waste to energy company Convert2Green Ltd. UKSBA members produce biodiesel from Used Cooking Oil (UCO), widely recognised as one of the most sustainable forms of renewable energy, and must meet the Renewable Fuels Agency's Qualifying Standard for sustainability, either for the biofuel they use or the biofuel they produce. Associate members must be either producers who have achieved the Qualifying Standard or better for a proportion of the biofuel they produce, and who are committed to achieving the standard for all their fuel, or organisations that actively support the use of sustainable biofuels.

The RFA Qualifying Standard is a carbon and sustainability reporting system for biofuels based on a full lifecycle analysis of emissions throughout the production chain. Fuels meeting the environmental standard must be sourced with regard to protecting biodiversity, carbon stocks, and soil, air and water quality. To meet the social standard, employers' rights and land rights must be protected.

23 August 2011

Written evidence submitted by The National Federation of Roofing Contractors Ltd

SUMMARY

- The National Federation of Roofing Contractors (NFRC) believes that the Green Economy will only be an area of interest to the general public with strong Governmental support.
- The National Federation of Roofing Contractors welcomes the Green Deal.
- It has concerns over the independence of Green Deal Assessors.
- It feels that a new accreditation scheme for quality workmanship is a duplication of those already in existence.
- It has not yet seen how the individual consumer will be appraised of the Scheme's benefits.

THE NFRC

1. The NFRC is the UK's leading trade association for the roofing industry. The Federation has over a thousand contractor and associate members and is an active member of the International Federation of Roofing Contractors. With a turnover of £1.6 billion, NFRC members represent in excess of 70% of the UK roofing

market by value. Companies vary from the very smallest local companies to some of the largest in the country, carrying out new build, repair and maintenance on existing buildings and heritage work. The NFRC is a key member of the National Specialist Contractors' Council and the National Home Improvement Council.

2. Roofing is a key component of the construction industry and NFRC has become the active voice of the roofing industry. To this end, it sponsors and advises the All-Party Parliamentary Group for the Roofing Industry, chaired by Rt Hon David Hanson MP to ensure that roofing matters are adequately represented.

3. The NFRC is committed to promoting greener communities using both sustainable construction techniques and technology. There is enormous potential to generate energy from solar power and (covert) wind generation devices installed on roofs. The NFRC offers support and guidance for those involved, bringing designers, suppliers and roofers together. This ensures standardisation and regulation within the sector. The NFRC and ConstructionSkills have initiated a training course for the installation of solar collectors on roofs. The course aims to foster skills for roof-integrated and roof-mounted systems and to build a database of reputable and trained roofers. There are currently 90,000 solar thermal systems installed in the UK with 5,000 new domestic systems installed every year. Manufacturers of solar panels and trained roofers have been brought together through the NFRC's ActiveRoof programme to minimise risk and ensure proper installation and training. For roof-installed or mounted systems, such as photovoltaic or solar thermal systems, the specialist skills of the roofer are needed, both for safe working at height and vital weather-proofing knowledge.

4. The Federation continues to actively encourage its members to work together with other reputable tradesmen and act as a hub of information to bring suppliers and contractors together.

THE GREEN ECONOMY

5. The UK has steep targets to reach for renewable energy, needing to produce 15% of its energy from renewable sources by 2020. It is widely believed that these targets will not be met for any one of a number of reasons:

- (a) Public confusion over different terms used by the media.
- (b) Uncertainty over the commitment of the Government to increasing the use of renewables, particularly in relation to feed-in-tariffs.
- (c) A general feeling that the technology has not been fully developed and in a relatively short period of time, current equipment will be superseded.
- (d) There has been relatively little financial incentive for members of the public to install microgeneration facilities in their home, and the outlay is beyond many people's reach.

6. However, there is a growing realisation that the UK's energy must not rely solely on one or two sources and in order to meet our legally binding EU targets, renewable energy must be utilised.

7. An increasing knowledge base amongst members of the public is increasing take-up of renewable energy sources.

8. With financial investment from the UK's banks in the form of the Green Bank, the public are becoming surer about renewable technology, and are able to see the financial benefits for their household.

9. The Green Deal will be seen as Government support for expanding the renewables sector, thus increasing consumer confidence.

THE GREEN DEAL

10. Of the various environmental policies being developed by the Government, the most important one for the roofing industry is the Green Deal scheme. All roofing contractors and suppliers will need to be involved in the Green Deal if the scheme is to be a success countrywide.

11. The NFRC is supportive of the aims of the Green Deal. It believes the scheme provides an immense opportunity to improve the green credentials of Britain's housing stock, and also to foster innovation and improvement in green products for both suppliers and contractors. The Federation believes this will subsequently deliver progress in the development of sustainable construction techniques. Many of the NFRC's associate members have already brought green roofing products to the market. Similarly, NFRC trade members have begun to form closer links with green product suppliers, and have increased efforts to provide green-specific training and skills.

12. While the NFRC supports the general thrust of the Green Deal scheme, it does have a few concerns over specific features of the policy. These are; the role of the Green Deal Assessor; the potential for increased burden on roofing contractors—particularly SMEs—that may arise from plans to introduce Green Deal specific accreditation; and the process by which the scheme will be publicised.

GREEN DEAL ASSESSOR

13. The NFRC has concerns over the independence of the Green Deal Assessor, and believes more should be done to ensure that assessors act solely in the interests of the consumer. Whilst the Government has given

some assurances, there still remains the possibility that assessors could have commercial ties to other parties in the Green Deal supply chain. The legislation does not seem adequately to confront this possibility, and as a result the advice offered to consumers might be prejudiced. If assessors are tied to commission deals or favour certain suppliers, it could lead to a mis-selling of products and services, and could even lead to bias in the market towards certain contractors. There must be a clear commitment, enshrined in legislation, that Green Deal assessors provide 100% independent advice.

PRE-QUALIFICATION SCHEMES AND THE GREEN DEAL PROVIDER

14. One of the biggest problems currently facing SMEs, of which Parliament is aware, is the challenge in the growth of pre-qualification schemes where large private companies and in some cases local authorities run their own “contractor list” and charge companies to belong to the list. This means that SMEs have to join and pay numerous fees to get work. The current arrangements appear to put the Green Deal Providers in the position where they can create their own “contractor list” and dictate the entry rules and fees. This would be hugely disadvantageous to SMEs and would distort the market. The Green Deal should legislate against such market distortions and allow free access to companies that are already qualified.

CONSUMER/CLIENT PROTECTION

15. A key feature of government/industry cooperation over the last few years has been the work to protect the consumer. This has led to the formation of TrustMark (now approaching 20,000 companies) across all construction disciplines not just to protect consumers from rogue traders and poor workmanship, but also to provide recognisable certification for the many honest contractors who comply with the required industry standards. All NFRC members are accredited through the TrustMark scheme and NFRC sees no benefit in introducing a new Green Deal specific Kitemark unless it is tied to TrustMark. Starting of a totally new system will be costly to small companies and, most significantly, would slow down the acceptance and support for the Green Deal. (TrustMark has taken 5+ years to get to the current numbers).

ACCREDITATION

16. To further improve standards to the consumer/client the NFRC has also recently launched a Competent Persons Scheme (CPS) for Roofwork, which will ensure compliance with Building regulations via a comprehensive audit and inspection regime. It is believed that such CPS will, in future require UKAS accreditation. Again this is a very costly and time consuming requirement for organisations that are vital to make the Green Deal work. Most importantly, it appears to add nothing for the consumer/client that is not available already.

PUBLICITY

17. It is vitally important that the Green Deal is well publicised. If consumers are unaware of the benefits of the scheme, then they will not engage with it. The NFRC is concerned that the current PR plans for the Green Deal Scheme do not include sufficient efforts to raise publicity of the scheme for individual consumers. This could lead to a situation in which those who primarily benefit from the scheme are businesses, or larger organisations. The major aim of any publicity campaign for the Green Deal must be to focus on informing individual households and consumers on the benefits of the scheme.

18. In conclusion, the National Federation of Roofing Contractors is delighted to see such an initiative from the Government, and believes that with some small amendments to the legislation, many concerns could be allayed. This will ensure that the green economy expands significantly, will be embraced by all and will play a major role in the economic recovery of UK plc.

11 August 2011

Written evidence submitted by the Woodland Trust

The Woodland Trust welcomes the opportunity to respond to this consultation. The Trust is the UK’s leading woodland conservation charity. We have three aims: to enable the creation of more native woods and places rich in trees; to protect native woods, trees and their wildlife for the future; to inspire everyone to enjoy and value woods and trees. We manage over 1,000 sites and have 300,000 members and supporters.

SUMMARY

- The transition to a green economy is an essential component of the Government’s aspiration to be the “greenest ever.” Such a transformation will support economic growth by stimulating investment in green technologies, furthering the pursuit of energy efficiency and generating a market for carbon trading.

- For the UK economy to credibly be described as green, it should contribute to the attainment of the objectives outlined in the Natural Environment White Paper (NEWP) and the Biodiversity Strategy. These objectives included a major increase in tree planting, restoring all degraded ancient woodland sites and improving protection for ancient woodland.
- The green economy should aim to reverse the decade long decline in the rate of tree planting. The NEWP, UK Carbon Plan and the Committee on Climate Change reporting all highlight the economic, social and environmental benefits derived from woodland creation. In recognition of this there should be a presumption for woodland creation.
- Moreover, the Government should be prepared to use the full range of fiscal and regulatory powers at its disposal in order to develop a benign investment environment in which transformative change can happen. Incentives such as the Woodland Carbon Code are welcome as they help ensure that environmental projects are economically viable.

The economic, social and environmental outcomes that a green economy should aim to deliver, and the appropriate tools and indicators to monitor progress towards such outcomes

1. Climate change represents the gravest long term threat to the future of the UK's woods and trees. This is one of many reasons for supporting the transformation of the UK's economy into one that could credibly be described as "green". A genuinely green economy should deliver both a reduction in the output of carbon (as committed to in the legally binding targets in the Climate Change Act 2008) and enable the UK to adapt to any unavoidable impacts that climate change modeling has projected.⁸

2. The transition to a low carbon society can aid economic growth by stimulating investment in green technologies, furthering the pursuit of energy efficiency and generating a market for carbon trading. The aspiration to conserve resources and reduce carbon usage will also deliver cost savings by incentivising the development of efficient procurement practices. Efficient procurement has the "win-win" of reducing operational costs for public, private and charitable sector organisations and limiting the negative environmental impacts often associated with economic development. To prime the green economy the Government must ensure that there is investment certainty as any changes to fiscal incentives hamper commercial interest in green technologies such as renewables.

The economic, environmental and social benefits of woods and trees

3. At the Trust we believe that a green economy should be capable of reversing the decade long decline in tree planting—it is worth noting that in the last ten years the rate of tree planting with native species has more than halved. The low level of new woodland creation is alarming as woods and trees deliver positive environmental and social outcomes, whilst simultaneously supporting economic growth.

4. Woodland acts as a cost effective tool for absorbing carbon from the atmosphere as evidenced by the Read Report which argued that mixed woodlands are able to deliver carbon abatement at less than £25 per tonne of carbon dioxide.⁹ This compares favourably to the Committee on Climate Change analysis which considers carbon abatement at £100 per tonne to be good value.¹⁰ The forestry industry also provides a vital economic contribution by generating employment and providing a sustainable product which can be used in building construction or as a renewable energy source. As the Confor submission to the Independent Forestry Panel noted: "Wood is a daily feature of all our lives, it locks up and stores carbon, substitutes for more energy intensive, finite materials, replaces fossil fuels, is easily re-used/recycled and supports tens of thousands of jobs across England. It is increasingly valued as a commodity that supports the sustainable management of forests, which, in turn, supports the delivery of other benefits."¹¹

5. The Government's Carbon Plan highlighted the benefits of woodland creation in both removing carbon from the atmosphere and providing ecosystems services.¹² Similarly, the latest Committee on Climate Change report into the Government's progress in meeting its climate change obligations noted the many benefits of planting trees.¹³ The Government has accepted the recommendations of the Committee on Climate Change and the ambitious carbon reduction targets in the Climate Change Act 2008. Tree planting needs to be a key part of the policy tools used to meet these targets because trees both absorb carbon and provide other societal benefits such as flood alleviation, natural green spaces and habitats for wildlife.

⁸ For more information on the impacts of climate change visit the Committee on Climate Change website at: <http://www.theccc.org.uk/adaptation>

⁹ At the Woodland Trust we price carbon dioxide from £10 a tonne of CO₂ for business for at scale investment (over 2,000 tonnes), £15 a tonne of CO₂ for business for smaller investment and £25 a tonne of CO₂ for individual investment.

¹⁰ Sir David Read on behalf of the Forestry Commission, *Combating climate change a role of UK forests*, p. IX.

¹¹ Confor, England expert panel on forestry call for comments—a response from the Confederation of Forest Industries (ConFor), 2011, p.1.

¹² HM Government, *Carbon Plan* (2011), page 50, at: <http://www.decc.gov.uk/assets/decc/What%20we%20do/A%20low%20carbon%20UK/1358-the-carbon-plan.pdf>

¹³ Committee on Climate Change, *Meeting Carbon Budgets—3rd Progress Report to Parliament* (2011), see pp. 195–199, at http://hmccc.s3.amazonaws.com/Progress%202011/CCC_Progress%20Report%202011%20Single%20Page%20no%20buttons_1.pdf

6. Meanwhile the National Ecosystem Assessment noted that the natural environment remains under threat as it is less diverse and more fragmented than 60 years ago.¹⁴ Creating new native woodland is an important action in reversing this decline as woods and trees provide habitat for wildlife, help regulate water flow and quality, prevent soil erosion and regulate climate. Scientific research demonstrates that increasing tree cover in urban areas by 10% reduces surface water run-off by almost 6%.¹⁵

7. Woodland creation also supports productive agriculture by adapting farming systems to the threats of climate change, generating income through timber sales, managing surface water and sedimentation runoff to water courses; and supporting pollinating insects and soil conservation. It is estimated that protecting pollinating bees is worth between £120–£200 million per year,¹⁶ whilst trees provide shade and shelter for livestock. There is quite simply a compelling economic and environmental rationale for encouraging tree planting on farms as part of a drive towards delivering a greener economy.

8. In a tough economic climate woodland creation can also offer genuine value for money to local authorities. A recent report, *Trees or Turf*, demonstrated that managing woodland is a more cost effective regime compared to intensively mown grasslands.¹⁷ Indeed, this was a conservative estimate of the cost savings as the figures in the report did not include the ecosystems benefits such as amenity value associated with native woodland creation.

9. Accessible green space also contributes to the attainment of the social objectives a green economy should aspire to deliver. The Office for National Statistics inquiry into alternative measures of national progress discovered notable public support for the notion that accessible green space was one of the most important determinants of happiness.¹⁸

10. Moreover, access to nature saves money. If just 1% of the 2.5 million people on incapacity benefit in Britain adopted healthier lifestyles it would deliver significant cost savings. The cost to the Exchequer of inactivity is around £13 billion and £11 billion to industry per year. Over a third of people are on benefits because of mental health problems or muscular or skeletal disorders—both of which can respond to tailored physical activity programmes. Assuming just one% of people on incapacity benefit could be helped back into the workplace through active lifestyles, it would save the country £67 million a year as well as have a significant impact on public health and community well being.¹⁹

11. Trees and woodland are a particularly valuable type of green space as they encourage exercise, help reduce the mental stresses of modern society and enhance air quality by reducing the incidences of respiratory diseases. Woodland can improve public health outcomes thereby saving millions in costs. Around £110 billion is spent each year in the UK on healthcare, equal to 8.5% of all income. It has been estimated that if every household in England had good access to quality green spaces such as woodland it could save around £2.1 billion annually.²⁰ Creating new accessible woodland offers a variety of benefits to society as well as delivering on economic and environmental objectives. This links directly into the green economy by providing better places for people to live and work, which in turn attracts inward investment and supports a happier and healthier workforce.

Tools, indicators and progress

12. Woodland creation is, as the evidence illuminates, a vital component in the green economy. One welcome development is the launch of Woodland Carbon Code. This was developed by the Forestry Commission in partnership with a group of experts from industry, including the Woodland Trust. This code provides a consistent framework for the provision and management of woodland carbon projects; and offers clarity and transparency to those businesses and individuals investing in woodland creation as a means of removing carbon. Projects certified under the code must be publicly registered and independently verified. The code marks a step change as carbon captured by certified projects can be accounted for in the greenhouse gas reporting produced by businesses, thus rewarding tree planting as a means of removing carbon from the atmosphere. Mandatory reporting (at the minute the code is voluntary) of GHG emissions and abatement by companies would also ensure that any carbon “credits” generated through woodland creation activity are accounted for and thereby highlight how cost effective woodland creation is as a carbon absorption activity.

13. Not only is it necessary to prime new planting through initiatives such as the Woodland Carbon Code, the Government must also offer leadership by setting a long term woodland creation target against which progress can be monitored. The Trust believe, that as part of creating a green economy, the Government should

¹⁴ National Ecosystems Assessment, *UK National Ecosystem Assessment Understanding nature's value to society* (2011) at: <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>

¹⁵ Sustainable Cities, *Using green infrastructure to alleviate flood risk* (2006), at: <http://www.cabe.org.uk/sustainable-places/advice/green-infrastructure-and-flood-risk>

¹⁶ DEFRA, Farming Link April 2009: Honeybees in crisis (2009).

¹⁷ Land Use Consultants (prepared for the Woodland Trust), *Trees or Turf? Best value in managing urban greenspace* (2011), at: <http://www.woodlandtrust.org.uk/en/campaigning/our-views-and-policy/woods-for-people/Pages/treessavemoney.aspx>

¹⁸ Office for National Statistics, *Measuring National Well Being* (2011), at: <http://www.statistics.gov.uk/articles/nojournal/ns-report-eng.pdf>

¹⁹ Department of Health, *Speech by Andy Burnham MP. Fit for the future—can we build a more active Britain?*, at: http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/MediaCentre/Speeches/DH_104324

²⁰ Woodland Trust, *Greening the Concrete Jungle* (2010).

commit to an annual tree planting rate of 15,000 ha across the UK, the restoration of all ancient woodland previously damaged by the planting of non-native conifers and furnish ancient woodland with additional legal protection. Such commitments would progress the welcome woodland creation, protection and restoration aspirations in the Natural Environment White Paper (NEWP).²¹

14. There is also more to be achieved in regard to providing accessible woodland for people to enjoy. In partnership with the Forestry Commission, the Trust developed an indicator for measuring the amount of accessible woodland. The Woodland Access Standard, based on wide ranging research and surveys of public opinion, is tailored to compliment other accessible natural green space standards.²² The Woodland Access Standard should be adopted as a measurement of the success of the green economy in supporting social objectives such as the creation of natural habitats for the public to enjoy. This standard aspires to the following targets:

- that no person should live more than 500m from at least one area of accessible woodland of no less than 2ha in size; and
- that there should also be at least one area of accessible woodland of no less than 20ha within 4km (8km round trip) of people's homes.

The nature of any barriers preventing the transition to a green economy

15. There are a number of obstacles that frustrate progress towards the green economy. Woodland creation is a good example as significant barriers exist for those organisations and individuals who may be considering investing in woodland creation. The nature of the investment—often high capital costs that are repaid in the longer term with a low rate of return—can dissuade potential investors as can the risk of land devaluation and the initial cost of establishing and maintaining the trees. Sometimes the beneficiaries of the expenditure are not always those delivering the upfront investment. For example a private company planting trees may find that the most significant health savings are made by the NHS rather than inside their own organisation. Moreover, the complex nature of the current support mechanisms can act as a disincentive for investors and those prepared to plant trees on their own land. To reverse the decade long decline in tree planting it will be necessary to ensure that the private sector is rewarded when its commitment to tree planting delivers on public policy. As such the Woodland Carbon Code and associated new greenhouse gas reporting guidelines should be welcomed as a means of funding woodland creation by providing a direct incentive to the business delivering the investment.

16. The manner of the UK government's implementation of the Kyoto protocol has also created a barrier to tree planting. The agreement gives each signatory a target for limiting or reducing emissions expressed as levels of allowed emissions or "assigned amounts". Signatories to the protocol can generate credits for activities that absorb carbon from the atmosphere such as woodland creation. At present the Government includes grant-funded woodland creation in its UK greenhouse gas reporting meaning that private investors are unable to use domestic forestry as a carbon offset. By retiring its claim to the Assigned Amount Units (AAUs) for domestic forestry the Government will help stimulate the type of private sector investment needed to deliver on the aim of re-invigorating the rate of tree planting.

17. Another barrier to the green economy is the complexity of the Common Agricultural Policy (CAP). For example, the Woodland Grants Scheme supporting new tree planting is paid through the Rural Development Regulation; the environmental pillar of the CAP. As part of the EU requirements to monitor and regulate the use of European funding the scheme can be highly bureaucratic, requiring a number of processes to be completed before any payments are passed to the landowner. The full process can take a year to complete before any work can be commenced. Such a level of bureaucracy is often cited by many small woodland owners as the principal barrier to woodland management and creation. It is therefore welcome that Government committed itself to: "carry out a full review of how we use advice and incentives for farmers and land managers, to create a more integrated, streamlined and efficient approach that is clearer for farmers and land managers and yields better environmental results."²³ Such a review should identify the best mechanisms for reducing the administrative burdens on small landowners.

The approach required to deliver a green economy, and the aspects of the current economic model that require development, eliminating and/or new approaches found

18. For a green economy to be achieved all departments across Whitehall must support and help deliver the objectives Defra has outlined in the NEWP. Protecting our natural capital is, as the NEWP points out, essential to the success of the UK's long-term environmental ambitions. The proposal to form a natural capital committee reporting directly into the Treasury is welcome as this should help ensure that Whitehall is able to measure its environmental impacts whilst designing policies to empower the private sector to manage its own footprint. Perhaps most importantly the Treasury should set a high environmental threshold when deciding upon whether to offer a government department or agency public funding. Such high environmental standards at the very heart of government would focus the rest of Whitehall on the importance of delivering on the environment.

²¹ Defra, *Natural Environment White Paper* (2011), see Annex 1 page 59 for the appropriate commitments, at: <http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf>

²² Woodland Trust, *Space for People: targeting action for woodland access* (2010).

²³ Defra, *Natural Environment White Paper*, p. 25.

19. The Treasury has an important role in influencing the shape of the economy through the tax system. In the Coalition Agreement the Government committed to ensuring that a high proportion of the Treasury's tax revenue was generated from green taxes.²⁴ The Government should use the tax system to incentivise environmental "goods", such as rewarding new woodland creation, as well as punishing "bads" like pollution. Such a policy could support the Woodland Carbon Code in offering a powerful economic incentive for investing in woods and trees. Reshaping the tax system is an important commitment because it signals to the market the Government's wish to reward environmentally friendly behaviour.

20. Moreover, the Green Investment Bank should accelerate the transition to a low carbon economy. Its objectives need to be broad enough to finance both engineering solutions such as renewables and the delivery of green infrastructure priorities like woodland creation. In a previous memorandum to the Committee the Trust outlined how this could be taken forward with mechanisms such as green bonds, green ISAs and green investment debt funds.²⁵

What tensions might there be between economic growth and the green economy? Would "greening" the economy deliver the outcomes needed?

21. Occasionally there are tensions between economic development and environmental protection. The draft National Planning Policy Framework being consulted upon by the Government is one example where a lowering of the threshold for development may have profound long term implications on environmental objectives by undermining the ability of the planning system to protect our green heritage.

22. Environmental protection and sound economic policy often go hand in hand. High Speed Rail is projected to destroy or damage some of our most precious natural habitats such as 21 ancient woods. Meanwhile the economic case for the project has been criticised by the IEA,²⁶ the NEF²⁷ and the Taxpayers' Alliance.²⁸

The policy and institutional "framework" required to create the right conditions for the green economy to thrive, and whether the Government's forthcoming Green Economy Roadmap provides this framework. Does the Roadmap deliver a clear vision of the green economy?

23. Empowering the Treasury to account for the impact of public policy on the natural world is a welcome innovation. For the Government to deliver on its environmental mandate Public Service Agreements need to incentivise all departments across government to recognise the importance of the environment.

24. Perhaps most importantly the Government has the power to set the regulatory, fiscal and tax structures which will empower the transformation towards a green economy. In practice this might mean the Government protects incentives such as the Renewable Heat Incentive to ensure that there is investment certainty in green technology, that the tax system rewards activities such as woodland creation where this delivers on public policy objectives and that the regulations such as the planning system both protect our best environmental assets and encourage enhancement.

Priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy

25. For the Government to deliver on its environmental policies there needs to be a long term target in place to offer transparency whilst also allowing for the appropriate incentives to be developed. Woodland creation is a good example where a target and incentives are needed to deliver on the Government's desire to see the decline in tree planting reversed. As has been shown, woods deliver a wide range of benefits particularly in relation to the meeting of climate change objectives and the enhancement of public health. Despite this, the UK is one of the least wooded regions in Europe with coverage averaging 13% compared to 44% across Europe. The Government should commit to a UK target of 15,000ha per annum so as to set a firm ambition following the welcome support for woodland creation in the NEWP. As a means of attracting investment, the Government should provide additional fiscal incentives to support those in the Woodland Carbon Code. This type of investment certainty allows businesses and landowners to invest with the assurance that public policy levers and incentives are not going to be altered unexpectedly.

The role of consumers, businesses, non-government organisations, and international bodies in delivering, and stimulating demand for, a green economy

26. Consumers, businesses and non-governmental organisations will all play a vital role in delivering the green economy. Consumers are clearly pivotal in creating demand for certain types of products, the private

²⁴ Cabinet Office, *The Coalition: our programme for government* (2010), page 31, at: <http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf>

²⁵ Environmental Audit Committee, Second Report, *The Green Investment Bank* (2011), see the Woodland Trust's written evidence at: <http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenvaud/505/505we01.htm>

²⁶ IEA, *High Speed 2: the next government project disaster?* (2011) at: <http://www.iea.org.uk/publications/research/high-speed-2-the-next-government-project-disaster-web-publication>

²⁷ NEF, *High Speed Rail is a £32 billion blindfolded gamble* (2011), at: <http://www.neweconomics.org/press-releases/high-speed-rail-is-a-%C2%A332-billion-blindfolded-gamble-says-think-tank>

²⁸ The Taxpayers' Alliance, *High Speed Rail* (2011), at: <http://www.taxpayersalliance.com/highspeedrail.pdf>

sector has a role in managing its environmental footprint when producing and selling products and non-government organisations can champion best practice in both the public and private sector. As an example, the Woodland Trust benefits from the support of a number of corporate partners who invest in our priorities as this helps deliver on their CSR objectives.²⁹

Whether any models that more closely resemble a green economy exist elsewhere that the UK should aspire to; and

27. No comment.

How the UK's policies to deliver a green economy relate to actions needed to deliver a the global green economy (a theme of the June 2012 Rio Summit)

28. Rainforest protection and climate change mitigation are two key environmental priorities for the international community. For the UK to be authoritative on the world stage, the Government must demonstrate leadership on both of these issues at home. This means protecting our UK's equivalent to the rainforest, ancient woodland, and mitigating climate change by reducing energy consumption and removing unavoidable carbon emissions through initiatives such as tree planting.³⁰ The Government must also consider the UK's global impact and act accordingly. For example tighter controls should exist to prevent the importation of timber that has been acquired through illegal logging.

24 August 2011

Written evidence submitted by the Royal Society for the Protection of Birds

SUMMARY

- Green is not synonymous with Carbon. Natural capital must be the foundation of a green economy. Reducing carbon emissions is important but it is only part of the story.
- Industries directly dependent on natural capital and natural services, such as agriculture, conservation, and nature-based tourism, support significant levels of economic activity and employment. Preserving and enhancing levels of biodiversity and ecosystems services will be integral to maintaining and increasing the role these industries have within the economy.
- Consequently, the UK Government's vision for a green economy should help achieve and have explicit links to its commitment to halt the loss of biodiversity in the UK by 2020.
- The Government's new Roadmap to a Green Economy fails entirely to incorporate the findings of the National Ecosystem Assessment, and the ambitions of the NEWP. It does not provide a holistic approach to achieving the UK Government's environmental targets or a vision for sustainable growth.
- Better accounting for natural capital and the correction of market failures at all levels will facilitate greener and more sustainable action from the private sector, with greater recognition throughout the economy of the benefits that people receive from nature.
- Action to address the market failures must be driven by sustainable development objectives. The UK Government's Sustainable Development (SD) strategy established the twin goals of living within environmental limits and providing a just society by means of good governance, sound science and sustainable economy. These 5 principles must be at the core of government's policies at all levels.
- The excessive degradation of our natural environment is largely a consequence of market failure, which the UK Government must act to address now. A greater use of regulatory and fiscal interventions is required than is currently laid out by the Roadmap.
- The Green Investment Bank should be given powers to borrow as soon as possible, to maximise the role it can play in stimulating private investment in the Low-carbon and Environmental Goods and Services Sector.
- A clear, consistent, and joined-up approach to policy is required to give businesses and investors the confidence to drive the wrenching transition required.
- The EAC should advance the broader debate surrounding the fundamental issue of whether economic growth can in fact be sustained indefinitely.

INTRODUCTION

1. The RSPB is Europe's largest wildlife conservation charity. We have over a million members, the support of over 16,600 volunteers and manage 200 nature reserves covering over 143,000 hectares, home to 80% of our rarest or most threatened bird species. Internationally, the RSPB is part of the Birdlife Partnership and are

²⁹ For examples please see the Woodland Trust website at: <http://www.woodlandtrust.org.uk/en/support-us/company-supporters/corporate-partners/Pages/our-partner-companies.aspx>

³⁰ See the Woodland Trust's manifesto for the England's forests for further detail. Woodland Trust, *A Bold Vision for England's Forests* (2011), at: <http://www.woodlandtrust.org.uk/en/campaigning/our-campaigns/panel/Documents/manifesto-for-forests.pdf>

involved in numerous conservation projects including three large scale tropical forest and peatland restoration projects.

2. The RSPB welcomes the statement of intent from the UK Government in setting out a roadmap for the transition to a Green Economy. A cross-departmental approach to making growth more sustainable is a timely response to both the economic and environmental pressures being felt across the UK.

3. A broader but related issue to this debate, which the RSPB feels the EAC should address directly, is the question of whether economic growth is in fact compatible with sustainability. The strain being placed on the environment by human consumptive activity has already highlighted limits for our continued existence, for example, in the levels of greenhouse gasses we can release into the atmosphere. In the wake of the global financial crisis, more emphasis must be placed on the questions of whether economic growth should be such a prominent measure of prosperity in our society, and whether the continued push for growth is in fact in conflict with prosperity in the longer-term.

THE GREEN ECONOMY AND THE LOW CARBON AND ENVIRONMENTAL GOODS AND SERVICES (LCEGS) SECTOR

4. In 2009, the (LCEGS) industry was estimated to be worth £3,046 billion globally, £106.5 billion of which is made up by the UK market, supporting 881,000 jobs.³¹ The size of the UK market is expected to grow to £224 billion by 2020.³² There is a significant opportunity for the UK to be a leader in this global market. Developing a comparative advantage in the technology and manufacturing requirements of the LCEGS industry would deliver huge gains to national output, driving sustainable export-led growth, whilst also contributing to the UK Government's environmental commitments.

5. However, last year the UK slumped from being third in the world in terms of investment in green growth, to only 13th place, ranking behind countries such as India and China. Total investment in renewables in the UK fell 70% from \$11 billion to \$3.3 billion, driven largely by a decline in offshore wind investment.³³

6. More action is needed from the UK Government to provide the necessary conditions for this industry's development. The RSPB supports recent recommendations outlined by the Aldersgate Group³⁴ and Environmental Industries Commission,³⁵ around the use of regulatory and fiscal incentives to bring about the required investment in green technology and infrastructure from the private sector.

7. It is important, as urged by the EAC itself,³⁶ that the Green Investment Bank is given the powers to borrow as soon as possible, and that sufficient public funds are used initially to maximise the potential funds leveraged by the Bank from the private sector.

8. Clear, consistent, and holistic policy in relation to low-carbon enterprise in the UK will also lead to greater confidence and certainty within the sector, facilitating greater investment.

BIODIVERSITY, ECOSYSTEM SERVICES, AND THE ECONOMY

9. Effecting the transformation required to achieve a low carbon economy is critical, but the transition to a Green Economy can not simply be restricted to enhancing the value of the LCEGS sector.

10. The green economy concept must incorporate environmental sustainability more completely across all sectors. Ultimately the ways in which the natural environment and natural resources underpin activity across the economy must be systematically incorporated into decision making.

11. The RSPB believes that both the Government's Green Economy Roadmap (*Enabling the Transition to a Green Economy*), and the corresponding priority of the DEFRA Structural Reform Plan (*3.Support a strong and sustainable economy, resilient to climate change*) fail to recognise the role of biodiversity, natural capital, and natural services in underpinning economic activity.

12. The recent findings of the UK National Ecosystem Assessment (NEA) emphasise the role Ecosystems Services (ES) play in supporting and enhancing the economy. The protection of the natural environment is not only important for wildlife and the communities who directly enjoy it. The UK National Ecosystem Assessment recently revealed that nature is worth billions of pounds to the UK economy.

13. A key conclusion from the NEA is that when we properly account for nature's value, it frequently makes economic sense to conserve it. For example, insect pollination in the UK, a regulating service that is currently unaccounted for by existing markets and the economic system, is estimated to be worth £430 million per annum to the agriculture industry. However, the industry continues to use inputs, such as some pesticides, which pose a threat to pollinators, and consequently undermine this ecosystem service.

³¹ Innovas, 2009, *Low Carbon and Environmental Goods and Services: an Industry Analysis*, for the department of Business, Enterprise, and Regulatory Reform.

³² Environmental Industries Commission (EIC), 2011, *Driving growth and competitiveness in the UK's Green Economy*

³³ The PEW Charitable Trusts, 2011, *Who's winning the clean energy race 2010*.

³⁴ Aldersgate Group, 2010, *Greening the Economy: A strategy for growth, jobs and success*.

³⁵ EIC, 2011, *Driving growth and competitiveness in the UK's Green Economy*.

³⁶ Environmental Audit Committee, 2011, *The Green Investment Bank: Second Report of Session 2010–11*.

14. Recent evidence in the NEA and The Economics of Ecosystems and Biodiversity (TEEB) report have led to a step change in our understanding of how biodiversity and ES underpin our livelihoods, and our economy. The RSPB believes that a corresponding step change is needed in the UK Government's policy approach, and that the Green Economy concept has the potential to be the vehicle through which the necessary transformation occurs.

KEY THEMES OF THIS INQUIRY

The economic, social and environmental outcomes that a green economy should aim to deliver, and the appropriate tools and indicators to monitor progress towards such outcomes

15. UNEP defines a green economy as “one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.”³⁷ This should involve a sustainable approach to the management of natural capital, ES, and biodiversity which ultimately underpin human well-being and economic activity.

16. Ultimately, a green economy help achieve the UK Government's commitment to halt the loss of biodiversity in the UK by 2020, as well as the UK's carbon commitments, such that economic policy acknowledges the connections between ES and economic activity, and reflects the challenges to growth posed by environmental limits.

17. The most appropriate tools to effectively achieve desired outcomes will involve intervention from governments, to correct market failures, provide policy certainty and ensure that the private sector accounts for negative externalities that affect society as a whole.

The nature of any barriers preventing the transition to a green economy

18. Ultimately, these barriers will differ from sector to sector, and consequently stimulating green investment will require differing interventions across different industries. However in general, it can be said that the major over-riding barrier to achieving a truly green economy is the prevalence of market failure in relation to the environment. Without a step change in our economic system, significant government intervention will be required to ensure that damages to public goods are taken into account in private decision making. It is clear that a wrenching transformation is required to our economy if we are to achieve our carbon and biodiversity targets. Markets aligned with voluntary initiatives will not come close. Political will is, perhaps, the major issue.

The approach required to deliver a green economy, and the aspects of the current economic model that require development, eliminating and/or new approaches found. What tensions might there be between economic growth and the green economy? Would “greening” the economy deliver the outcomes needed?

19. The United Nations Environment Programme (UNEP) contend that “perhaps the most widespread myth is that there is an inescapable trade-off between environmental sustainability and economic progress. There is now substantial evidence that the “greening” of economies neither inhibits wealth creation nor employment opportunities, and that there are many green sectors which show significant opportunities for investment and related growth in wealth and jobs. A caveat, however, is that there is a need to establish new enabling conditions to promote the transition to a green economy, and this is where urgent action is required of policy makers around the world”.³⁸ The RSPB agrees with this in relation to certain sectors, especially the LCEGS sector, where there are clear potential win wins from stimulating green investment.

20. However, for many industries, such as agriculture and transport, there may be more challenges in decoupling growth from environmental damage. More work is needed to ascertain what trade-offs and tensions might arise.

The policy and institutional “framework” required to create the right conditions for the green economy to thrive, and whether the Government's forthcoming Green Economy Roadmap provides this framework. Does the Roadmap deliver a clear vision of the green economy?

21. No. The current Roadmap falls woefully short of detailing how the UK will transition to a Green Economy for a number of reasons. Firstly, it lacks a clear vision of what goals a Green Economy will seek to achieve. Interpretations of a Green Economy vary considerably, and without clear overarching aims, specific targets, and a holistic policy approach, the initiative will make no discernable change from “business as usual”.

22. Furthermore, it lacks detail around sectors across the economy that have crucial links to the environment, such as agriculture, water, conservation and tourism. All of these industries are intimately dependent on the quality of the environment, and the goods and services it provides. The most recent studies into the

³⁷ UNEP, 2011, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication—A Synthesis for Policy Makers*, www.unep.org/greeneconomy.

³⁸ Ibid

environmental economies of UK countries show that a total £27.5 billion of output and almost 750,000 Full-Time Equivalent jobs in the UK are underpinned by the natural environment.³⁹ For example, in England in 2004, almost 300,000 jobs were supported by the natural environment, through industries such as agriculture, forestry, fisheries, conservation, and tourism.

23. Nature-based tourism in particular is an important sector, supporting 192,000 FTE jobs and £5 billion GVA in England in 2004. Spending on visits to the natural environment in England was estimated to be £20 billion in 2009/2010,⁴⁰ with trips taken to the natural environment increasing 10% over the past 10 years despite tourism as a whole declining by 10%.⁴¹ Spending brought to Scotland from nature-based tourism in 2010 was estimated to be £1.4 billion.⁴²

24. A major omission from the roadmap has been its failure to incorporate the findings of the NEA and the ambitions of the recent Natural Environment White Paper (NEWP).

25. Lastly, we were disappointed to read that “The government will increase the proportion of tax revenue accounted for by environmental taxes” in the Coalition’s “Programme for Government” was phrased in the roadmap with the addition “...regarding measures to maximise opportunities for green growth in the UK”. Fiscal policy, whilst being a useful tool to stimulate alternative green growth, should not be restricted to this, ultimately being one of the key tools government has at its disposal to ensure that markets deliver the best outcome for society, not simply growth.

Priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy

26. The newly created Green Investment Bank is an opportunity to leverage further private investment in environmental industries. The scale of investment needed for the UK to meet its 2050 carbon emissions reductions commitments is unprecedented, with most estimates ranging between £200 billion and £1 trillion over the next 10–20 years. Traditional sources of capital for investment in green infrastructure can only provide £50 to £80 billion up to 2025, leaving a funding gap running into hundreds of billions of pounds.⁴³

27. Certainty for the renewable and low-carbon energy sector is a requirement if it is to attract the investment it requires. The Government’s review of the FIT and subsequent reductions in solar tariffs has undermined industry confidence and scuppered solar schemes across the country. Furthermore, Government is sending inconsistent and worrying signals to investors about the long-term future of renewable energy. This is reflected in the Energy Market Reform proposals, which have failed to put forward a post 2020 vision and target for renewable energy, and have introduced an Emission Performance Standard that is too high to affect new gas power plant and that is grandfathered, so that it will act more as a long-term permit to pollute new fossil fuel plant. Delivering a green economy needs long-term certainty from Government; this needs to be addressed urgently.

The role of consumers, businesses, non-government organisations, and international bodies in delivering, and stimulating demand for, a green economy

28. The role of businesses and NGOs are also important in helping to deliver for the environment. NGOs should seek to form more innovative partnerships with business, and businesses likewise look to identify win-wins for growth and the environment. Voluntary Corporate Social Responsibility also has a significant role to play.

29. However, it must be recognised that in a free-market economy, the decisions of producers are driven by profit and risk, and as such will require policy interventions in many cases where externalities exist that prevent business incentives being aligned with sustainable growth across the UK.

How the UK’s policies to deliver a green economy relate to actions needed to deliver the global green economy (a theme of the June 2012 Rio Summit)

30. Rio+20 should be about sustainable development and how greening the economy can help. The concept of sustainable development has been corrupted through terms such as “sustainable economic development”, “sustainable growth” and now green economy. We believe sustainable development means respecting environmental limits and reflecting the value of ecosystem services in decision making. We also believe, like Stern, the TEEB and NEA, that doing so makes good environmental sense. The UK can share its laudable

³⁹ DEFRA, 2004, *Revealing the value of the natural environment in England*; Bilsborough and Hill, 2003, *Valuing Our Environment: The Economic Impact of the Environment of Wales: Technical Summary, for the Valuing the Environment Partnership*; Department of Environment Northern Ireland, 2007, *Valuing Our Environment: The Economic Impact of the Environment in Northern Ireland*;

Scottish Natural Heritage, 2009, *Valuing our Environment: The Economic Impact of Scotland’s Natural Environment*.

⁴⁰ Natural England, 2010, *Monitor of Engagement with the Natural Environment: The national survey on people and the natural environment: Annual Report from the 2009–10 survey*.

⁴¹ Natural England, 2011, *Monitor of Engagement with the Natural Environment (MENE): Comparison of MENE and England Leisure Visits Survey 2005*.

⁴² Scottish Natural Heritage, 2009, *Valuing our Environment: The Economic Impact of Scotland’s Natural Environment*.

⁴³ Environmental Audit Committee, 2011, *The Green Investment Bank: Second Report of Session 2010–11*.

plans for measuring natural capital and developing a national wellbeing metric. A transition to a green economy at whatever scale will require a major transformation in investment, production and consumption patterns. Virtually all sustainability success stories have a common denominator—the use of simple, numerical, verifiable targets. Domestic policy needs them, so do transnational agreements.

26 August 2011

Written evidence submitted by Paul Appleby

EXECUTIVE SUMMARY

- This memorandum provides my view on the preparedness of the UK for the transition to a “green economy” by addressing each of the themes set out in the EAC Select Committee Announcement of 7 July 2011. In summary this memorandum suggests that:
- The Government’s own Sustainable Development Indicators could be used as a basis for establishing to monitor progress of the transition towards a green economy.
- More research is required on measuring the key metrics that define a green economy and these should be used to assess and compare the performance of the main developed world economies.
- The Government will need to develop a strategy to persuade the public, industry and investors that proposed measures are both risk free and the only alternative for preserving the future of the planet.
- The Green Deal is a central plank of the green economy, but there remain uncertainties about its likely uptake and funding, particularly in the light of the 30 to 35% of British homes that fall below decency standards and are likely to require considerably more than the £10,000 upper limit mooted for the Green Deal.
- Apart from funding, the attitude and behaviour of the public is the biggest challenge to the success of the transition to a green economy. For example resistance to disruption from energy efficiency works and inefficient operation of buildings. Incentives such as free loft clearance should be included in the Green deal, whilst smart metering should be rolled out in conjunction with the Green Deal.
- Businesses should be encouraged to measure and monitor their sustainability performance through such measures as the Green Building Management Toolkit, BREEAM In Use and the Ska.
- Funding for the Energy Company Obligation may exceed Government tax and spend limits set for 2014 in the 2010 Spending Review.
- Government’s willingness to dilute feed-in tariffs and zero carbon has eroded confidence that it will not meddle with poorly designed schemes that are found to have unintended consequences.
- Manufacturers of green products will have to contend with both increases in energy and fuel prices and competition from countries such as China and India.
- Reducing the carbon targets in future Building Regulations could threaten the assumptions made in the 2050 Pathways Analysis that require carbon emissions associated with building energy consumption to remain constant between now and 2050, despite an additional 10 million new homes.
- The major programme of improving energy efficiency of the existing building stock requires a massive increase in the number of professionals and contractors with the necessary skills. The Government has ask the Green Deal Skills Alliance to develop the framework to address the skills gap, however it is not clear where the people will come from, particularly with cuts in the education maintenance allowance and inactive benefits.
- There is real concern about the trend for a reduction in “ecosystem services” exacerbated in both the intensification of agriculture and 10 million new homes projected over the next 40 years. The draft National Planning Policy Framework (NPPF) allows development that significantly harms biodiversity “as a last resort”.
- Government needs to support the development of anaerobic digestion, gasification and pyrolysis of waste as an alternative to landfill and incineration, but not reducing the amount of sustainable recycling.
- Government transport policy should focus on both reducing the need to travel and encourage the transition to lower carbon transport modes. However the increase in rail fares by a potential 30% by 2015 mitigates against this.
- In my view there is an inherent dichotomy between growth and a green economy, but this can be overcome by a reorientation of the types of products and services that support GDP from consumer orientated to ones that support sustainable development and climate change mitigation, or what the UNEP calls a “Green New Deal”.
- Government should prepare a spreadsheet that sets out the costs for the transition to a green economy, including what will be spent in each Department’s sector, how much is expected to be leveraged from the private sector, what will be the GIB involvement and what areas of the economy are expected to grow and by how much?

- *Enabling the Transition to a Green Economy* is a useful summary of key Government initiatives, although there are a number of important gaps, particularly with regard to local communities and enterprise zones.
- Priorities should be informed by the investment sectors proposed for the Green Investment Bank, with decarbonising the electricity grid representing the largest initiative in need of finance.
- The dilemma for the Rio+20 conference to address is how to achieve the Millennium Goal of halving extreme poverty by 2015 and subsequently creating a world where the prospect of economic prosperity is available to the hundreds of millions of people currently living below the poverty line, whilst reducing global carbon emissions and conserving threatened non-renewable resources.

I would conclude that although Government policy appears to tick most of the right boxes in enabling a green economy, it is questionable whether the various measures will have the teeth to instil sufficient confidence to leverage the vast amounts of money required at a time when recession and cost cutting permeate every aspect of the economy.

1.0 Introduction

1.1 As a freelance consultant I specialise in the sustainable design of buildings and providing advice to design and masterplanning teams on all aspects of sustainability. I graduated with a first class honours degree in Environmental Engineering in 1975 since when I have worked as a mechanical services design engineer, a lecturer and researcher, setting up my own consultancy in 1988. This became Building Health Consultants Ltd, which remains today as part of URS Scott Wilson. In 2000 I established the Building Sustainability Unit at URS, from which I retired at the end of 2008.

1.2 I have some 60 publications to my name including the book *Integrated Sustainable Design of Buildings* which was published in January of this year by Earthscan. It is a comprehensive guide to sustainable design, masterplanning and construction, designed for a global marketplace, but with a particular focus on the UK.

1.3 The following headings use the themes taken from the EAC Select Committee Announcement:

2.0 *The economic, social and environmental outcomes that a green economy should aim to deliver, and the appropriate tools and indicators to monitor progress towards such outcomes*

2.1 The Government already publishes 68 Sustainable Development Indicators which cover a wide range of factors under the themes of:

- Sustainable consumption and production;
- Climate change and energy;
- Protecting natural resources and enhancing the environment; and
- Creating sustainable communities.

These have been updated annually since they were first published by the previous Government in 2006. Each indicator is compared against levels in 1990, 2003 and the previous year simply in terms of an improvement, deterioration, no change or lack of data. It should be relatively straightforward to establish measurable targets for each of these indicators for specified dates in the future, similar to the targets for reductions in carbon dioxide and greenhouse gases set out in the *Climate Change Act*.

3.0 *The nature of any barriers preventing the transition to a green economy*

3.1 The transition to a green economy requires not only targeted use of public money but a huge public relations exercise to instil confidence in both “the public”, industry and investors. In the absence of massive state spending the Government must demonstrate that what they are putting into place is risk free, with long term assurances that green is good and a message that if we don’t do this then we are risking the future of the planet.

3.2 A Guardian/ICM opinion poll published in January 2011 indicated that only 14% of the population consider that climate change is not a threat. However an Ipsos Mori poll from April 2011 found that only 25% of respondents included climate change in their top three of environmental issues, demonstrating the importance of how the question is phrased and the results are reported. Overall climate change came fourth, beaten by future energy sources and supplies, dealing with waste and overpopulation. It has been speculated that this result was due to the fact that energy costs, fly tipping and immigration are particular issues for the respondents in Britain, whereas climate change has been the subject of significant scepticism in certain corners of the press.

3.3 The Committee on Climate Change (CCC) *3rd Progress Report on Meeting Carbon Targets* published at the end of June considers that the way the Green Deal and Energy Company Obligation (ECO) are currently configured encourages neither whole-house nor area-based approaches. The CCC’s analysis indicates that the £10,000 limit placed on the Green Deal will preclude a comprehensive approach to carbon reduction. For example the German Energy Efficient Construction and Rehabilitation Programme offers up to 75,000 euro per property, including an element of grant funding. The area-based approach “...applies the whole-house approach on a street by street basis. It strengthens incentives for uptake of measures, based on evidence that suggests

people are likely to be more willing to act when they can see others acting. It also offers scope for cost reduction through scale economies.” This is unlikely to fit with Green Deal Providers such as B&Q and M&S who will most likely deal with individual householders.

3.4 A further barrier to the take up of the Green Deal relates to the condition of existing dwellings. According to a BRE Information Paper from February 2010: “*The real cost of poor housing*” (IP 16/10) some 4.8 million homes in England came within the Government’s definition of “poor housing” in the 2006 *English Housing Condition Survey*. This rates housing under the Housing Health & Safety Rating System (HHSRS) against a whole range of hazards from health effects of inadequate heating to asbestos exposure. It can be concluded that currently between 30 and 35% of households in Britain cannot be considered as decent by this standard. The collateral damage from this is not only socio-economic but runs into billions of pounds per year, much of which is a burden on the taxpayer. Although there has been a steady improvement in social housing, the private sector has been more difficult to reach, but even the limited funding that was made available through the Private Sector Renewal fund has been withdrawn. It seems likely that those homes that remain below the decency threshold will require significantly more than the £10,000 upper limit set by the Green Deal to even bring them up to the threshold, let alone significantly enhance their energy efficiency.

3.5 The CCC also warns that “ECO funding may be restricted under limits on DECC spending, given that this may be classed as tax and spend, limits for which were set to 2014 in the 2010 Spending Review.”

3.6 Clearly there are massive opportunities for those who position themselves correctly to service the Green Deal and ECO. However uncertainties over uptake mean that many companies will hesitate before investing in the staff, training, equipment and premises required. These worries have been reinforced by a recent pilot of the Green Deal carried out by the London Borough of Sutton, B&Q and BioRegional. Of the 400 householders who responded to the advert only 125 accepted the free audit and 67 of these decided to go ahead with the energy saving measures. A lack of confidence in the level of savings that would be achieved was cited as the main reason for not going ahead with the scheme. Others have referred to the potential disruption, particularly in having to clear out lofts or having internal insulation installed, for example.

<http://www.building.co.uk/news/half-of-homeowners-reject-green-deal-in-trial/5022937.article>

3.7 The willingness of Government to dilute Feed-in tariffs and zero carbon has eroded confidence that it will not in future meddle with poorly designed schemes that are found to have unintended consequences. As the Green Deal and ECO schemes evolve in coming months it is critical that industry uses the opportunity to consult on the legislation, codes of practice and standards to ensure that the risk of failure is minimised.

3.8 UK manufacturers of “green” products will also have to contend with rising energy and fuel prices and competition from countries such as China and India. Many of the barriers to financing of the transition to a green economy will impact on the introduction of the Green Investment Bank and are beyond my expertise. However a useful account of these have been provided in Section 1.3 of the most recent *Update on the design of the Green Investment Bank* (BIS, 2011).

3.9 Many of the barriers to a green economy were addressed in the final report of the Low Carbon Construction Innovation and Growth Team (IGT) to which the Government responded in their recently published *Low Carbon Construction Action Plan*. Although this response extensively references the IGT’s recommendations, it only occasionally adopts them wholeheartedly. Mostly the Action Plan avoids committing to action from Government which wasn’t already in its Carbon Plan and was not undone in the 2011 Budget.

3.10 The key principle behind the Green Deal and its “golden rule” is that energy saving measures will pay for themselves within 25 years or the life expectancy of the product, whichever is the lesser. However for new buildings there is concern about the impact of sustainability on first cost and hence the viability of projects. This is one of the reasons given by Government for dropping the more rigorous definition of zero carbon, that includes unregulated carbon emissions, from the 2016 Building Regulations for homes. It could also be argued that if we are successful in decarbonising the electricity grid that all buildings that rely on electricity for their energy supply will ultimately be close to zero carbon. However the key to this lies in the *2050 Pathways Analysis* which requires demand to remain roughly constant between now and 2050, even with an additional 10 million homes.

3.11 Absolutely crucial to the success of the Green Deal and enhanced Building Regulations is the availability of suitably skilled people to undertake the necessary work. Refurbishment has always been the poor cousin to new-build and many architects, consultants and contractors have tended to avoid it. This is partly because of the lack of glamour and greater constraints, as well as the potential risks because of working with existing structures, and with complicated programming requirements in some cases.

3.12 In their response to the IGT report the Government has recognized the potential capacity and skills shortages associated with improving 26 million existing homes and 1.7 million other buildings in the next forty years. Many of the strategic issues have been passed to the Green Deal Skills Alliance (GDSA) which is developing a Green Deal Competency Framework, Accreditation Standard, Common Knowledge Framework, training programmes etc. However it is not clear where the people will come from to fill the gap. It could be argued that this problem has been exacerbated by the cuts to education maintenance allowances and inactive benefits, as well as the increase in fees charged for further and higher education courses.

3.13 According to the 2011 *Natural Environment White Paper* “economic growth and the natural environment are mutually compatible”. This bold statement of course can be easily disproved by history: it could be argued that much of the destruction of ecosystems on this planet (such as rain forests worldwide) has been caused by an unthinking drive for economic growth. The *National Ecosystems Assessment* carried out between 2009 and 2011 reports that some 30% of “ecosystem services” from the natural environment have declined in the last 60 years, whilst others are in a reduced or degraded state. The main challenge in reversing this trend is the intensification of agriculture to support population growth. There will also be pressure on the countryside from the construction of 10 million new homes projected over the next 40 years. Although the Draft *National Planning Policy Framework* (NPPF) incorporates much about protecting biodiversity it allows “as a last resort” compensation to be paid for a development that significantly harms biodiversity.

3.14 The Draft NPPF also addresses flood risk by requiring developers to “avoid inappropriate development in areas at risk of flooding by directing development away from areas at highest risk or where development is necessary, making it safe without increasing flood risk elsewhere.” Tellingly this is not as strong as the wording in the 2011 *National Flood and Coastal Erosion Risk Management Strategy for England* which states that “it is essential that spatial planning ensures that new developments take flood and coastal erosion risk fully into account, and are safe from, do not increase, and where possible reduce risk over their lifetimes.”

3.15 The 2011 *Waste Policy Review for England* identifies planning and community involvement as key issues for the successful migration away from landfill. Historically public attitudes to waste incineration have been negative, primarily because of concerns about emissions to atmosphere and disruption from refuse vehicles. The key to the development of acceptable energy from waste installations is a combination of careful location of plants, so that vehicles can access with minimum impact on the neighbourhood, and the plant being located far enough away from homes and offices to create minimum impact on air quality whilst enabling district heating infrastructure to be available to the local community. A solution to this problem could be the widespread introduction of the latest generation of gasification and pyrolysis plants to manufacture syngas from non-recyclable waste. Although it represents a low pollution alternative to incineration there is relatively little experience with the use of gasification and pyrolysis for recovering energy from waste and hence lifetime costs may be high when compared to incineration. The challenge is to ensure that waste, which would either be recycled or used for anaerobic digestion, is not diverted to these plants.

3.16 There is an emphasis across Government policy on promoting ultra low emission vehicles (ULEV) and associated infrastructure. Because of restricted battery life and the availability of charging opportunities in cities there is a danger with current technologies that drivers are more likely to be diverted from public transport than IC vehicles. In my view the tipping point for market acceptance is only likely to arrive when battery life reaches 300 miles or more and the cost of new cars is similar to that for the equivalent IC model.

3.17 There will be increasing competition for sustainably sourced biofuels, both internationally and from different sectors, such as energy generation—for grid electricity, district CHP and biomass boilers; and for transport—road vehicles, aircraft and ships.

3.18 Apart from reducing CO₂ emissions associated with individual vehicles the key to successful sustainable transport policy is behaviour change. Hence the aims must be to both reduce the need to travel and encourage a transition to lower carbon transport modes. In the UK there appears to be a Gordian knot tying many drivers to their motor cars. Like home ownership the car is an important status symbol and sign of independence. There are however measures that Government can promote in the planning environment for new development. The Draft NPPF for example includes direction to Local Authorities to “ensure that housing is developed in suitable locations which offer a range of community facilities and good access to key services and infrastructure.” Whilst in the paragraphs dealing with transport it requires that “planning strategies ... protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore, developments should be located and designed where practical to accommodate the efficient delivery of goods and supplies, give priority to pedestrian and cycle movements, and have access to high quality public transport facilities.”

3.19 Rail fares are scheduled to increase by RPI plus 3%, which will result in an increase this year of 8% and potentially 30% by 2015. This is likely to result in some commuters resorting to using their cars rather than the train, resulting in an increase in carbon emissions by a factor of two to five for each journey. On the other hand those that choose to travel by bus or coach will on average reduce the carbon emissions associated with their journey by around 40%, whilst still others may give up their long distance commute altogether and find a job nearer their home. Increasing cost of long distance rail journeys may result in more travellers using domestic flights.

4.0 *The approach required to deliver a green economy, and the aspects of the current economic model that require development, eliminating and/or new approaches found. What tensions might there be between economic growth and the green economy? Would “greening” the economy deliver the outcomes needed?*

4.1 According to the recently published EC Communication *Rio+20: towards the green economy and better governance*, a green economy “... generates growth, creates jobs and eradicates poverty by investing in and preserving the natural capital offers upon which the long-term survival of our planet depends.” Similarly the UK Government’s most recent publication *Enabling the Transition to a Green Economy* states that “a green

economy will maximise value and growth across the whole economy, while managing natural assets sustainably”.

4.2 There is a fundamental dichotomy in these statements that I feel the EAC Inquiry should address. This concerns the link that Malthus made in 1798 between growth and catastrophe, later addressed by the Club of Rome in their 1972 report *The Limits to Growth*, also by BioRegional and WWF in their One Planet Living concept and even more recently in the now extinct Sustainable Development Commission’s 2009 report *Prosperity Without Growth*.

4.3 The question behind all of this intellectual activity concerns whether growth is compatible with sustainability. Of course before this question can be addressed it is important to consider what we do or don’t want to grow. Malthus was particularly concerned about population growth outstripping agricultural production. To this the Club of Rome report added growth in industrialisation, resource consumption and pollution. However Governments are primarily concerned with economic growth, or per capita increases in Gross Domestic Product (GDP). This is generally considered to be an indicator of prosperity and standard of living.

4.4 The statement made in the Summary to the SDC report that: “the material profligacy of consumer society is depleting natural resources and placing unsustainable burdens on the planet’s ecosystems” may have been unpalatable to Government, in particular as it goes on to state that “there is an urgent need to establish clear resource and environmental limits on economic activity and develop policies to achieve them.” The author’s argument is that this profligacy increases the depletion of non-renewable natural resources, pollution, energy demand, carbon emissions and associated climate change. Lord Stern in his 2007 review of *The Economics of Climate Change* takes the opposite view. He considers that “tackling climate change is the pro-growth strategy for the longer term, and it can be done in a way that does not cap the aspirations for growth of rich or poor countries.” However this requires enormous investment, driven by Governments, in infrastructure to mitigate climate change. This is what President Obama is attempting to implement in the US, but has signally failed at every step primarily because of Republican (Tea Party) opposition.

4.5 In my view there doesn’t have to be a conflict between the SDC and Stern strategies. However I think it is important to define the type of growth that is compatible with a sustainable future. There needs to be a reorientation of the types of products and services that constitute our GDP. The SDC and Stern both foresee an economy that is geared up to support sustainable development and climate change mitigation, what the UN Environment Programme (UNEP) call the “Green New Deal” in their 2009 report *Rethinking the Economic Recovery: A Global Green New Deal*—borrowing from the Roosevelt New Deal of the 1930’s and not to be confused with the UK Coalition’s proposed Green Deal.

4.6 On the face of it UK Government policy ticks most of the right boxes signposting the road to a green economy. For example its *Carbon Plan*, published in November 2010, and subsequent *Low Carbon Action Plan*, published recently in response to the Innovation and Growth Team’s report. However it is questionable as to whether key pieces of legislation, such as the Energy Bill, and policy statements, such as the *National Planning Policy Framework* (NPPF) and *Electricity Reform White Paper*, will have sufficient teeth and instil sufficient confidence to leverage the vast amounts of money required at a time when recession and cost cutting permeate every aspect of the economy.

4.7 The UK Government is attempting to leverage funding for a “green economy” from the private sector through the Green Investment Bank, whilst pump priming an improvement in the building stock through long term loans from the Green Deal. Subsidies are being applied through feed-in tariffs. Renewable Heat Incentives and grants to those on benefits etc through Energy Company Obligations.

4.8 Modifications to the Building Regulations will be used to drive improved thermal performance of new buildings. This Government remains committed to a timetable of reducing carbon targets so that homes will generate zero “regulated” emissions from 2016, although the original Code for Sustainable homes definition of zero carbon that included such plug-in devices at televisions and white goods has been abandoned. Zero carbon non-residential buildings will follow in 2019.

4.9 Another catalyst intended to green the construction sector is the “presumption in favour of sustainable development” in the recently published Draft NPPF. The whole premise behind this document is that we need more development in order to accommodate a growing population, create jobs and engender prosperity.

4.10 Strategies for other aspects of the green economy have been set out in an array of documents including the *Natural Environment White Paper*, *Waste Policy Review*, *National Flood and Coastal Erosion Strategy*, *Local Transport White Paper* and the *Water White Paper* (due in December 2011).

5.0 *The policy and institutional “framework” required to create the right conditions for the green economy to thrive, and whether the Government’s forthcoming Green Economy Roadmap provides this framework. Does the Roadmap deliver a clear vision of the green economy?*

5.1 The recently published document *Enabling the Transition to a Green Economy* provides a useful summary of the key Government initiatives that can be defined as “green”. It is interesting to see that the above document refers to the Stern thesis from 2007 that the cost of preventing climate change is small compared to dealing with the impacts. The figure of 1% of GDP is quoted that represents a capital expenditure of approximately \$22.9 billion based on Q4 2010 data. This compares with an estimated spend of £200 billion

on infrastructure in the next five years (according to the 2010 National Infrastructure Plan) and £110 billion on energy infrastructure by 2020, according to the DECC consultation document on Electrical Market Reform. I would like to see a spreadsheet that sets out clearly what the costs are for the transition to a green economy, including what will be spent in each Department's sector, how much is expected to be leveraged from the private sector, what will be the GIB involvement and what areas of the economy are expected to grow and by how much?

5.2 In my view there are some important omissions from the framework. For example there is no mention of the *Low Carbon Construction Action Plan*, ie the Government response to the IGT final report. This is not referred to in the Green Economy Policy Timeline, nor is the 2010 *Carbon Plan*. This figure also omits the Local Transport White Paper.

5.3 Although the *Localism Bill* is mentioned in passing, there is no reference to the *Local Growth White Paper* (BIS, 2010) nor the GLG publication from January of this year *Regeneration to enable growth*. Along with the NPPF and the 2007 *Local Communities Act* these are all important in facilitating the green economy at a local level, particularly with regard to the future development of sustainable communities and the role of both Local Authorities and the community itself in implementation. In this context the impact on sustainable development of the Regional Growth Fund and the Local Enterprise Partnerships and Enterprise Zones needs to be mentioned.

6.0 *Priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy*

6.1 The relevant sectors in which there should be the greatest economic activity over the next 10 to 20 years are energy infrastructure, public transport infrastructure and refurbishment of existing buildings. The sectors identified in the most recent *Update on the design of the Green Investment Bank* (BIS, 2011) as being suitable for the first round of investment are informative:

6.2 At a predicted £110 billion before 2020 decarbonising the grid represents the largest initiative in need of finance, with c28 GW of renewables projected in the *Renewable Energy Roadmap* at a cost of up to £60 billion, £17 billion on 6 GW of nuclear and the remainder on Carbon Capture & Storage (CCS), transmission reinforcement and a smart grid and metering. It is anticipated that CCS will not pass its demonstration phase until after 2020.

7.0 *The role of consumers, businesses, non-government organisations, and international bodies in delivering, and stimulating demand for, a green economy*

7.1 Apart from funding, the biggest challenge to creating a green economy is the attitude and behaviour of consumers (refer to 3.2 and 3.17 above). Most of the key drivers depend on behaviour change. Examples include energy use, take-up of the Green Deal, water use, waste, transport mode, garden biodiversity. In my view there will be resistance to the Green Deal because of the potential disruption from works such as insulating lofts; so it should incorporate an offer to clear, temporarily store and restock lofts. There should also be a link between the roll-out of Smart meters and the Green Deal. This should comprise electricity, gas and water meters as a package.

7.2 In tough economic times it may be difficult to persuade businesses to focus on sustainability, particularly SME's for which energy represents a small proportion of overheads. Larger businesses, and particularly the more energy intensive ones, will be driven in part by the need to report on sustainability to shareholders and in part the statutory reporting requirements of the CRC Energy Efficiency Scheme.

7.3 The Better Buildings Partnership has developed toolkits for implementing green leases and green building management (*Green Building Management Toolkit*: BBP, 2010). The latter has been trialled at British Land's York House headquarters, resulting in a 32% reduction in carbon emissions and waste recycling increased from 40% to 70% after only one year of use. Businesses should be encouraged to measure and monitor their sustainability performance through such toolkits as the above, BREEAM In Use or the RICS Ska Rating System.

8.0 *Whether any models that more closely resemble a green economy exist elsewhere that the UK should aspire to*

8.1 The key question is how to recognise a successful green economy and what are its most important constituents (see Section 2.0 above). A useful research project might use a standardised series of metrics to test the main developed economies to compare their performance against agreed criteria. A useful report was prepared for DECC by the Regulatory Assistance Project in February 2010 comparing energy efficiency programmes in eleven countries, including Germany, Sweden, Australia and the US. Although the programmes mentioned do not cover all aspects of a green economy of course.

8.2 The German KfW Energy-efficient Construction and Rehabilitation Programme targets all dwellings built prior to 1984, with a view to bringing them up to current energy performance standards. Loans of up to 75,000 euros are available, with 10% in the form of a grant and no repayment required within the first five years and interest below the bank rate. It is also available for enhancing the specification of new homes, but with a maximum loan of 50,000 euros. It is understood that demand was so great in 2009 that the scheme was temporarily suspended for existing homes in 2010.

9.0 *How the UK's policies to deliver a green economy relate to actions needed to deliver a global green economy (a theme of the June 2012 Rio Summit)*

9.1 Compared with China, India and the US, Britain's global environmental impact is relatively small. Its contribution is therefore more one of influence and example setting.

9.2 I note that one of the themes for the Rio+20 conference is "a green economy in the context of sustainable development and poverty eradication". Of course there is a massive amount of funding and effort from the developed countries in achieving the Millennium Development Goals. However the world population is predicted to reach nine billion by 2050 and countries such as China and India are seeking and achieving exponential increases in standards of living and consequential per capita carbon footprints. Meanwhile the US is making no headway in introducing Federal climate change mitigation legislation. The carbon and ecological footprints of many inhabitants of the African continent is close to zero. The dilemma for the Rio+20 conference to address is how to achieve the Millennium Goal of halving extreme poverty by 2015 and subsequently creating a world where the prospect of economic prosperity is available to the hundreds of millions of people currently living below the poverty line, whilst reducing global carbon emissions and conserving threatened non-renewable resources.

25 August 2011

Written evidence submitted by the British Retail Consortium

1. Introduction

1.1 The British Retail Consortium (BRC) is the lead trade association representing the whole range of retailers, from independents through to the large multiples and department stores, selling food and non-food products and services, and operating on the high street, out of town, in community and rural shops and online.

1.2 Our membership accounts for over 90% of the UK grocery market by turnover, as well as leading fashion retailers, large and small home improvement stores, furniture retailers and well known department stores. Despite the huge variety of products our members sell, all have embraced environment and sustainability policies, adapting the approach as necessary, depending on their business models.

1.3 Retail is a fast-paced business sector; quick to innovate and lead by example. As such, our members lead the way on sustainable and environmental issues recognising that, as responsible businesses, they have a role to play in ensuring their operations are not harmful to our future as well as helping their customers make more environmentally friendly choices. Individually and together through the BRC, members have invested in their own operations, worked with their suppliers and embarked on communication campaigns to embed sustainable and environmental concerns into their day to day activity; sustainability is not treated as a "nice-to-have" by our members, it is integral to their businesses.

1.4 As a sector, retailers have led the way voluntarily on environmental policy, both individually and collectively through the BRC. The BRC's climate change initiative "A Better Retailing Climate" has achieved significant improvements in the two years it has been in operation, including cutting energy related emissions from buildings by 18%, cutting waste to landfill to 23% and reducing energy-related transport CO₂e emissions by 18%.

1.5 There is no denying that environmental and sustainability policies are complex to both develop and implement. Solutions often require a step change in attitude and approach, not least the ability to think long term. The sector is extremely competitive and retailers need to ensure that investment in these policies to meet consumer demand is efficient and effective. The majority of the sector has already implemented those changes that are relatively simple. Retailers' logistics are hugely efficient, packaging continues to become lighter, less bulky and more technologically sophisticated, new stores' carbon footprint are a fraction of what they were and little of retailers' own waste is now sent to landfill. The more challenging aspects of this debate, such as water usage throughout the supply chain, the impact of older properties on the estate and food waste in the home are now where the biggest gains will be made. However, these all present significantly more challenging obstacles to overcome and require different ways of working to that which has moved the industry on to the place we are in today. To see further progress, strong leadership from government, further innovation in approach and technology and genuine appetite and commitment from all business sectors is necessary.

2. The economic, social and environmental outcomes that a green economy should aim to deliver, and the appropriate tools and indicators to monitor progress towards such outcomes

2.1 The focus must be on ensuring future policy is long term. To make a real difference, any coherent policy in this area must look at least 20 or 30 years in the future and should be based on a cross-party consensus, not short term political changes, to ensure consistency and certainty for businesses wanting to invest and play their part. The Landfill Tax escalator is a good example of this. It has provided long term certainty to the waste management industry. By providing a long term signal to local authorities and private companies, the policy has contributed to significant increases in recycling rates. Significant investment has been made into recycling facilities and collection infrastructure, which might not have been possible if the policy's vision had been more short term. In certain situations, at a practical level, shorter term certainty (eg five years) is important to facilitate business decisions and investment, especially for competitive sectors such as retail.

2.2 Retail supports the introduction of policies that focus on achieving environmental objectives using an economically efficient approach so that they are consistent with economic growth and improving living standards.

2.3 It is estimated that over 75% of UK emissions are influenced directly or indirectly by consumers.⁴⁴ Policies must ensure that consumers are engaged and understand both the importance of sustainability and their role in the transition to a green economy.

3. The nature of any barriers preventing the transition to a green economy

3.1 The most common barrier preventing progress towards a green economy is financial. This principle applies equally to businesses and consumers. For businesses, the expected return on investment is often not sufficiently compelling to make significant investments which would radically reduce environmental impact or carbon emissions. For example, one retailer recently made the decision not to proceed with the installation of solar panels at their head quarters site as the feed-in tariff payments had been reduced, making the investment less attractive.

3.2 We believe Government has a leadership role to play in developing a legislative framework that both raises the minimum operating standards and supports leading businesses to adopt more sustainable business practices. The Government's intervention must recognise the leadership role businesses can play themselves. Any intervention must ensure the regulatory environment does not inhibit retailers' ability to innovate in this area. Instead, any intervention must incentivise and reward progressive approaches.

3.3 It is important to get the mix right between enabling voluntary initiatives or market based approaches and introducing legislation. There is no doubt that, now environmental responsibility has become a competitive issue for retailers, the debate has moved faster and policies have developed more quickly. Competition can therefore be a good thing and Government should not always seek to legislate, when often the market can make changes more deeply and more quickly.

3.4 However, there are times when legislation is the only way forward to deliver a comprehensive approach, engaging those who do not participate in voluntary initiatives. In these instances, we would look to government and take the lead. For example, retailers have taken the lead on certain environmental issues which have subsequently been developed further with legislative drivers, such as responsible sourcing timber and selling energy efficient products. In both of these examples, legislation has ensured that environmental opportunities have been maximised whilst levelling the playing field.

4. The approach required to deliver a green economy, and the aspects of the current economic model that require development, eliminating and/or new approaches found. What tensions might there be between economic growth and the green economy? Would "greening" the economy deliver the outcomes needed

4.1 There are more synergies between economic growth and the green economy than commonly understood. The UK needs to be at the forefront of any moves to a sustainable economy to take full advantage of potential economic opportunities. The policy framework needs to incentivise businesses to embrace sustainable business practice as well as generating customer demand for low impact products.

4.2 Given the context of resource scarcity and anticipated increases to carbon pricing, the long term affordable solution is to develop low carbon and zero carbon energy sources. In June 2008, Lord Stern estimated that the annual cost of addressing climate change would be 2% of GDP, compared against losing at least 5% of GDP if no action was taken. Retailers are increasingly generating renewable energy on site, and feeding excess energy back into the grid. This could be accelerated with the right incentives, ensuring reduced demand on the grid, increased energy security and decarbonisation of energy generation. Changes to the Carbon Reduction Commitment (CRC) and Feed-in Tariffs (FiTs) have discouraged further investment in these areas.

4.3 The UK faces an opportunity to be a world leader in developing and manufacturing renewable technologies. For example, the UK Government continues to support development and demonstration of CCS technology, and Scotland is amongst the world leaders in developing wave and tidal technologies. The UK

⁴⁴ Consumers, Business and Climate Change; the Sustainable Consumption Institute, 2009.
<http://www.ciesnet.com/files/publications/copenhagenpaper.pdf>

Government must continue to support the fledgling industry, where the economic case appears sufficiently compelling, to ensure that the UK takes full advantage of the opportunity here.

4.4 As a sector, retailers have led the way voluntarily on environmental policy, both individually and collectively through the BRC. The BRC's climate change initiative "A Better Retailing Climate" has achieved significant improvements in the two years it has been in operation, including cutting energy related emissions from buildings by 18%, cutting waste to landfill to 23% and reducing energy-related transport CO₂e emissions by 18%. Our next progress report, due to be launched in January 2012, will push the industry further than before, recognising how much has already been achieved. Current signatories to this initiative comprise 49% of the retail sector by market value and we hope to increase this level in 2011. A copy of the 2010 progress report is attached with this submission.

4.5 The BRC has also led the way in the provision of recycling information for consumers. Recognising the uneven approach of local authorities in this area, the BRC developed the On-Pack Recycling Label (OPRL) which uses the familiar WRAP logo combined with information on the ability to recycle packaging. Over 120 companies now use this label and it now appears on thousands of own-brand and branded lines. We hope this label not only helps customers understand more about what can and cannot be recycled but also acts as an incentive for local authorities to invest more in their recycling facilities. More information is available at: www.onpackrecyclinglabel.org.uk

4.6 Retailers are also committed to a number of equally significant. The Courtauld Commitment, which is now in phase two and is shortly to consider phase three is also achieving significant results. The third phase, the Product Research Forum, aims to improve resource efficiency and reduce the carbon and wider environmental impact of the grocery retail sector. It moves away from a historical focus on packaging and aims to achieve more sustainable use of resources over the entire lifecycle of products, throughout the whole supply chain. More information is available at: http://www.wrap.org.uk/retail_supply_chain/design/product_research.html

5. The policy and institutional "framework" required to create the right conditions for the green economy to thrive, and whether the Government's forthcoming Green Economy Roadmap provides this framework. Does the Roadmap deliver a clear vision of the green economy?

5.1 The BRC supports policy that provides a framework for further progress on these issues and we believe government has to be bold in this regard, recognising the scale of the challenge ahead. The BRC believes that the Government should set the framework and then enable retailers, along with other business sectors, to use their individual expertise and business models to achieve results in ways that best suit them. Government needs to allow businesses flexibility and not place onerous burdens on industries, which will simply inhibit their ability to innovate.

5.2 The policy framework needs to provide incentives to support and encourage the private sector to take action where the carbon benefits are significant but the investment case for private sector isn't sufficiently attractive and there are other social benefits. As well as ensuring the wider adoption of green technology, it will bring down costs of expensive technology which will in turn ensure the sustainable, long-term growth of the green sector. The majority of larger retailers are considering the introduction of renewable energy technology. However, in a large number of cases the economic case is not sufficiently compelling without additional incentive.

5.3 Another important role for government is to carry out research, particularly generic studies that wouldn't be pursued by an individual company. Government studies can be extremely useful in providing independent evidence to drive changes in approach.

6. Priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy

6.1 A low carbon UK must involve a zero carbon energy supply, low carbon transport network, and a significant retrofit to the building stock to deliver a low carbon building stock. New stores are increasingly trialling innovative low carbon technology and greener materials. This could be accelerated through incentivisation or recognition of a reduction in embodied carbon in construction. Consumers must also be empowered to live low carbon lifestyles. The most effective way to achieve this is via price incentives. Retailers are making changes to their communications approaches and product ranges to enable consumers to make more sustainable choices. The retail sector could also become a significant stakeholder in the delivery of low carbon homes, as Green Deal providers. The British Retail Consortium is working with DECC and others in the design of the Green Deal policy.

6.2 If the UK is to meet its 2020 and 2050 carbon reduction targets, it is imperative that the impact of products is also reduced. Retail is contributing through its work with its suppliers. Retailers are working with suppliers to manage climate risks and develop sustainable business models. Retailers are working with their suppliers to reduce waste, emissions and water use. The effect is to reduce cost, reducing the impact of products and build resilience to future changing weather patterns and rising resource costs. Retailers are collaborating to increase their impact. Individually, retailers are often unable to work constructively with the supply base to initiate change. Their impact can be significantly improved by adopting common messages and pooling their

collective buying power to influence suppliers. Once suppliers make changes to deliver for a larger proportion of their customer base, the new behaviours become the norm. The Product Research Forum, referenced above, is an important collaborative forum to drive improvements throughout the supply chain.

6.3 It is important to look at the overall environmental impact of a product, and not be distracted by individual issues for example the footprint of a product grown in an artificial climate in the UK may be higher than the footprint of a product grown naturally abroad and then imported. Although air freight is generally not considered to be a responsible and sustainable activity, it is not always the highest impact activity to be prioritised. Retailers have made significant progress to reduce air freight where appropriate. However, transportation is often not a significant proportion of the environmental footprint. Air travel comprises around 2% of all global green house gas emissions.

6.4 It is also important to reduce the carbon impact of the UK building stock. The existing building stock contributes 43% to UK carbon emissions, with 26% coming from domestic housing. The Green Deal has the potential to be an important tool to radically reduce UK carbon emissions but it at present we do not think it will provide does sufficient incentive for investors, providers, or consumers to make a significant impact.

6.5 The Government should ensure it sets out a holistic and consistent approach to energy policy, avoiding contradictions across departments or issues areas. It is our view that the shifting and confusing energy policy environment in the UK, particularly around renewable electricity, energy efficiency regulation and carbon reporting, has held back progress for retailers.

6.6 The introduction of a carbon price floor could add yet another layer of taxation for retailers, with many already subject to the Climate Change Levy (CCL) and CRC Energy Efficiency Scheme. Issues around carbon intensity, energy security, energy efficiency and carbon reporting should be considered together if market dynamics are to be used effectively to achieve the Government's objective of a low-carbon generation future. All aspects of regulation, taxation and reporting should be used to recognise and promote energy efficiency and low carbon generation at the expense of high carbon energy usage and wastefulness.

6.7 Recent Government changes to the CRC Energy Efficiency Scheme (ie the withdrawal of financial recycling payments as announced in the Comprehensive Spending Review in November 2010) have fundamentally changed the scheme and retailers are calling for the scheme to be abolished in its current form.

7. The role of consumers, businesses, non-government organisations, and international bodies in delivering, and stimulating demand for, a green economy

7.1 Retail has an important role in stimulating consumer demand for a green economy. Retailers have the potential to engage consumers with the sustainability agenda generally, as well as facilitating energy efficiency. The retail sector is striving towards sustainable models of consumption which allow consumers to consume and aspire to a better life, but in a manner consistent with long term prosperity and environmental sustainability. There are a number of barriers preventing consumers from making more sustainable choices, including price, information, a sense of hopelessness, and the need to change the social context.⁴⁵

7.2 Consumers need to be empowered to reduce their energy consumption, and will increasingly seek ways to do so, given the expected increase in energy prices to 2050. Consumers must be provided with mechanisms to reduce their energy consumption and cost effectively and generate their own low carbon electricity. Initiatives such as the EuP Directive provide a framework that incentivises energy efficiency. The feed-in-tariff is a valuable initiative to incentivise consumers to invest in renewable energy technology.

7.3 Government must establish a policy framework that rewards responsible behaviour. It must be cheaper and easier to be green. Retailers can play an important role in supporting consumers to adopt green behaviour and purchase lower impact products. Retailers are improving communication with consumers through initiatives such as the On-Pack Recycling Label, referenced above. However, the initiative taken by retailers is not matched by local authorities, whose fragmented and inconsistent approach to recycling and waste undermines retailers' efforts.

7.4 The retail sector has also contributed to consumer behaviour change through their support of communications campaigns such as the Love Food Hate Waste campaign, led by WRAP. All the major grocery retailers support the campaign by providing information to customers on how to reduce food waste, for example, how to store food to keep it fresh for longer, recipe advice, guidance and ideas to increase use of leftovers, information on appropriate portion sizes and different size product formats.

8. Whether any models that more closely resemble a green economy exist elsewhere that the UK should aspire to

8.1 It is regularly reported that other countries have gone further, faster than the UK in evolving to a green economy. The BRC believes that the Government should seek to access a greater proportion of the global green economic opportunity by providing sufficient incentives to business. With around 6% of energy being sourced from renewable sources, the UK is behind the majority of nations in the European Union. The average

⁴⁵ Consumers, Business and Climate Change; the Sustainable Consumption Institute, 2009. <http://www.ciesnet.com/files/publications/copenhagenpaper.pdf>

across the EU is around 15%, with leaders such as Austria and Sweden sourcing over 50% from renewable sources. If the UK is to access the economic opportunity presented by climate change, it should be at the forefront of developing green technologies such as renewable energy generation.

9. *How the UK's policies to deliver a green economy relate to actions needed to deliver the global green economy (a theme of the June 2012 Rio Summit)*

9.1 No comment.

25 August 2011

Written evidence submitted by Public Interest Research Centre

ABOUT PIRC

The Public Interest Research Centre (PIRC) is an independent charity, whose work is aimed towards building a sustainable society. Through research and advocacy, we press for the structural changes needed to effectively tackle climate change and ecological degradation.

DECLARATION OF INTERESTS

Established in 1971, the Public Interest Research Centre is an independent charity (Registered No. 266446). Our funding is provided by charitable foundations and individual donations. We do not receive any corporate or government funding.

SUMMARY

- The transition to a green economy needs to ensure all areas of the economy decarbonise, rather than simply shifting emissions elsewhere.
- The Government's "Green Economy Roadmap" was disappointing in failing to acknowledge one of the key indicators of a green economy—whether total emissions are rising or falling. Once outsourced emissions are factored in, the UK's emissions continue to rise.
- Bending to lobbying from the energy intensive industries sector, the Government has begun to make allowances for climate policy driving "carbon leakage"—but is ignoring the much larger outsourcing of emissions that takes place regardless of existing climate policies.
- It is clear that a wide range of solutions exist for Government, businesses, consumers and NGOs to address outsourced emissions and build a truly green economy—but they need to be given fresh impetus and greater coordination.
- The UK should aspire to follow the examples of Scotland, the Netherlands and Sweden, each of which present models that more closely resemble a truly green economy in respect of the ways they are tackling outsourced emissions.
- When total UK emissions are counted, this highlights a tension between economic growth and the green economy. In order to work towards an *absolute* (rather than merely *relative*) decoupling of emissions, and build a truly green economy, the UK's full emissions profile needs to be addressed.

Given this, we recommend that:

- The Government mandates an investigation into the UK's outsourced emissions by the Committee on Climate Change (CCC) in its updated Carbon Plan this Autumn.
- We would also welcome a dedicated inquiry into the subject of outsourced emissions by the Environmental Audit Committee.

SUBMISSION

1. *The transition to a green economy needs to ensure all areas of the economy decarbonise, rather than simply shifting emissions elsewhere*

PIRC is very concerned that current provisions for the move towards a green economy in the UK include a major loophole around outsourced emissions. PIRC have already submitted evidence on this matter to the Environmental Audit Committee's recent inquiry on Carbon Budgets.⁴⁶ As a result, we will not simply repeat our earlier submission, but focus here on (a) the shortcomings of the Government's "Green Economy Roadmap" in this regard, and (b) on the potential solutions that Government *could* provide in this area. We attempt to answer many of the EAC's framing questions for the inquiry through this lens.

⁴⁶ PIRC's submission to the EAC's Carbon Budgets inquiry is available online here: <http://bit.ly/luaIAe>

2. *The Government's recently-published document "Enabling the Transition to a Green Economy" (formerly and hereafter referred to as the Green Economy Roadmap) was disappointing*

Its stated remit was ambitious: "A green economy is not a sub-set of the economy at large—our whole economy needs to be green."⁴⁷ Globalisation has meant that "our whole economy" stretches far beyond territorial borders, enabling trans-national trade in labour, capital—and pollution. This has led inadvertently to the outsourcing of greenhouse gas emissions, so that by 2004 the UK's total carbon footprint was 19% larger than in 1990—despite reductions in territorial emissions.⁴⁸ Yet no-where does the Roadmap acknowledge this stark fact, or attempt to make provisions for it. The Roadmap does not, therefore, deliver a clear vision of the green economy.

3. *Earlier indications suggested the Green Economy Roadmap would seek to address this issue—but instead it has been ignored*

For the past three years, Defra have been the leading department in Whitehall trying to advance action on the UK's outsourced emissions, within its Sustainable Consumption and Production team. This work has recently been subsumed under the Coalition's focus on the "Green Economy". Amongst the areas that Defra lists under its "Green economy, green business" webpages is a section on "Sustainable products and consumers" which states unequivocally: "When you consider all the products we import and consume in the UK, the UK's total greenhouse gas emissions have increased by 19% since 1990 ... The impacts from our businesses, lifestyles and homes are not sustainable."⁴⁹ A public presentation given by Defra at a conference in December 2010 suggested that a breakthrough had been made in convincing other departments to share these legitimate concerns. The presentation stated there was a "Shared understanding between Defra, DECC and BIS that looking only at the production picture, and not the consumption one, is potentially unhelpful for ... climate change—if we overestimate the effectiveness of our domestic climate change policies by only considering territorial emissions by source ... Seeking to incorporate this into the Green Economy Roadmap."⁵⁰ Despite Defra's best efforts, no such incorporation has been made.

4. *The Green Economy Roadmap neglects a fundamental indicator of success in transitioning to a green economy—whether total emissions are rising or falling*

The Government's own Sustainable Development Indicators 2010 include UK consumption emissions as a key measure of sustainability.⁵¹ Despite progress on many of these indicators, consumption emissions are shown to be still rising. No mention of either the indicator or this worrying trend is made in the Green Economy Roadmap. Moreover, measurement of outsourced emissions is not yet even joined-up across departments: though Defra publish historical figures for UK consumption emissions—verified by the ONS—on their website,⁵² DECC continue to publish only territorial emissions.⁵³ A chance to remedy this discrepancy is looming: Defra have recently let a contract to Leeds University to report on UK emissions from consumption from 2010–16;⁵⁴ these figures should also be made available on the DECC website alongside territorial emissions data. Proper reporting needs to be in place so that Government can begin to deliver against the indicators it has set itself.

5. *The Government, bending to lobbying from the energy intensive industries sector, has begun to make allowances for climate policy driving "carbon leakage"—but ignores the much larger outsourcing of emissions that takes place regardless of existing climate policies*

It is important to differentiate between what is often termed "carbon leakage" and the far larger problem of outsourced emissions. Carbon leakage usually refers to emissions being driven overseas *as a direct consequence* of stringent climate change policies, where businesses seek to avoid the additional cost of abating emissions by moving their operations to a lower-compliance regime. Research by the Carbon Trust shows that this could affect only a very small number of sectors and a tiny percentage of UK emissions: it is calculated that implementing the current EU Emissions Trading System (EU ETS) Phase III targets to 2020 without any free allocation of allowances or protection would drive less than 2% of emissions abroad.⁵⁵

Nevertheless, since certain strategic energy-intensive sectors—such as steel, aluminium and cement manufacture—could be affected disproportionately, the government is justified in giving some attention to measures that will discourage such leakage. It is clear that efforts to build a green economy in the UK would be hampered (environmentally and economically) if certain parts of industrial supply chains were to quit the UK entirely or discouraged from relocating here (for example, steel casting for the manufacture of wind turbine

⁴⁷ HM Government, *Enabling the Transition to a Green Economy: Government and business working together*, August 2011, p 4.

⁴⁸ Stockholm Environment Institute, *Development of an Embedded Emissions Indicator*, report for Defra, July 2008.

⁴⁹ See <http://www.defra.gov.uk/environment/economy/products-consumers/>.

⁵⁰ Presentation at the SDRN Annual Conference 2010 by Alice Baverstock, Defra, 9 December 2010, <http://www.sd-research.org.uk/wp-content/uploads/microsoft-powerpoint-alice-baverstock.pdf>

⁵¹ Defra and Office of National Statistics, "Measuring Progress: Sustainable Development Indicators 2010", http://sd.defra.gov.uk/documents/SDI2010_001.pdf

⁵² Defra website, <http://www.defra.gov.uk/statistics/environment/green-economy/scptb01-ems/>

⁵³ DECC website, http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/uk_emissions/uk_emissions.aspx

⁵⁴ Defra research project ET0101, "Embedded Carbon Emissions Indicator", <http://bit.ly/nhvexA>

⁵⁵ Carbon Trust, *Tackling carbon leakage: sector-specific solutions for a world of unequal carbon prices*, March 2010.

components). However, we would urge caution that the Government not overreact to such fears: recent research by the Grantham Institute suggests that too many industrial sectors are likely to benefit from compensatory free allowances under Phase III of the EU ETS, resulting in an excessive transfer of EU citizens' taxes to these sectors.⁵⁶ We wait to see the Government's heralded package of measures to compensate energy-intensive sectors and urge that a public consultation is held on them prior to implementation.

Furthermore, concerted lobbying on this relatively small matter risks obscuring the far larger problem of UK emissions being outsourced overseas regardless of the shape of existing British climate policy. The quickest glance at data on outsourced emissions over the last 20 years shows that this process has not been driven by climate policy to date, but rather is a long-established negative trend driven by globalisation and the flight of capital and labour from UK industry to predominantly Asian countries. The hue and cry over carbon leakage from the energy-intensive industries forgets the simple fact that environmental legislation plays only a small part in determining overall costs for most businesses, and that labour costs tend to be far more important. It forgets too that many multinational businesses based in the UK are facing increasing demands from consumers to account for the environmental impacts of their global supply chains, and would like Government to provide clarity and a level playing field on this too. For example, the UK Corporate Leaders' Group on Climate Change recently called on Government to mandate an enquiry into outsourced emissions by the Committee on Climate Change.⁵⁷

6. It is clear that a wide range of solutions exist for Government, businesses, consumers and NGOs to address outsourced emissions and build a truly green economy—but they need to be given fresh impetus and greater coordination

To be clear, the best policy advice on what to do about the UK's outsourced emissions will come from a thorough investigation by the CCC. However, multiple solutions already exist. Some are being researched and pursued by Defra, but with insufficient cross-departmental backing to date. Others remain entirely unexplored. The following give a flavour of potential interventions Government could make were it to take the matter seriously, running from the level of the individual consumer up to international negotiations:

- Working with businesses to increase the uptake of product carbon labelling using the PAS-2050 British Standard.
- Running a communications campaign to promote the buying of products with lower carbon footprints.
- Extending the Courthauld Commitment with retailers to cover outsourced emissions (as part of targets for lifecycle reductions in supply chain impacts).
- Encouraging retailers to choice-edit product lines on the basis of carbon footprint scores.
- Introducing mandatory carbon labelling and company supply-chain reporting.
- Promoting international Product Standards, or introducing a “Product Emissions Performance Standard”, applicable to any goods or services whether produced within the UK or overseas.
- Incentivising resource efficiency and investing in green manufacturing technologies (such as for the steel, aluminum and cement industries) to make the UK a hub of clean manufacturing.
- Accounting for outsourced emissions in public procurement policies, and purchasing goods and services with lower lifecycle emissions.
- Promoting demand-side measures to alter consumption patterns that would reduce emissions, ranging from encouraging consumers to buy longer-lasting products (and keep products for longer), to discouraging food waste and incentivising dietary change.
- Striking international trade deals that promote emissions governance.
- Introducing Border Adjustment Mechanisms to price carbon into imports.
- Treating outsourced emissions as akin to aviation and shipping under the Climate Change Act, and taking compensatory domestic action if international action is insufficient.

7. The UK should aspire to follow the examples of Scotland, the Netherlands and Sweden, each of which present models that more closely resemble a truly green economy in respect of the ways they are tackling outsourced emissions

In Scotland, the government is obliged under the Climate Change (Scotland) Act 2009 to “lay before the Scottish Parliament a report in respect of each year in the period 2010–50... set[ting] out the emissions of greenhouse gases (whether in Scotland or elsewhere) which are produced or otherwise associated with the consumption and use of goods and services in Scotland during that year.”⁵⁸ The Scottish Government has commissioned research into Scotland's historic emissions from a consumption basis, and will update this in

⁵⁶ Grantham Institute—Imperial College London, London School of Economics, & Carlos III University in Madrid, “Policy brief: Still time to reclaim the European Union Emissions Trading System for the European tax payer”, May 2010, <http://cep.lse.ac.uk/pubs/download/pa010.pdf>

⁵⁷ UK Corporate Leaders' Group on Climate Change, *Seize the Day*, June 2010.

⁵⁸ Climate Change (Scotland) Act 2009, para 37, pp 21–22; see also <http://www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action/climatechangeact/reporting>

2012.⁵⁹ The Dutch Government has sponsored research into consumption-based emissions through the Netherlands Environmental Assessment Agency (PBL)⁶⁰ and has often been at the forefront of sustainable consumption policies, such as the development of ecological footprinting tools, and the NU-Spaarpas, a pioneering “green loyalty card” to promote sustainable buying habits.⁶¹ In Sweden, meanwhile, the Government’s Environmental Objectives Bill of March 2010 was introduced with the goal of “hand[ing] over to the next generation a society in which the major environmental problems in Sweden have been solved, and that this should be done without increasing environmental and health problems outside Sweden’s borders.” Since the passage of the Bill, Sweden has developed a series of environmental indicators which all take into account a consumption perspective, including outsourced greenhouse gas emissions.⁶²

8. What tensions might there be between economic growth and the green economy?

The Green Economy Roadmap calls for “green growth” and for “wealth [to be] generated while emissions and other environmental impacts are reduced.” This is certainly to be encouraged, but to do so will require a fuller picture of the impacts of growth to date. The key is the level of *decoupling* occurring in the UK economy: that is to say, how far growth can be decoupled from emissions.⁶³ Whilst the UK economy has experienced *relative* decoupling in recent decades—a fall in the amount of carbon emitted per unit of GDP created—it is plain to see, once outsourced emissions are factored in, that *absolute* decoupling has not yet occurred. Structural decomposition analysis of total UK emissions trends carried out by Stockholm Environment Institute for Defra shows that “while technological efficiency has improved the CO₂ impacts of our products since 1992, the rise in UK consumption has outstripped the improvements achieved”.⁶⁴ Civil servants have warned Ministers in briefings that “the Government needs to be cautious about over-claiming on its achievements in decoupling economic growth from environmental degradation”.⁶⁵

Going further, Steven Sorrell of the University of Sussex, in assessing the historical data on emissions from UK consumption, has concluded that “Economic Growth [is] incompatible with deep cuts in emissions”⁶⁶—at least by going on past example. Whether the same continues to be true in future can only be properly gauged by moving to measure UK consumption emissions on an annual basis, and taking appropriate action based on these insights.

RECOMMENDATIONS

1. To open up policy discussions about outsourced emissions, the Government must mandate an investigation by the Committee on Climate Change (CCC) in its updated Carbon Plan this Autumn. The Green Economy Roadmap held out the promise of strengthening government policy on outsourced emissions, but has failed to do so. In order to provide clarity to business on this issue, and demonstrate it is serious about building a green economy (rather than simply an economy that outsources its environmental problems), the Government must mandate an investigation by the CCC into outsourced emissions, as part of its updated Carbon Plan this Autumn. As recounted in our previous evidence to the EAC, the Government has to date resisted mandating such an investigation; it should not continue to do so.⁶⁷

2. We would also welcome a dedicated inquiry into the subject of outsourced emissions by the Environmental Audit Committee.

25 August 2011

⁵⁹ Scottish Government, “Production of a time series of Scotland’s Ecological and Greenhouse Gas Footprints”, 2009, and PIRC correspondence with Daniel Hinze, Senior Economist in the Environmental Analysis Unit, Scottish Government, August 2011.

⁶⁰ See for example presentation at Leeds-CCEEP Expert Workshop on Consumption-based Accounting, 5 July 2011, by Harry Wiltling, Netherlands Environmental Protection Agency, “Consumption-based accounting: a tool for policy”, available online at <http://www.cceep.ac.uk/Events/Past/2011/July/HarryWiltling-consumption-based-accounting.pdf>

⁶¹ See http://www.nuspaarpas.nl/www_en/

⁶² Swedish Environmental Protection Agency, *The Climate Impacts of Swedish Consumption*, January 2010; *Swedish Consumption and the Global Environment*, 2011.

⁶³ For a discussion of decoupling, see Prof Paul Ekins’ presentation “Decoupling Growth from Carbon: Possibilities and Policies”, 22 May 2008, available online at: <http://www.slideshare.net/guest3bd2a12/decoupling-growth-from-carbon-presentation>

⁶⁴ Defra briefing, “Sustainable Consumption and Production”, undated (2008?), released following Freedom of Information request by PIRC in 2011. Available for download from: http://pirc.info/foi_outsourced.zip

⁶⁵ Defra briefing to Hilary Benn, “Publication of Defra research report: Embedded CO₂ emissions associated with UK imports”, 29 May 2008, p 3, released following Freedom of Information request by PIRC in 2011. Available for download from: http://pirc.info/foi_outsourced.zip

⁶⁶ Steven Sorrell, University of Sussex, slides for presentation given at Leeds-CCEEP Expert Workshop on Consumption-based Accounting, 5 July 2011, available online at: <http://www.cceep.ac.uk/Events/Past/2011/July/JohnBarrett-SteveSorrell-carbon-budgets-rebounds-efficiency-gains.pdf>

⁶⁷ See PIRC’s submission to the EAC’s Carbon Budgets inquiry, available online here: <http://bit.ly/luaIAe>

Written evidence submitted by International Synergies Limited

1. EXECUTIVE SUMMARY

1.1 A “Green Economy” should enable businesses to decouple the production of goods and services from their associated carbon emissions and depletion of natural resources. This “decoupling” can most efficiently be achieved through *applied industrial symbiosis*. The UK is home to the world’s most successful industrial symbiosis initiative—the National Industrial Symbiosis Programme (NISP), which should be enhanced to support the delivery of a green economy. A very strong UK and international *evidence base* is provided in support of this view.

1.2 Research commissioned by the European Commission (2011), identified NISP as *the world’s most effective resource efficiency programme*, and recommends the replication of the programme across all 27 EU Member States.

1.3 Table 1 shows the economic, environmental and social impact of NISP in England, since 2005 and associated investment cost per unit from public investment:

Table 1

NISP OUTPUTS 2005–11

NISP outputs and value for money	2005 – 2011 (cumulative)	Investment cost per unit	Lifetime persistence results (5 year period)	Investment cost per unit
Additional sales	£179,978,763	£0.02	£899,893,815	£0.005
Cost savings	£172,089,282	£0.03	£860,446,410	£0.005
CO ₂ reduction	6,931,613 tonnes	£0.63	34,658,065 tonnes	£0.13
Virgin material saved	10,547,958 tonnes	£0.42	52,739,790 tonnes	£0.08
Water saved	12,703,548 tonnes	£0.35	63,512,740 tonnes	£0.07
Waste diverted from landfill	7,780,968 tonnes	£0.56	38,904,840 tonnes	£0.11
Hazardous waste eliminated	408,358 tonnes	£10.76	2,042,240 tonnes	£2.15

1.4 The outputs delivered through NISP are achieved with a net financial benefit to the Treasury ie although the programme receives direct Government investment the end result is that Government direct tax revenues are roughly somewhere between x6 to x9 the investment. Independent economic analysis of NISP has identified that the programme (between 2005 and 2010) generated *£1.4 billion to £2.4 billion of Total Economic Value Added (TEVA)*, equating to a multiplier effect on Government investment of between 53.2 and 88.6.

1.5 International Synergies continued success in delivering industrial symbiosis in the UK thus fostering a green economy has led to International Synergies assisting to set up programmes (based on the NISP model) in *China, Brazil, Romania, Hungary, Mexico, Turkey, South Africa and Slovakia* and currently in development programmes in *Poland, Italy, Germany and Spain*.

1.6 The *OECD* has identified *industrial symbiosis* “a la NISP” as systemic innovation “*vital for future green growth*” and has made NISP an OECD exemplar case for partnership/networking for eco-innovation.

1.7 We hope that the Committee, based on the evidence, support industrial symbiosis and NISP as a catalyst for developing a green economy, however, *to maximise its potential it needs to be a core policy across Government* rather than as is the case today. Currently NISP is “buried” deep beneath the limited waste agenda and a combination of reduced Government investment (thus reduced Government Tax returns) and the gradual blunting of the programme’s effectiveness by misguided direction is putting in danger the UK’s world lead in this area.

1.8 Further information about NISP can be found in NISP The Pathway To A Low Carbon Sustainable Economy <http://www.international-synergies.com/media-centre/publications/>

2. AREA OF EXPERTISE OF INTERNATIONAL SYNERGIES LIMITED

2.1 International Synergies is *the recognised World Leader in applied industrial symbiosis* (an industrial ecology tool for innovation and green growth). Our credentials to contribute to this agenda are contained in Appendix 1.

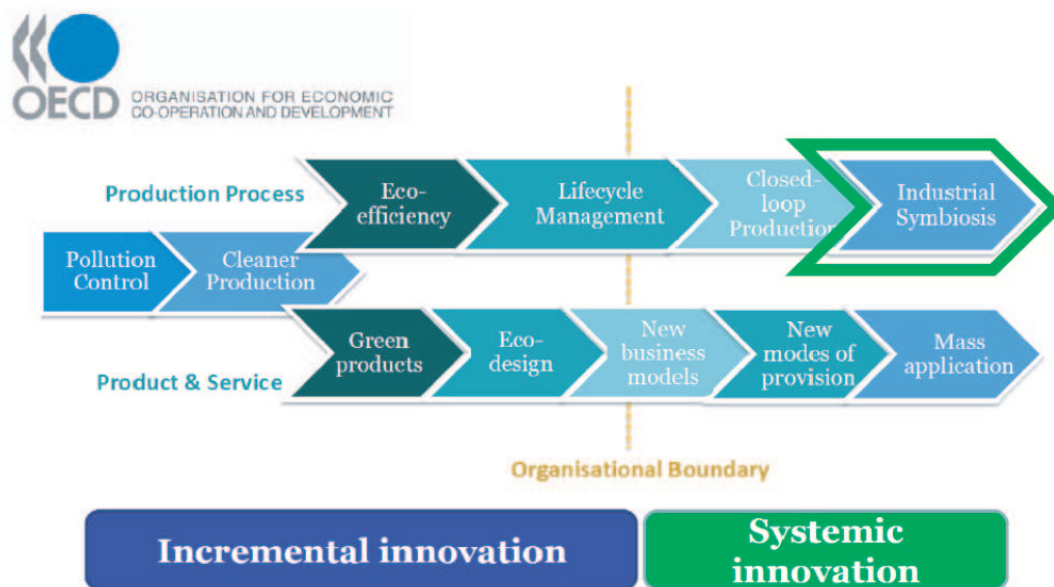
3. APPLIED INDUSTRIAL SYMBIOSIS: AN APPROACH REQUIRED TO DELIVER A GREEN ECONOMY

3.1 Industrial symbiosis is a proven catalyst for green growth. It enables businesses to respond to new opportunities and growing markets without the normally associated environmental degradation. Where resources (of whatever type) are used inefficiently in business processes they create additional and unnecessary costs that constrain growth, generate waste and further deplete scarce natural resources.

3.2 Industrial symbiosis based on NISP's achievements is cited by the Organisation for Economic Co-operation and Development (OECD) as "*an exemplar of systemic eco-innovation that is vital for future green growth*" [Figure 1] and is advocated by DG Enterprise & Industry as a recommended policy instrument in the "*Sustainable Industry: Going for Growth & Resource Efficiency strategy*" (August 2011).

Figure 1

DRIVERS OF GREEN GROWTH (OECD, 2010)



3.3 Definition: Industrial Symbiosis engages diverse organisations in a network to foster eco-innovation and long-term culture change. Creating and sharing knowledge through the network yields mutually profitable transactions for: novel sourcing of required inputs, value-added destinations for non-product outputs, and improved business and technical processes. (Lombardi and Laybourn 2011)

3.4 Industrial symbiosis enables businesses to harness the full economic value of under-utilised resources to create new market opportunities and provide environmental benefits in the form of CO₂ reduction, reduced consumption of water and virgin materials as well as a reduction in industrial waste and pollution.

3.5 To achieve a "green economy" it is important that businesses develop a "systemic" understanding of all their resources and move away from the current "linear" approach that results in inefficient and unsustainable resource consumption. Applied industrial symbiosis shows that the systemic approach adds to the bottom line.

3.6 Industrial symbiosis provides a most efficient and cost effective way to stimulate green business growth and reduce greenhouse gas emissions from industry. Figure 2 (below) describes how industrial symbiosis is able to generate emissions reductions:

Figure 2

NATURE OF EMISSIONS REDUCTIONS THROUGH INDUSTRIAL SYMBIOSIS

Input savings	Lower embedded energy in processing recycled materials than virgin raw materials
Process savings	Savings in gas, electricity or other fuel use by one of the synergy partners, principally <i>through innovation</i>
Energy Savings	Production of energy through, for example, anaerobic digestion and utilisation of waste heat
Fuel substitution	Replacing fossil fuels with other non fossil fuel sources in industrial processes
Transport savings	Reduction in transport and logistics directly associated with synergies
Disposal savings	Reduction in biodegradable material sent to landfill

3.7 Demand led innovation from industrial symbiosis is an efficient way to maximise the contribution from the UK's research centre's such as universities. A study by the University of Birmingham found that 20% of all activity under NISP involved *bring new R&D to market*. Strengthening links with UKTI could mean that the UK could increase its share of the global environmental technologies market.

4. MODEL FOR THE GREEN ECONOMY IN THE UK: THE NATIONAL INDUSTRIAL SYMBIOSIS PROGRAMME (NISP)

4.1 NISP provides an effective *existing* model for delivering green growth in the UK and *has the support of British industry with the Confederation of British Industry (CBI) calling on the Government to "further develop and encourage the work of NISP"* (CBI: "*Making Ends Meet*", February 2011).

4.2 NISP facilitates mutually profitable links between participating companies. Between April 2005 and March 2011* NISP enabled its UK business members to:

- generate £900 million in additional sales;
- cut costs by £860 million;
- reduce industrial CO₂ by 34 million tonnes;
- divert 39 million tonnes waste from landfill;
- reduce industry's demand for virgin materials by 53 million tonnes;
- cut water use by industry by 65 million tonnes;
- recover and reuse 2.4 tonnes of hazardous waste; and
- create and safeguard 8,770 jobs.**

*All figures are externally verified and include persistence (capped at five years) based on the fact that a synergy will continue to deliver benefits year after year.

** NB at £3,152 per job we believe this to be up to one eighth of the investment needed per job than those projects approved under the Regional Growth Fund and projected in the new Enterprise Zones.

4.3 Independent (Manchester Economics) economic analysis of NISP has also identified that the programme generates a significant financial contribution to the UK economy in the form of Gross Economic Value Added (GEVA—capturing direct and indirect employment and profit value added). Between 2005–10, the analysis identified that NISP generated in the range of £369 million to £660 million, equating to an investment multiplier for Government in the range of 14.3–23.9.

4.4 Monetising the additional environmental benefits derived from NISP is possible through the Treasury Green Book analysis of net Total Economic Value Added (TEVA) and brings this figure to between £1.4 billion to £2.4 billion, with a multiplier effect on Government investment of between x53.2 to x88.6. This analysis also reveals that the impact of this industrial symbiosis project on the Exchequer ranges from *£148 million to £247 million additional tax receipts*, measured through a combination of income tax, corporation tax and VAT between 2005 and 2010.

4.5 Value for Money—It is clear from 3.2 and 3.3 above that even at the bottom end of the scale the return on investment and benefit cost ratios are stunningly good. The implication is that done at scale, transitioning to a green economy can be win win win with both Government and industry increasing revenues whilst delivering improved environmental performance. Industrial symbiosis for little investment delivers massive public goods.

5. HOW UK POLICIES CAN SUPPORT GLOBAL TRANSITION TO GREEN ECONOMY

5.1 The "NISP model" for applied industrial symbiosis recognised as global best practice.

5.2 International Synergies was commissioned to set up and support the delivery of industrial symbiosis projects in China, Mexico, Brazil and South Africa as part of the UK Government's Sustainable Development Dialogue Programme. International Synergies is now, via the European Commission assisting establishing an

industrial symbiosis network in the largest industrial park in the world, the Tianjin Economic Technological-Development Area (TEDA), working alongside the United Nations International Development Organisation. In addition International Synergies are the only UK member of the Chinese TEDA Low Carbon International Cooperation Committee.

5.3 International interest in NISP is driven by the increasing weight of research, policy and empirical evidence calling for the deployment of new industrial symbiosis initiatives. The European Commission has commissioned research (undertaken by COWI) that assessed the effectiveness of 120 different resource efficiency policies throughout the World from 23 countries. *The report identifies the NISP as the most effective policy in terms of its cost-effectiveness, carbon reduction, benefit to business and its potential for replication throughout Europe.* For example, in its analysis of NISP's "value for money", the COWI report identifies that the programme delivers CO₂ reduction at only €0.44/Tonne of CO₂.

5.4 Criteria for selection included "Expectation of large resource efficiency potential, coverage of key sectors, coverage of key resources (including water) and the economic structure of the country". Based on further screening the report selected nine cases for further analysis. Of these nine, *NISP is at the top of the list for cost effectiveness, impact and replication potential across Europe.*

5.5 NISP was said to give "*the widest environmental and economic benefits*" and "*optimises the use of resources*". Key factors identified as underpinning NISP's success included "cross sectoral synergies between industries" and "*backing of national funding*".

5.6 The report concludes that replicating NISP across the European Union would result in an economic gain to businesses of more than €3,000,000,000 (additional sales and cost savings) and *generate an annual CO₂ saving of 45,000,000 tonnes—equating to approximately 5% of Europe's annual emissions reduction target for 2020.*

5.7 Building on this evidence base, industrial symbiosis is being included in European policy. The European Commission Roadmap for a Resource Efficient Europe (part of the Resource-Efficient Europe Flagship Initiative of the Europe 2020 Strategy) has promoted industrial symbiosis as a policy instrument. In his closing remarks at Green Week (2011) Commissioner Potocnik stated that industrial symbiosis should be replicated across Europe. At the launch of the Flagship Initiative in January 2011 *NISP was cited as only one of three best practice examples* (the only one from the UK) and had previously been cited as best practice within the EU Waste Framework Directive. (Incredibly Industrial Symbiosis wasn't included in the Waste Policy Review 2011 even though based on Defra's own figures NISP has been the most successful UK programme since its inception in 2005).

5.8 Malcolm Harbour, Member of European Parliament, West Midlands quotes:

"I am delighted to see that International Synergies a company from the West Midlands is setting up an office in Brussels and look forward to seeing its innovative applied industrial symbiosis approach, proven by its creation and delivery of the UK's National industrial Symbiosis Programme (NISP) being further implemented across other countries in Europe.

The substantial growth opportunities that arise from industrial symbiosis, particularly for SMEs, and the concomitant environment benefits make this approach very relevant to our 2020 Vision and an approach that can be implemented quickly and effectively".

5.9 DG Enterprise & Industry has similarly called for the accelerated adoption of industrial symbiosis initiatives in Europe, advocating industrial symbiosis as a recommended policy instrument in its recent publication "Sustainable Industry: Going for Growth & Resource Efficiency" (August 2011).

5.10 NISP was cited as one of the world's top 20 Green Game Changing Business Innovations in a report commissioned by the Worldwide Fund for Nature, 2010, and was subsequently awarded the prestigious *edie.net Award for Environmental Excellence* in the category of "Best Carbon Reduction Project" (2010).

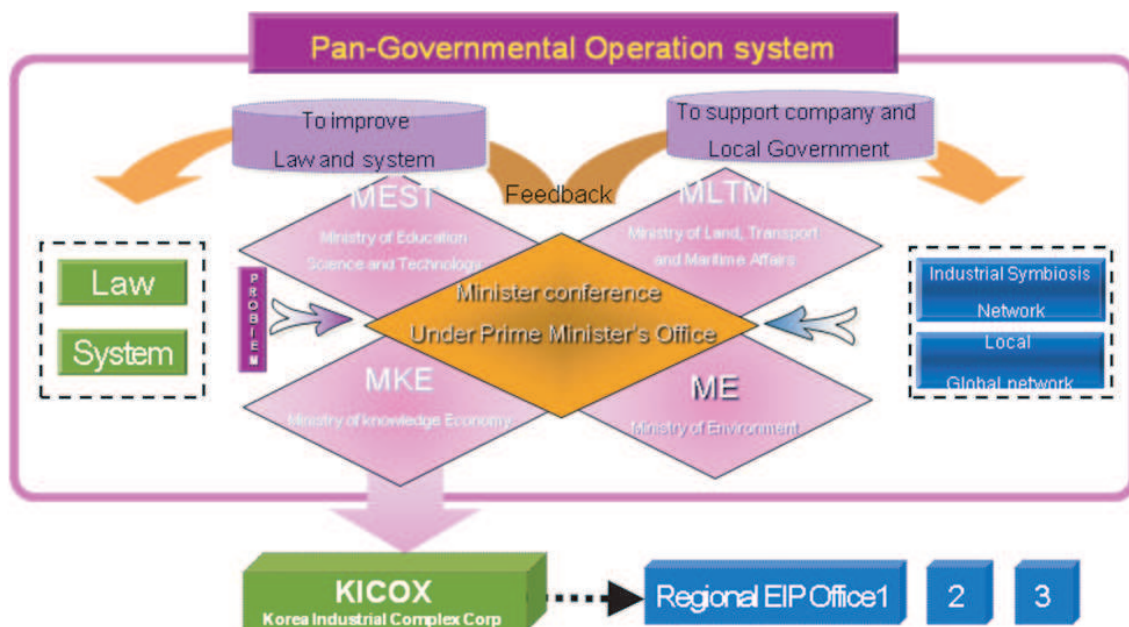
5.11 There is a large body of underpinning academic evidence behind industrial symbiosis—unfortunately the UK are not leaders in this area (USA, Netherlands, Finland, Korea are probably out ahead), however, through International Synergies this activity has increased and we are responsible for the new definition of industrial symbiosis replacing one from the USA. There are some excellent pockets such as Prof Roland Clift at University of Surrey and Dr Rachel Lombardi at the University of Birmingham.

6. RECOMMENDATIONS

6.1 Continued but enhanced investment from UK Government but in a central role (compare and contract with the Korean Government approach where they are intending putting this activity under the office of the Prime Minister). This approach can be scaled up today.

Figure 3

EIP DEVELOPMENT: PAN-GOVERNMENTAL COOPERATION SYSTEM



6.2 Move away from “pre-determined” technology fixes where the technologies are decided upon and then launched into the market often with perverse incentives. A better approach is to create the conditions under which demand led innovation can thrive.

6.3 Government to review UK carbon accounting legislation to include “lifecycle” emissions—currently limited to “direct emissions”.

6.4 Consider hypothecating/investing a fraction of the revenues associated with taxes designed to change behaviours towards the environment to industrial symbiosis. Better regulation (if needed at all) can come from a direct feedback mechanism from the companies engaging in industrial symbiosis to policy makers ie identify those regulations that are well intentioned but have a limiting effect on the ground to the achievement of a Green economy.

6.5 The Technology Strategy Board are currently considering the establishment of a number of Technology Innovation Centres (TICs). Resource efficiency is one area under consideration but, of course, lacks the “glamour” of an Aerospace. If, however, a Resource Efficiency TIC was established with industrial symbiosis at its heart then more advanced applications (3rd generation industrial symbiosis) could be accelerated which would have a major contribution to transitioning to a Green Economy. One such 3rd generation is Regional Economic Development through Intelligence Based Industrial Symbiosis which is about to be piloted in two locations in the Midlands.

6.6 Industrial symbiosis could be one of the UK’s “big ideas” for Rio + 20 input. The industrial symbiosis programme that International Synergies established in Brazil has already extended to seven Brazilian States. International Synergies will be submitting to the Inquiry for Preparations for the Rio+20 essentially this same evidence, however, details will be included of a major international conference on applied industrial symbiosis to be held in Birmingham 12–14 June 2012 ie Rio + 20 + 1 week. The conference has the backing of major institutions (including OECD), major Corporate’s (including Veolia), major municipalities (including Birmingham City Council) and the world’s leading academics (Dalhousie, Yale, etc).

25 August 2011

Written evidence submitted by John Lewis Partnership

The Partnership’s submission is focused on the *barriers preventing the transition to a green economy* and the *policy and institutional framework* we believe is necessary to encourage “green growth”. We have illustrated the *role for business in delivering and stimulating demand for a green economy* by including examples from across our John Lewis and Waitrose businesses.

SUMMARY

- We find that the current “green” policy framework is complex, uncoordinated and burdensome for business. In creating the conditions for the green economy to thrive, the Government needs to take further steps to simplify the policy landscape and to commit to longer term horizons, in order to establish the certainty required for business to make investments.
- The development of a secure and robust policy on alternative and bio-fuels will act as a catalyst to technology investment.
- To encourage consumer take up of the Green Deal, meaningful incentives and flexibility must be built into the framework.
- The ability to develop micro renewable energy generation sites will depend on a supportive and enabling planning framework.

ESTABLISHING THE POLICY FRAMEWORK FOR A GREEN ECONOMY

1. Energy

Our business priorities

1.1 We have recently set an absolute carbon reduction target, committing us to a reduction in operational CO₂ equivalent emissions by 15% by the end of 2020–21, against a 2010–11 baseline. We believe the target is challenging given our growth plans, but achievable based on the very clear programme of investment and activity which underpins it.

1.2 We have improved the energy efficiency of our new shops—new space opened in 2009 was *operating 7% more efficiently*, on average in 2010, than our existing trading estate. We continue to fit the latest technology to our existing estate and new shops and to engage our Partners in helping to deliver reductions locally.

Policy framework required

1.3 The key barriers we face in making our business more energy efficient and less energy intensive relate to the *complexity and lack of certainty and transparency in Government policies*.

1.4 We propose that the Government quickly agrees an *adequate carbon pricing mechanism and level* which is not subject to change and is simple, transparent and predictable. If Government decides to introduce upstream carbon price support of the kind proposed, we believe this will provide sufficient price signal to encourage energy efficiency in private organisations like JLP. End users should not also have to pay an additional charge for carbon emissions resulting from the use of energy (be that the downstream Climate Change Levy (CCL) or the CRC).

1.5 In addition to the CRC, JLP already faces various requirements and guidance around reporting carbon emissions and energy use on its estate including guidance on corporate greenhouse gas (GHG) reporting and Display Energy Certificates (DECs). There should be a *single reporting requirement for organisations*, not multiple schemes, which includes the *mandatory roll out of DECs*. The introduction of mandatory GHG reporting for all UK companies would act as a significant reputational driver to encourage better leadership on energy efficiency within non-energy intensive organisations like ours. It would also provide a fairer, accurate and more complete form of reporting of a company’s carbon management activities than the energy use data outlined in the CRC performance league table.

1.6 DECs offer a level playing field for all organisations though we are concerned about the *effectiveness of the DEC benchmarking system* and want to ensure it is more accurate. If multiple reporting schemes are retained, different reporting requirements should be streamlined so that the scope of emissions included is the same, the calculation methodology is the same and the rules for accounting for change are the same.

1.7 Should the *Carbon Reduction Commitment Energy Efficiency Scheme (CRC)* be retained the proposed changes introduce both complexity and additional costs. The abolition of the recycling of payments back to business directly *reduces finances available for re-investment in low carbon technologies*.

1.8 One area where we have a particular concern in the CRC is around the treatment of energy from renewable micro generation, based on our plan to roll out renewable energy centres for our shops and develop local bio-gas generation. Whilst on the one hand Government is incentivising business to produce renewable energy onsite through the Renewable Heat Incentive and the Feed in Tariff, the CRC is effectively charging for it as a “carbon output”. We strongly feel that *only the energy input into onsite generation should be reported in the CRC scheme*; energy output should be excluded. This would simplify the rules and restore a meaningful incentive for business to invest in creating their own renewable energy sources.

2. Low Carbon Vehicle Technologies and Alternative Fuels

Our business priorities

2.1 *Gas has great potential as a road fuel*—if taken from the grid, compressed and used in “dual-fuel” heavy vehicles it can reduce the carbon emissions from those vehicles by 15%.

2.2 Benefits are multiplied if we can *turn waste into vehicle fuel* by diverting waste from landfill to digestion plants where it can be turned into bio-gas, cleaned up and injected into the gas grid. This reduces overall carbon emissions by nearly 40% as CO₂e, or 75% direct CO₂ (subject to proving in trials). It also reduces landfill and our dependence on fossil fuels.

Policy framework required

2.3 There are currently very *few incentives to invest in bio-fuels* and concerns about their continuation.

2.4 We need *a secure and robust policy framework on bio-fuels*, which has wide stakeholder support, if we are to be confident about making further investment in alternative fuels. Specific barriers to overcome include the high cost of the plant to inject gas into the grid, compress it locally and convert vehicles to dual-fuel configuration, making the business case is risky and capital intensive.

2.5 We welcome the Green Gas Certificate scheme, but would like to see other *incentives to catalyse the growth of such technology*. For example: duty reduction for gas used as a road fuel, capital assistance for local schemes or for the creation of a small, strategic network of natural gas filling stations for HGVs. We calculate a scheme for 200 heavy vehicles would cost around £5 million but displace over 6m litres of diesel fuel per year.

3. Waste

Our business priorities

3.1 Our long-standing objective is to reduce waste wherever possible and to reuse or recycle more of the waste we do produce, for example via the anaerobic digestion process. This not only *meets our broader environmental objectives* but it *reduces the costs associated with waste disposal*.

Policy framework required

3.2 One barrier we face is that *local authorities only deal with residential waste*. If they were also to deal with commercial waste we believe it would enable our business to divert more waste from landfill.

4. Sustainable Living

Our business priorities

4.1 Our businesses are developing both Partner (employee) and customer communications under the banners of “Bringing Quality to Life” in John Lewis and “The Waitrose Way” which recognise the important role we play in helping our Partners and customers to live more sustainably, by choosing quality products and services with a reduced environmental impact.

4.2 John Lewis has developed a product identifier label to enable customers to more clearly identify these products in our shops.

4.3 We welcome the Green Deal and the opportunities this provides for our business and we are proactively working with Government to shape the framework.

Policy framework required

4.4 Our key concern around participation in the Green Deal relates to the *lack of incentives and triggers to drive consumer demand*. There need to be stronger financial incentives in the framework (eg council tax reductions) to encourage take up of the Green Deal.

4.5 We want to see *flexibility* to enable customers to arrange a tailored package of measures and financing options. This flexibility would mean eg customers being able to top up upfront payments with Green Deal finance, or make early payments on Green Deal funded home improvements.

4.6 We think Government has underestimated the number of homes still requiring cavity wall and loft insulation, yet it plans to remove these subsidies for all except the “fuel-poor”. The Government will focus instead on subsidies for more “hard to treat” measures. We would like Government to keep *loft insulation and cavity wall subsidies* under review or to have a longer phase out period instead of the current planned cut off point.

4.7 We would like to see direct support for the *costs of completing good quality, tailored home assessments* (indications are £80 to £100 per home). We are concerned that industry will prioritise installation of high margin measures to cover assessment costs and not necessarily those that are most appropriate.

5. Planning

Our business priorities

5.1 The review of national planning policy provides a fresh opportunity to encourage genuinely sustainable growth, by clearly *guiding local authorities to support investment in new low-carbon technologies and energy-efficient development* in sustainable locations. We support the proposed *presumption in favour of sustainable development*.

5.2 One of the key initiatives of our carbon reduction plan is the development of *renewable energy generation centres* to enable our shops to operate off the grid.

5.3 Our first pilot energy centre will be a biomass combined cooling, heat and power plant, providing energy for our new Waitrose in East Cowes. Opening later this year it will use mainly locally sourced biomass woodchip and *reduce our reliance on the national electricity grid*, almost eliminating our fossil fuel reliance other than for planned maintenance works. The residual heat will be used in an adjacent medical centre and 50 zero-carbon homes.

Policy framework required

5.4 We are *planning a further 150 energy centres across Waitrose and John Lewis* by 2020–21 but our ability to achieve this is dependent on a planning application process which is aligned with the Government's promotion of onsite renewable micro generation and carbon reduction/energy efficiency technologies. We hope that the *clearly defined presumption in favour of sustainable development* will assist significantly in achieving this.

5.5 We also recommend *greater training of planning officers* on issues of green energy and sustainable development.

DELIVERING AND STIMULATING DEMAND FOR A GREEN ECONOMY

6. Role of Business

Examples from across our John Lewis and Waitrose businesses

6.1 John Lewis Cambridge ran an *eco-delivery trial*, inviting customers to choose a more environmentally favourable delivery slot ie when a vehicle was already in their area. Over 70% of customers chose this option and we have now rolled it out across all our shops.

6.2 Waitrose is the first supermarket to trial *vans fuelled by bio methane gas* extracted from a landfill site in Surrey. They will save four tonnes of CO₂ per vehicle per year and will qualify for a fuel discount on the London Congestion Charge, reducing our costs.

6.3 97% of all domestic large electrical appliances (brand and own brand), excluding tumble dryers, are now energy efficiency rated A or above. In 2011 we introduced our most *energy efficient collection of own brand large appliances* which are all A-rated or above.

6.4 John Lewis *reduced packaging material* in 100 lines in 2010–11 which resulted in the removal of 20 tonnes of cardboard and over 6 tonnes of plastic. By re-engineering packaging we generated savings of £50,000 on duvet boxes and £40,000 on sheet bags.

6.5 John Lewis will be diverting *99% of construction, demolition and excavation waste* from landfill for all 2011 projects. In our John Lewis Stratford shop, opening in September, waste volumes generated will be less than 6 tonnes per 100m².

6.6 Waitrose's *new refrigeration system*, which uses a water-cooled and propane-based natural refrigerant, has enabled significant savings in both energy and costs. We have achieved a 20% reduction in refrigeration and cooling emissions so far by fitting the new system in 26 shops. In one shop we reduced our refrigeration carbon footprint by 69%.

25 August 2011

Written evidence submitted by the Wood Panel Industries Federation

EXECUTIVE SUMMARY

- The Wood Panel Industries Federation (WPIF) represents all UK manufacturers of wood-panel products.
- The wood panel industry embodies many principles that should be a model for the green economy.
- The industry is being undermined by current energy policies. The subsidising of burning woody biomass is distorting the wood market, and threatening to displace the industry.
- Wood products, used in construction and manufacturing, have a central role in the green economy.

THE WOOD PANEL INDUSTRY

1. The WPIF represents all UK industrial manufacturers of wood-based panels. The group produces Wood Chipboard, Oriented Strand Board, and Medium Density Fireboard. WPIF companies have seven manufacturing sites, across England, Scotland and Wales.⁶⁸ The industry accounts for approximately 8,600 jobs and supplies approximately 60% of UK wood-based panels. The sector has an annual turnover of £520 million.

2. The industry's key feedstock is coniferous softwood, in the form of small roundwood, sawmill co-products (chips and dust) and recycled timber. The industry is the second largest processor of UK-sourced wood, all from FSC monitored forests, annually consuming some 4.5 million tonnes. This includes 3.4 million tonnes of wood derived from UK forest sources, and 1.1 million tonnes of recycled timber.

THE WOOD PANEL INDUSTRY AS PART OF THE GREEN ECONOMY

3. The wood panel industry contributes to carbon reduction through its products and manufacturing processes. Converting wood into useable material performs a valuable carbon capture and storage function, sealing carbon for the life-span of the product. Wood panel production releases far less carbon (approximately 378kg of CO₂ per tonne of wood) than burning wood for electricity generation (typically 1,905kg of CO₂ per tonne of wood).

4. The wood panel industry is also the largest industrial generator of renewable heat in the UK—around 2.4TWh in 2009, with capacity of over 3TWh. Approximately 55% of the industry's total heat demand is satisfied by its own process residues.

5. An independent report by CarbonRiver has established that if the wood panel industry were displaced by wood-fired electricity generators, net CO₂ emissions in the UK would increase by six million tonnes per annum.⁶⁹

6. The CO₂ released by burning softwood will take 35–40 years to be reabsorbed. The majority of products produced by the WPI will store carbon for at least this period. Wood based panels are used in all areas of construction (including flooring, roofing, cladding), as well as furniture and shop-fitting. These panels are a part of our daily lives, albeit often disguised as parts of other products. Demand for these products continues to grow, and they will play a key role in meeting the Government's "Zero Carbon Homes" agenda.

7) A greater market for wood products could encourage the expansion of sustainably managed woodlands and forestry, increasing the carbon sink effect and reducing CO₂ emissions further.

THREATS TO THE INDUSTRY FROM CURRENT ENERGY POLICY

8. The Renewables Obligation encourages energy companies to burn material that would otherwise have its carbon locked in by being processed by forest industries. Diverting wood to large-scale biomass power plants represents a major distortion of the Hierarchy of Use, the purpose of which is to ensure that material is reused or reprocessed as many times as possible before the energy is recovered through burning. Wood should be utilised to its full potential before any energy-recovery (such as burning for renewable energy) takes place.

9. The WPIF has called on Government to remove the subsidy on burning wood for electricity production. This subsidy is threatening an industry which already plays a central role in the green economy. The wood RO is distorting the wood market, leaving the wood panel industry unable to compete on a level playing field for its feedstock. Without a sustainable supply of wood, the survival of the industry is in jeopardy.

10. Demand for wood from biomass plants is growing. A recent report for DECC points towards demand of 80–100 million tonnes of wood—almost eight to 10 times the UK wood harvest. Just these three companies could consume 15 million tonnes of wood, more than the entire UK wood harvest:

- RWE npower Tilbury plant—650MW conversion to wood pellets.
- Prenergy Port Talbot—350MW woodchip plant.
- Forth Energy—four plants with a total of 500MW.

11. Waste wood is also being diverted to large-scale biomass plants. This represents a major distortion of the Waste Hierarchy. Burning virgin wood, or used wood that has a recycling potential, is a waste of a valuable resource—and one that is not in line with the objectives of a green economy.

12. Useable wood, which could be utilised in manufacturing, is being burnt in biomass plants which are only around 30% efficient. The RO should be refocused on smaller-scale efficient CHP (around 80% efficient), and generation using end-of-life waste. This would be a more sustainable solution in the long term, by ensuring that carbon is still locked in to wood products.

⁶⁸ WPIF factory sites are as follows: Hexham and Auchinleck (Egger UK Ltd), Chirk, Clwyd (Kronospan), Cowie, Stirling, and South Malton, Devon (Norbord), and Kirby, Liverpool (Sonae Industries Ltd).

⁶⁹ CarbonRiver (2010): "An analysis of carbon emissions for different end of life scenarios for virgin, recycled and low grade wood fibre", available at http://www.makewoodwork.co.uk/GalleryEntries/Manifesto_and_Reports/Documents/WPIF_Project_Subsidy_Report.pdf.

CONCLUSION

13. Incentivising the consumption of vast quantities of useable wood for an inefficient and environmentally damaging process is a disastrous waste of limited natural resources.

14. On environmental and economic grounds, we believe that it is better to use wood instance to make products, which in turn can be recycled or reused and at the end of their useful life can still be used as fuel and the energy recovered. Products store the carbon for long periods, whereas burning virgin wood before use in products wastes the economic and carbon potential of the material. Wood is only “carbon neutral” after a growing cycle, but in the case of softwoods that lifecycle can be 40 to 50 years.

15. The Government is not only distorting the wood market, thereby threatening the existence of a carbon-efficient and economically green wood panel industry. It is also pursuing a subsidisation policy that will result in a net increase in carbon emissions.

16. To maximise the carbon storage potential of wood, the lifespan of wood and wood products should be extended as far as possible, through good design and maintenance, re-use, and recycling.

17. In progressing towards a greener economy, the Government must ensure that existing industries with proven green credentials are not undermined by short-sighted policies. The wood panel industry should instead be championed as an example of an industry which takes the sustainability of its supply seriously, and has made every attempt to reduce its own carbon footprint through the development of on-site high-efficiency renewable heat.

26 August 2011

Written evidence submitted by The Institute for Learning

The Institute for Learning (IfL) is the professional body for teachers and trainers in the Further Education sector.

In March 2011 BIS asked us to carry out a survey of our membership to find out more about if and how green skills are being embedded into the subjects our members are teaching and the appetite and drivers for current and future engagement with green skills.

We asked our members questions around how easy it is to link with relevant green employers in their subject area, how up to date they feel qualifications are in relation to green skills and topics, and the demand from learners and employers for awareness about green skills. Alongside these specific questions we also asked how enthusiastic they are about general green issues, how confident they feel to incorporate green issues into the subjects they teach and whether they feel there is an argument for teaching generic green skills as part of all vocational qualifications.

We opened the survey for two weeks and received 3,134 responses from teachers and trainers across the Further Education sector.

Throughout the responses two main themes come through emanating from the clear enthusiasm and interest from teachers and trainers to include green skills more in teaching. The first key theme is the need for more continuing professional development (CPD) in green skills, and that CPD opportunities enable exchanges of good practice, especially within subject areas between teachers and trainers. This needs to be supported by organisations (national and the individual college or provider) so that teachers and trainers are given time to share practice in updating their own green skills and methods for integrating into teaching. Teachers feel that ideally CPD time and resources should be funded by government or others to give extra impetus. Members felt that CPD opportunities should be subject specific, with some that are more generic. Since this report was published IfL have developed an online community of practice for green skills where members can share ideas with each other and discuss topics affecting sustainable development and the green economy.

The second key theme is around resources available and the idea of creating a national online database of teaching resources on green skills to enable teachers and trainers to draw on these and share resources amongst themselves, and so that there are some fixed and recognisable resources available in a specific location for teachers and trainers, IfL members, to search through and use. Since this report was published the Learning and Skills Improvement Service have developed a new sustainable development area on their Excellence Gateway with resources for the sector to utilise.

We have attached the report and hope that you find it useful. If you would like to discuss any of the themes with us further please get in touch.

26 August 2011

Written evidence submitted by the Society of Motor Manufacturers and Traders

INTRODUCTION AND SUMMARY

1. The Society of Motor Manufacturers and Traders (SMMT) is the leading trade association for the UK motor industry, providing expert advice and information to its members as well as to external organisations. It represents companies throughout the automotive sector ranging from vehicle manufacturers, component and material suppliers to power train providers and design engineers. The motor industry is a crucial sector of the UK economy, generating a manufacturing turnover of £51 billion, and contributing well over 10% of the UK's total exports.

2. SMMT welcomes the opportunity to provide written evidence to the House of Commons Environmental Audit Select Committee on the green economy and also eagerly awaits publication of government's green economy roadmap. The comments in this written evidence expand on SMMT's submission on the green economy to DEFRA in spring 2011 which covered the broad themes of this inquiry.

3. A summary of the response:

- The automotive industry supports ambitions for a green economy and is well placed to deliver on government's objectives.
- The automotive industry has invested heavily in developing lower-carbon products and processes, and is investing in ensuring the right skills to enable this transition.
- Government and industry have outlined the key technologies and fuels for our sector and specifically identified the strategic technology groups in which targeted investment can provide best value-for-money and meet green economy objectives.
- Joined up government policy making must ensure the right business environment for creating a green economy—from energy to innovation policy, from taxation to trade policy, government must ensure policies encourage investment and growth.
- Consumer education and incentives are an essential element of any transition to a low-carbon economy and for developing markets for low-carbon products.

AUTOMOTIVE—DRIVING THE GREEN ECONOMY: CHALLENGES AND OPPORTUNITIES

4. The automotive industry shares the government's ambitions to rebalance the economy and stimulate sustainable low carbon growth led by private sector investment and increased exports and inward investment. The UK automotive industry is well placed to help deliver these objectives. Growth opportunities for UK automotive manufacturers and suppliers arise from the move to low and ultra low carbon vehicle technologies across the globe. Government policy in moving to a green economy has to recognise and support the dynamism and diversity of UK automotive manufacturing.

- Over the last 10 years there has been over a 20% reduction in average new car CO₂ emissions as well as significant reductions in the environmental impacts of manufacturing processes.
- The UK has the fourth highest R&D spend in Europe and represented a fifth of core global R&D activity in 2010. Over £1.5 billion is spent annually on automotive R&D in the UK. Much of this spend is on R&D that will deliver ever cleaner, safer and more fuel efficient vehicles.
- In collaboration with government, the automotive industry has developed long-term low carbon roadmaps for its products and identified technologies which show automotive's leadership in addressing the carbon impacts of its products and processes.
- The automotive industry employs over 700,000 people from manufacturing to retailing, contributing £8.5 billion added value to the economy. Currently, significant investments are being made in developing low-carbon skills for now and the future.
- The UK is home to seven global volume manufacturers as well as the majority of globally successful luxury car makers, motor racing companies and low volume vehicle manufacturers. These companies are investing heavily in UK R&D to develop innovative technologies that lower the emissions and environmental footprint of their products. Government policies to foster the green economy need to retain this diversity as a UK strength and support R&D investment and innovation across the whole UK automotive industry, irrespective of industry segment or vehicle type.

GREEN PRODUCTS AND TECHNOLOGIES: INVESTMENT AND DEVELOPMENT

5. The UK is fast becoming a centre for low carbon vehicle manufacture, development, demonstration. Long-term commitments from government for continued support of new technology will enable the UK to build on this area of opportunity and strengthen the UK's leading role. In addition, new markets for our products and increased demand will lead to growth and in turn job creation. This is a challenge and an opportunity, with increased investment in low carbon products and growth, there is a need to increase the UK's share of the value in global value chains.

6. Through the Automotive Council, the UK industry and government has developed consensus technology roadmaps for cars and commercial vehicles which provide a key focus for the UK motor industry, recognising

the long-term challenges associated with the transition to ultra-low carbon vehicles. The Automotive Council has also set out priorities for strategic investment priorities for the move to lower carbon technologies, identifying five “sticky” or priority technology groups where the UK has the potential for a significant return on investment, which industry, government and R&D funding bodies should strategically exploit and support. The low carbon framework outlined by government should reflect the diversity of technology opportunities as outlined in the consensus roadmap.

7. Innovation policy and R&D support is key for low carbon growth in the UK automotive sector. It also makes the UK a more attractive location for highly mobile R&D investment by OEMs and global Tier 1s. Industry supports plans to incentivise R&D activity through a reform of the large company R&D tax credit scheme to make it work better for automotive manufacturing and encourage greater investment in innovation in the UK now.

8. We see a need for government innovation policy to focus on areas where great gains can be made. Through work commissioned by the Technology Strategy Board (TSB), strategic input into European funding streams and UK research funding bodies, UK government and industry can work together to strategically exploit and support the above mentioned priority technology groups, in which the UK has the potential for a significant return on investment.

9. The Green Investment Bank as a key “green economy” policy also has a potentially significant role to play in the demonstration and deployment stages of low carbon technologies and its infrastructure. SMMT calls on government to ensure the scope of the Bank covers investments in the automotive sector.

CREATING THE RIGHT BUSINESS ENVIRONMENT FOR GREEN GROWTH

10. The UK automotive industry is ready to lead on low-carbon growth and needs the right business environment to do this. Joined up policy making by government is critical—from innovation to trade policy there is an essential need to prioritise low-carbon growth.

11. Security and costs of energy are important factors when decisions are made on where to locate businesses. Our industry calls on government to have a clear and long-term energy policy prioritising these factors. Government has made several policy decisions which risk undermining competitiveness and do not comply with better regulation principles. Changes to the Carbon Reduction Commitment (CRC) effectively make it a tax on industry, as well as other burdensome reporting requirements the CCL (Climate Change Levy), CCAs (Climate Change Agreements), and EU ETS (EU Emissions Trading Scheme). In addition, changes to the FITs (feed-in-tariff) scheme have made several companies no longer pursue production of renewable energy, impacting both on the economy and the environment.

12. The government’s ambitious carbon budgets must ensure manufacturing competitiveness and a fair sharing of the burden. There are many opportunities for growth in the low carbon economy—government must ensure that its policies and targets are achievable and support efforts being made by the automotive industry to reduce the emissions of its products. Policies aimed at green growth need to understand and support the diversity of the UK automotive industry across all segments to be ultimately successful—economically as well as environmentally.

13. Procurement is one of the most important government policy levers in encouraging the development of markets for low carbon products. There needs to be a consistent approach to procurement policy across government departments and at all levels of government. An example of the significance of this policy option is that we are currently pressing government to continue to phase 2 of the Low Carbon Public Procurement Programme, which has a significant impact on the development of a market for low carbon light commercial vehicles.

14. UK infrastructure impacts on our businesses and green economy objectives in a number of areas: from smart metering to the strategic road network. A well functioning, secure and reliable infrastructure and approach to policies in this area is critical. Specific policies such as plugged-in-places (PiP) and the recent EV infrastructure strategy are essential enablers and policies to ensure we can bring some of our new low carbon technologies to market. It is important that progress on setting the right framework for infrastructure development is paired with continued government engagement with local authorities, key investors and stakeholders to ensure investment is happening in the envisaged timeline and scale.

15. Specifically for our sector we also need a proactive government approach to standards for low carbon products. A current example is the standardisation of plugs for electric vehicles, where we want to see strong UK government participation in the European/international arena, when global standardisation is being discussed.

SKILLS FOR A LOW-CARBON ECONOMY

16. Industry is working closely with partners to ensure the development of training in specialist skills for a shift to more low-carbon technologies. It is essential that skills provision is aligned with industry’s future needs, and Government must target its funding to ensure value-for-money and a long-term investment for industry and the wider economy. Funding such as the Growth and Innovation Fund (GIF) needs to support the

major up-skilling and re-skilling required for new technology. Sector Skills Councils should continue to be supported in the work being undertaken through labour market intelligence gathering which assesses future and current skills needs.

ENCOURAGING AND EDUCATING CONSUMERS

17. Government's commitment to supporting the industry's ultra-low carbon vehicle ambitions through its "Plug-In Car Grant" consumer incentive is very welcome. This support increases the attractiveness of the UK to international investors, support domestic manufacturing and reduce transport emissions. Long-term funding and planning certainty for low-carbon incentives and infrastructure is essential. Government must implement initiatives to encourage the uptake of low carbon commercial vehicles (both heavy and light duty), exploring whether support for low carbon vans should be incorporated into the Plug-In Car Grant. Focusing government policy on support in this section of the industry would achieve considerable emissions reductions as well as presenting significant growth opportunities.

18. CO₂ based vehicles taxes, such as VED, need to be benchmarked to ensure they are transparent and clear, consistent and take a long-term approach to retain choice and provide certainty for industry and consumers.

19. The marketing of low-carbon products and environmental claims is highly regulated, and government must take a clear stance on issues around low-carbon and ultra-low carbon product marketing. This is very important for all stakeholders (government, business and consumers) in the shift to a low-carbon economy and increasing numbers of low-carbon products coming to market.

A LOW-CARBON INDUSTRY

20. Industry itself has responsibility to act to help deliver the green economy. The sector will this year publish its 12th sustainability report, which will show continued improvements in addressing the environmental impacts in the manufacturing, use and disposal phases of a vehicle's life. The sector has a responsibility to continue reducing waste, water and energy usage (and more) as well as providing the best products it can.

21. The sector must also take up the opportunities government presents to it—with an active growth policy, vehicle manufacturers can expect government to provide the right business environment for greater investment, whilst industry has to ensure its readiness to make those investments and support jobs and green growth across the supply chain. Collaborative working with government is critical. The Automotive Council is a central process in providing a joint focus on the agenda and setting UK priorities, but as the Council itself has recognised collaborative partnerships, for example with industry and academia, will also be key to making the UK a world-leader in low-carbon innovation activity.

22. Supply chain management is increasing in importance as the growth agenda develops. The joint industry and government supported Automotive Council has recently strategically focused on growing the UK automotive supply chain. The aim is to create sourcing opportunities and the right investment climate in the UK to retain more of the value of an assembled vehicle in the UK. The Automotive Council has produced a Sourcing Roadmap which will make visible and quantify the very real opportunities arising for suppliers and investors from the desire by OEMs based in the UK to source more components locally to meet existing product needs and demand for low carbon technologies.

25 August 2011

Written evidence submitted by The Royal Academy of Engineering

The Royal Academy of Engineering is keen to contribute to the committee's inquiry on the green economy. This is a crucial topic combining the areas of energy, climate change and manufacturing industry—all of which are central to the future of the UK's economy.

The following submission is a summary of proceedings of a roundtable meeting held at the Academy in March on the offshore wind supply chain. The meeting was attended by Fellows of the Academy, representatives of the offshore industry, government, and other relevant stakeholders. Further details can be found at http://www.raeng.org.uk/news/publications/list/reports/Offshore_wind.pdf

The report makes a number of recommendations in the areas of infrastructure, skills and investment. Although it focuses on the supply chain in a specific sector, most of the findings are directly applicable to other sectors of the green economy.

The focus is also mainly on renewable energy technologies as these will underpin the emerging green economy, but it should also be remembered that demand reduction will play equally important role in the emerging industry.

Answers to specific questions are given below but the main messages that came out of the meeting were that government should:

- Support UK businesses that have already secured opportunities within the sector.
- Engage with businesses planning to enter the market and help them to understand the industry.

- Explore opportunities for UK companies unaware of the sector, matching gaps in the supply chain to the capabilities of businesses.

The economic, social and environmental outcomes that a green economy should aim to deliver, and the appropriate tools and indicators to monitor progress towards such outcomes

The green economy should clearly have the objective of maintaining a secure and affordable energy system with significantly reduced levels of greenhouse gas emissions. It should also contribute towards our economic policy objectives. It can help to rebalance the sources of economic growth towards engineering and manufacturing, it can create new high-value-added industries to sustain tens of thousands of green jobs⁷⁰ and it can spur economic development across the UK regions.

The nature of any barriers preventing the transition to a green economy

Planning regulations remain a barrier to the development of large-scale renewable energy projects. The government must ensure that planning timetables are adhered to and must continue to streamline the entire planning process, treating applications connected to renewable energy as national infrastructure priorities. Planning permission for grid infrastructure may be the biggest obstacle.

The approach required to deliver a green economy, and the aspects of the current economic model that require development, eliminating and/or new approaches found. What tensions might there be between economic growth and the green economy? Would “greening” the economy deliver the outcomes needed?

If the UK is to make the most of the green growth opportunity, government must act to increase the total pool of skilled workers available to the green industrial base, improve the supporting infrastructure and encourage investment. Below are a number of actions required by government in each of these areas.

Skills

- Encourage competence-based qualifications and accreditations applicable across the energy industry. Sectoral qualifications and accreditations reduce access for individuals wishing to enter the industry and add costs for companies in lower tiers of the supply chain, particularly SMEs, who operate across the energy industry. Measures to rectify this could include the introduction of an energy-wide framework of qualifications and accreditations.
- Increase the portability of skills between energy sectors. Measures could promote schemes to retrain those moving between sectors, and programmes to ensure diversity and social inclusion.
- Build awareness of careers in the energy industry among teachers, careers advisers and students.
- Continue to support and promote Science, Technology, Engineering and Mathematics (STEM). At the base of the skills shortage is low take-up rates for these subjects among young people: government must continue to support them at every level of the education system.

Infrastructure

- Encourage Tier 1 (large-scale manufacturing) businesses to locate in the UK. Their presence will catalyse development in the rest of the supply chain, sustaining as many as eight jobs in the wider industry for each job created at a Tier 1 manufacturer.

Investment

- Move swiftly to implement the timetable for Electricity Market Reform (EMR). Uncertainty surrounding the reform proposals is already damaging investor confidence. To prevent this short-term lull turning into long-term stagnation, the EMR process must be conducted promptly in line with the timetable communicated to investors. The final proposals must be simple and predictable enough to attract internationally mobile capital from non-traditional sources.
- Provide clarity on how the transition to Feed-in Tariffs will work, and how the Renewables Obligation will operate under the new regime.
- The government should also kick-start investment with targeted financial support during the construction phase, through loan guarantees or similar products delivered by the Green Investment Bank. A key obstacle is the inability of contractors to guarantee project costs, due to the limited track record of the renewable energy industry. Many potential investors remain concerned about construction risks and are unwilling to invest without such guarantees. Government guarantees could remove this short-term barrier to investment. Once these are completed and the risks are better understood, contractors and investors will be in a position to bear the full risk themselves.

26 August 2011

⁷⁰ Carbon Trust, Offshore Wind Green Growth Paper, April 2011. P7 Offshore wind could generate 80,000–230,000 jobs.

Written evidence submitted by Microsoft

THE ROLE OF ICT IN CREATING A GREEN ECONOMY

Microsoft welcomes the opportunity to respond to the Environmental Audit Committee's inquiry into the green economy. Information Communications Technology (ICT) has a critical role to play in accelerating Britain's ability to achieve its environmental targets. Improved carbon efficiency will in turn drive financial benefits for British business as well as the public sector and create a more efficient, effective economy.

We focus this response on the benefits that ICT can bring to the green economy and the regulatory and policy framework required to achieve these ends.

Undoubtedly, ICT has a vital role in helping UK businesses to reduce their carbon emissions and thus contribute to achieving the UK's environmental sustainability targets. The Climate Group has estimated that ICT could reduce predicted annual global emissions by 15% by 2020 (*Smart 2020* report), an amount equivalent to Europe's carbon emissions. By enabling smarter decisions, creating process efficiency, or fundamentally changing the way certain goods and services are delivered, ICT can dramatically and cost effectively improve the resource efficiency and environmental sustainability of many activities and products.

There are also significant opportunities for users of ICT to capitalize on technology advances and published practices to improve the energy efficiency of ICT itself. According to a recent report by Gartner, 2% of global emissions are accounted for through ICT use. We believe that this could be substantially reduced by leveraging existing technologies and practices, and the ICT industry, including Microsoft, is working hard to further improve energy efficiency of our products and services.

One particularly promising prospect is that of cloud computing for business, which can dramatically improve the energy efficiency of ICT-based services, particularly for smaller firms.

BETTER, CHEAPER, GREENER ICT AND A WHOLE SYSTEMS, OUTCOME-BASED APPROACH

Successfully spurring a green economy requires individuals and organisations to exhibit behaviours and actions that are inherently more environmentally sustainable. However, studies suggest that focusing on "green" as the key value proposition or driver will not generate the necessary adoption to make a difference at the scale necessary to both transform the economy and substantially improve the environment. Simply put, while "green" is important to many, it's not the deciding factor in their decision making and is at best a tie-breaker all else being equal.

Therefore the focus needs to be on creating better and ideally less expensive solutions that are also greener. Coupled with the appropriate policies and incentives to drive the adoption behaviour of the population at large, these more sustainable alternatives can make individuals and organisations more productive, save them money and improve their quality of life—while helping sustain the environment and driving economic growth.

A key factor in designing better, less expensive and more sustainable products and services is a whole systems-based approach that focuses on the desired outcomes being delivered by the activity or product, rather than the actual product or service itself.

ICT can help make services better, cheaper and greener across multiple dimensions and is particularly effective when ICT solutions are implemented as part of a whole systems approach. ICT can not only be used to improve the resource efficiency of existing activities, but can also substitute for traditional resource intensive activities and products, creating a more sustainable alternative. Furthermore, it can help highlight better alternatives that would not have been obvious otherwise.

ICT-BASED SOLUTIONS FOR A GREEN ECONOMY

The following ICT-based solutions are just a few examples of how the efficiency and environmental sustainability of existing activities can be radically improved. It is important to note that in many cases these solutions would benefit from policies and incentives to gain broad adoption and fully capitalize on their potential to reduce the environmental impact.

ESTABLISHED USES

- *Energy-smart commercial buildings.* Leveraging pre-existing data from building management systems, ICT can be used to perform rich analytics that quickly and effectively reduce energy waste by alerting building managers about high value efficiency problems and opportunities.
- *Digital downloads.* Substitute the manufacturing, delivery and storage of physical goods such as media (books, music, games, video, software) by downloading them digitally instead. Eg Microsoft Store.
- *Digital Workflow.* Traditional ICT technologies can dramatically reduce the volume of paper that needs to be manufactured and shipped around the country by digitizing workflows, including capturing signatures electronically.

- *Information dashboards.* Capitalizing on the concept of “improving what gets measured”, vast quantities of data captured and generated by ICT can drive behaviour change in individuals and organizations. Applications range from improving driving efficiency through analyzing vehicle telemetry data, improving energy efficiency of workplaces and households by spurring friendly competition, and providing an open platform for citizens and scientists to publish environmental data, for example, EyeOnEarth.eu.
- *Smart logistics.* Use sophisticated analytics to optimize delivery routes. Create a warehouse “pick list” that optimizes the order in which goods are loaded in a way to allow speedy delivery.
- *Virtual presence/telework.* Reduce the need to travel by enabling people to communicate and collaborate in rich ways across the Internet.
- *Car sharing.* ICT enables vehicles to be shared when needed, reducing congestion and demand for parking.

EMERGING

- *Smart Appliances.* Power hungry devices (eg electric heaters, refrigerators, washing machines and stereos) embedded with ICT technologies and coupled with cloud computing services can co-ordinate their use of power to reduce peak demand within a specific household and across the grid to significantly curtail carbon emissions and reduce the need to further overbuild the electricity grid.
- *Road traffic orchestration.* Using data from GPS and road sensor networks, weather and event data, ICT can predict traffic congestion, provide suggestions for how to avoid it and be the basis for dynamic road tolling which encourages a more balanced use of shared, finite resource for example Bing Maps.
- *Car pooling.* Smartphone applications and cloud computing leveraging GPS and map data can make dynamic matches between riders and drivers that allow people to travel between locations without depending on the same driver for the return trip.

USING ICT TO MAKE SMARTER DECISIONS

There is significant potential for carbon reductions using ICT, both in measuring and managing energy use, as well as creating more efficient or low carbon technologies. Examples range from teleworking software to systems that automatically turn off equipment when people leave the office.

Travel is a significant factor in the carbon output of businesses and individuals. Reducing the amount of travel undertaken by its employees and encouraging more unified technology will save carbon, costs and travel. At Microsoft we are making full use of technology such as Unified Communications (UC) and web and videoconferencing.

Our employees use both Office Lync and Office Communications Server web conferencing to host approximately 60,000 conferences every month. Microsoft Travel estimates that employees have cut travel by more than 100 million miles in the past fiscal year, saving 17,000 metric tons of CO₂.

Microsoft has also partnered with Forrester to provide customers a return on investment calculator for Microsoft Lync. This technology enables customers to calculate carbon emissions, productivity and cost savings through using this technology as an alternative to travel. <https://partner.microsoft.com/UK/40167900>

ENERGY EFFICIENCIES THROUGH CLOUD TECHNOLOGY

One major source of emissions is data centres, a single facility to house ICT equipment and store data. These are major users of energy, representing around 2–3% of the UK’s total electricity use alone (Boosting Energy IQ, Policy Exchange). However, such facilities offer significant potential for efficiency improvements compared to underused servers based in offices. They are also becoming more efficient.

While traditional data centres still draw up to 90% of their maximum power even when they are inactive, “sharing” servers between different users (while protecting data) can lead to much greater efficiencies. Such virtualisation or “cloud computing” shows the potential of the ICT sector to drive carbon reductions. This is particularly the case in small firms, where servers are under utilised.

A new piece of research by Imperial College London, *The Enabling of Technologies of A Low Carbon Economy—from Information Technology to Enabling Technology*, finds:

- Cloud computing has the potential to abate at least 1.5 million tonnes of CO₂ in France, Germany, the UK and Sweden—equivalent to taking 500,000 cars off the road or reducing the ICT sector’s footprint in these countries by 5%.
- 60% of the savings potential relates to small/micro sized firms.
- Where a cloud data centre is located is more important in CO₂ terms than the overall efficiency of the data centre—a cleaner energy source will more readily deliver better carbon savings than investing in efficiency.

These are major carbon savings and we estimate the economic benefits of cloud computing could be significant, adding £11 billion in net new business revenues to the UK economy.

There are also carbon and cost savings involved with electronic software distribution which are typically driven by large datacentres. A recent study by the University of Reading and Microsoft showed up to 83% savings in CO₂ when a product was downloaded versus taking physical possession of the media. This is as a result of the removal of production, printing and distribution of materials which support better carbon efficiency, as well as lower costs for businesses and other organisations.

GREENING IT PRODUCTS

In general, only 15% of servers are utilized to capacity and desktops waste as much as 75% of the electricity they consume. Microsoft is creating innovative new products to ensure computers are more energy efficient and better utilized. For example:

- *Windows 7*—The installed base of PCs emits double the amount that datacentres do. Windows 7 is 30% more energy efficient than Windows XP due to power management being on “by default” in Windows Vista and Windows 7. Considering the low deployment of power management on previous versions of the OS, this change enables customers to have their OS pre-configured to go to sleep and reduce energy use. Customers can also calculate their own energy consumption and cost savings customised for their desktop scenarios using the Microsoft energy saving calculator: <http://www.microsoft.com/uk/environment/environment-calculator.aspx>
- *Microsoft Hyper-V and System Center Virtualisation Manager*—Server virtualisation technology such as Microsoft’s helps organisations identify underutilised resources and the hardware specifications needed to successfully consolidate applications onto fewer servers. Gartner finds potential for 80% saving in power and 82% saving in floor space.

Businesses can also calculate their own energy consumption and potential cost savings using the Microsoft energy saving calculator: <http://www.microsoft.com/uk/environment/environment-calculator.aspx>

- *System Center Configuration Manager 2007 R3*—this includes some important new power management features that can help maximize power policies across an organization. This helps customers to:
 1. Help plan a power strategy by monitoring current power state and consumptions and reporting on machine utilization trends, current power settings and current energy consumption.
 2. Enable the administrator to easily create, deploy and enforce specific power settings using the existing ConfigMgr infrastructure.
 3. Provide the business meaningful report formats relevant to power management.

There are a number of actions that the Government and policy-makers can take to ensure that ICT plays a stronger role in support of Britain’s Green Economy. These can be broadly categorised as:

ACCELERATING THE ROLE OF ICT AS AN ENABLER FOR THE GREEN ECONOMY

- Creating the right cost and financial incentives.
- Removing disincentives to the roll-out of Cloud Computing.
- Ensuring interoperability of technology.
- Providing strong public sector leadership.

CREATING COST AND FINANCIAL INCENTIVES

According to Microsoft-commissioned research conducted in September 2010, over three quarters (78%) of businesses surveyed agreed that IT should be included in Government incentives to reduce carbon footprint, whilst 62% of businesses are unaware of any green incentives available to them in IT carbon reduction.

ICT is currently not included in the Energy Technology Product list as part of the Enhanced Capital Allowances (ECA) scheme, which provides tax relief for certain environmental technologies. ICT that provides reporting, alternatives to travel or energy efficiencies are not included on this list. This is despite the fact a recent Verdantix study on carbon reporting in the UK shows that 44% of customers rely on software to help them manage and report their emissions and the evidence above which highlights potential energy and travel savings.

REMOVING THE BARRIERS TO CLOUD DATA CENTRES

At present the UK’s policy framework undermines the potential to expand more efficient data centres. Specifically, the Government’s CRC Energy Efficiency Scheme acts as a disincentive to increasing the UK’s data centres. This is because data centre firms effectively take on the burden of responsibility for energy from their customers and are held responsible for apparently higher emissions through the CRC league table, when in fact the growth of their data centres is reducing the economy’s net emissions.

In addition, even if the data centre firm purchases its energy from renewable technology, they would still have to pay the full CRC rate (if that generation were also claiming ROCs or FITs). One data centre operator said the CRC meant it was unlikely to locate any data centres in the UK. As a result, Intellect UK has called for data centres to be incorporated into CCAs (and therefore exempt from the CRC). (Boosting Energy IQ, Policy Exchange). A potential solution to this problem could include the expansion of the A-G energy efficiency classification system to ICT equipment.

ENSURING INTEROPERABILITY

For IT to enable the smarter use of energy, regulators and standards bodies should require interoperability and appropriate standardization for information access and formats. This will help foster a healthy ecosystem of energy service providers and prevent vendor lock-in with proprietary formats. Standardisation should rely on existing Internet Protocol and Web services standards, as well as leverage the XML and extensible capabilities of Web services standards.

PROVIDING LEADERSHIP AND EDUCATION FROM THE PUBLIC SECTOR

Governments can help save energy and benefit the environment by applying power management and virtualisation to their IT infrastructure and by promoting telework. Microsoft, for example, participates in the WWF 1 in 5 challenge which encourages businesses to replace one out of five meetings with a virtual meeting. These measures secure lower carbon emissions and would also help the Government's aspirations to reduce waste in public spending.

There is a strong need for education, particularly across small businesses, of carbon reduction incentives and of the potential for IT to reduce carbon footprint and drive energy efficiency, as part of an effective demand side response.

As Microsoft's research suggests, more than one in ten (11%) UK businesses have no plans to reduce their carbon footprint with this figure rising to one in five for SMEs. Less than one in four businesses (24%) were aware of potential government financial incentives in place to help them green their business. Cloud computing in particular can help drive massive energy savings for SMEs.

26 August 2011

Written evidence submitted by Farming First

Executive summary

- Agriculture is a key driver in building a global green economy. Agriculture feeds our entire population and produces fibre for clothing, feed for livestock and bioenergy. Agriculture significantly contributes to gross domestic product ("GDP") growth and leads the way in poverty reduction. Agriculture also has one of the highest potentials for reducing carbon emissions and helping vulnerable people adapt to climate change.
- Farmers need to be able to access markets at the local, regional and global level to achieve sustainable livelihoods. Making agriculture a dynamic sector will require the adoption of supportive frameworks and investment in infrastructure and markets.
- Enhancing sustainable productivity must be at the centre of efforts to make agriculture both environmentally sound and economically dynamic, whilst efforts should be increased to promote sustainable agri-food systems throughout the lifecycle.
- Sharing knowledge, creating supportive extension service networks and investing in innovation and research are all essential for farmers to adopt practices that maximize the efficiency of the inputs they use and help protect the natural resources on which they depend.
- Despite agriculture's key role in building the green economy, foreign aid to agriculture has decreased from 22.5% of the total in 1980 to 5.4% in 2005. Over this same period, the rate of growth in global crop yields has slowed down to 1% per year today.

Introduction to Farming First

1. Farming First is a global coalition representing the world's farmers, scientists, engineers and industry, as well as agricultural development organisations. Farming First calls for a broad-based, knowledge-centered approach to increase agricultural output in an environmentally sustainable and socially responsible manner. For more relevant information, visit the Farming First website at: www.farmingfirst.org/greeneconomy

The economic, social and environmental outcomes that a green economy should aim to deliver, and the appropriate tools and indicators to monitor progress towards such outcomes

2. The transition to a green economy is fundamental for addressing the social, environmental, and economic pillars of sustainable development.

3. In the context of discussions on the Green Economy, Farming First recommends the following outcomes focusing on agriculture's role in delivering the "green economy in the context of sustainable development and poverty eradication":

- (i) *Reducing poverty*: Make agriculture a driver for poverty reduction by ensuring policies link producers to markets and enable value to be created throughout the supply chain to help create income opportunities and diversify rural activities.
- (ii) *Enhancing sustainable agricultural productivity*: The world will need to produce more with less to meet demand and reduce its environmental footprint. Increasing production and productivity should be a priority to protect habitat.
- (iii) *Investing in innovation, research and extension services*: Invest in training, knowledge sharing, extension services, as well research and development to close the uptake gap for existing tools and ensure new solutions are available for tomorrow.

Reducing poverty

4. Agriculture can be a potent driver for poverty reduction. The World Bank estimates that GDP growth from agriculture generates at least twice as much poverty reduction than any other sector. Currently 65% of people in developing countries are involved in agriculture. 1.3 billion of them are small farmers, with limited access to inputs, infrastructure and markets (WDR, 2008). In countries where agriculture represents one of the primary livelihoods, concerted efforts to improve productivity through sustainable practices could change the lives of millions.

5. A dynamic and productive agriculture sector is also essential for the urban sector. In 2010, for the first time ever, more people lived in urban areas than in rural areas globally. Urban populations are dependent on the agricultural sector for most of their consumption, so improving local production and trade is crucial; but it also means a world of opportunities for farmers who can reach the urban market.

6. Making agriculture a dynamic sector will require the adoption of supportive frameworks and investment in infrastructure and markets. Farmers need to be able to access markets at the local, regional and global level in order to sustain a livelihood from their activities. In some areas, this means improving access to transport, storage and market facilities. In Tanzania, US\$2.4 billion of investment is being directed towards tripling the area's agricultural output and maximising the trade potential of the Dar es Salaam port for Tanzania's neighbouring landlocked countries. Through the Southern Agricultural Growth Corridor of Tanzania project (SAGCOT), both public and private sector organisations are supporting 20,000 smallholders to become commercial farmers to bring in annual revenues of an estimated US\$1.4 billion into the country.

7. Access to weather and price information and improved seeds also helps farmers grow better crops and sell at better prices. For instance, in India, a late December harvest of mustard seeds was causing up to 30% of crop to be lost to frost, so breeders worked on a seed with a shorter duration period. This enabled farmers to harvest in early December, avoiding the issue of frost. Farmers also benefited from better prices as they were able to bring their seeds to the market before the usual excess occurred in January.

Enhancing sustainable agricultural productivity

8. Improving the footprint of agriculture while increasing production needs a concerted effort in two areas: first closing the uptake gap of existing best practices and technologies by focusing on knowledge sharing and creating supportive extension services networks; and second investing in innovation and research to provide the solutions for tomorrow and ensure agricultural policies are science-based. According to the Food and Agriculture Organization ("FAO"), 77% of the increased growth in crop production that the world is expected to require will have to come from increases in yield, with only 9% coming from increases in land under cultivation and 14% from more intensive cropping on existing cultivated land.

9. Enhancing sustainable productivity must be the centre of efforts to make agriculture both environmentally sound and economically dynamic: more crops must be achieved per drop of water, per acre of land, per measure of inputs. This is essential to ensure the surface of land under cultivation does not expand, in order to preserve biodiversity and natural carbon sinks. Producers need to be integrated in value chains and new activities need to be developed in processing and other sectors to improve rural incomes and ensure that growth in productivity translates into better livelihoods. The 2009 Keystone "Field to Market" research found that gains in yield per acre in the past 20 years in the USA had also been accompanied by significant improvements in the overall efficiency of resource use. The project looked at key crops such as soybean and maize and found reduced use of irrigated water, reduced soil loss, habitat loss, energy use, and lower carbon emissions. The Field to Market study clearly showed that progress has been made by farmers in the path to increased sustainability while enhancing their productivity.

10. Additionally, efforts should be increased to promote sustainable agri-food systems throughout the lifecycle. In 2010, FAO estimated that poorly developed systems for handling, storage, packaging, transportation, and marketing of agricultural products in developing countries results in post-harvest losses ranging from 15% to a staggering 50%. Investment in food infrastructure and handling could reduce losses and improve food safety. Developed countries also face losses due to food waste from harvest, through delivery to

food services, and in households. Waste is worst in fresh produce which delivers vital nutrients to humans around the globe.

Invest in innovation, research and extension services

11. Agriculture is a knowledge-intensive sector. Farmers need to have access to training, extension services, and sharing of traditional knowledge that can encourage the production of abundant and nutritious crops and mixed diets. Knowledge helps farmers adopt practices that maximize the efficiency of the inputs they use and helps protect the natural resources they depend on. Training programmes should specifically involve women farmers in developing countries as essential “gatekeepers” for household nutrition and welfare.

12. Providing this education to rural communities in a systematic, participatory manner is essential to improving their production, income and quality of life. Extension services disseminate practical information related to agriculture, including correct use of improved seeds, fertilizers, tools, tillage practices, water management, livestock management and welfare, marketing techniques, and basic business skills to address poverty. Extension is also an essential pillar for rural community progress including support for the organisational capacity of farmers’ groups and the formation of co-operatives.

13. Modern extension services must increase their capacity for two-way information sharing—between experts in research and farmers themselves who have essential information on farming. Research and extension should be functionally linked and there should be pluralism in the approaches to implementing this form of education. Mobilisation of the scientific, donor, business, NGO, and farmer communities are needed to improve knowledge sharing, as well as local, reliable SME’s such as agro-dealers to be able to adopt new practices and technologies.

The Empowering Smallholder Farmers in Markets (ESFIM) programme promotes this collaborative approach to research. Working in 11 developing countries, the initiative both partners farmers’ organisations with local researchers to voice their requirements more effectively, and provides farmers’ organisations with information and knowledge that will strengthen their ability to collect, organise and exchange experiences and knowledge.

14. Farmers must constantly adapt, and the challenge of climate change is making that need ever more acute. Investing in research and development, in both the public and private sector, is essential to ensure farmers have the tools they need in the future and that the gains obtained in productivity and footprint are not undermined.

15. Targeted investment in research, combined with supportive frameworks for the roll out, diffusion and uptake of the products of research are essential to support continuous improvements in agricultural sustainability. In particular, research on the needs, aspirations and knowledge of smallholders in the developing world can help ensure agricultural solutions are appropriate for local conditions. Interdisciplinary research into agricultural production, supply chains and consumption needs to be supported to ensure a holistic approach to agricultural development.

16. The Farming First coalition supports prioritising the following areas of research:

- Conduct agronomic research related to water availability, soil fertility and post-harvest losses, as well as climate change challenges.
- Conduct research into crop varieties needed by the poorest and most vulnerable regions.
- Promote farmer-centred research in accordance with their needs.
- Explore alternative and efficient uses for agriculture products and by-products along the value chain; and
- Support research on the nutritional quality of foods.

17. As a sector, agriculture is essential to the green economy. With a predicted nine billion people by 2050, agricultural production will have to increase to meet new demands, for food, feed, fuel and fibre. Agriculture must not only meet demand—it must also do so while minimizing its environmental footprint and creating sustainable livelihoods for farmers and others along the supply chain.

18. In a time of food insecurity and with the largest share of its population in developing countries living in rural areas, the world cannot afford to ignore the potential of agriculture to achieve the triple goals of a secure food supply, poverty reduction through improved rural livelihoods, and environmental sustainability through reduced footprint of production and climate change adaptation.

The nature of any barriers preventing the transition to a green economy

19. Farmers need to be able to get their products to market and receive equitable price treatment when they do. At the moment, there are a number of barriers preventing farmers from accessing markets.

Capital investment

20. Agriculture is in desperate need of capital investment, especially if it is to be able to feed a predicted nine billion people in 2050 and reduce the number of people living in poverty. This is particularly important in Africa where 61% of rural people are living in extreme poverty—many of whom rely heavily on agriculture

as a source of income. The FAO estimates that \$210 billion needs to be invested in agriculture to reach the target of increasing agricultural production by 50% by 2050.

21. Governments need to encourage public and private investment in agriculture, targeting in particular smallholders and women farmers. Price caps will fundamentally destroy that investment. Regulation is also important for private investors.

Transparent commodity markets

22. Global leaders must encourage the creation and use of transparent markets and national/regional commodity exchanges and avoid export bans on food and agricultural inputs. They must not interfere with transparent markets as, all market users are speculators, and are currently a valuable source of capital flowing back into agriculture.

23. Policymakers should encourage appropriate and aligned regulatory systems (eg food safety, tolerances, maximum residue levels, etc) to remove the unnecessary challenges associated with commodity imports.

Access to up-to-date market pricing information

24. Mechanisms must be developed to provide remote access to up-to-date market pricing information for farmers. Throughout 2011, the FAO Food Price Index has been near or at historical highs. Particularly to farmers in food insecure areas, good price transparency improves fair contracting and encourages regional trade among food insecure countries, for instance in sub-Saharan Africa.

25. Information on markets must be collected regionally, including informal markets. On average, only 16% of crop yields ever enter international markets (World Trade Organization (“WTO”). Yet, trade in commodities may be far higher than understood due to informal markets, particularly in developing countries.

Creating appropriate policy environments

26. Governments must create aligned policy environments, which support farmers as small-scale entrepreneurs. Entrepreneurship training can also help to improve smallholder farmers’ marketing skills, helping them to get their products to market.

27. Governments can also support future food and nutrition security by encouraging a range of specific crops and produce to be grown to avoid hunger and malnutrition. This effort will rely on increasing the productive capacity of farmers, especially in food insecure countries, through a focus on:

- (i) Land tenure security.
- (ii) Access to banking and microcredit.
- (iii) Access to inputs and irrigation.
- (iv) Agricultural extension services to share knowledge with farmers.
- (v) Reduced post harvest losses through storage.
- (vi) Rural infrastructure.

Knowledge sharing

28. Agriculture by nature represents a mosaic of solutions and practices, focused on farmer needs and knowledge sharing. Sustainability is a moving target towards which farmers in different geographies and farming systems are already moving and they will need support to continuously improve.

29. Agriculture in a green economy means a broad-based, knowledge-centered approach to agricultural development. Key to achieving this goal is a focus on:

- (i) Addressing implementation gaps through support for knowledge sharing; and advisory and training services.
- (ii) Ensuring agricultural policies are based on science.
- (iii) Supporting productivity through innovation and best practices.

The approach required to deliver a green economy, and the aspects of the current economic model that require development, eliminating and/or new approaches found. What tensions might there be between economic growth and the green economy? Would “greening” the economy deliver the outcomes needed?

30. Agriculture is the basis of our food supply and the raw materials which supply fibre for clothing, feed for livestock and bioenergy. In order to feed a global population of nine billion by 2050, the World Bank estimates that this will require a 70% increase in global food production.

31. Particularly in the developing world, agriculture contributes significantly to GDP growth, leads the way in poverty reduction and accounts for the lion's share of global employment opportunities, especially for women. GDP growth from agriculture generates at least twice as much poverty reduction than any other sector. Worldwide, agriculture employs 37.3% of the world's current labour force—97% of whom live in developing countries (international Labor Organization (“ILO”). In Uganda, for instance, 82% of the work force is dependent on agriculture (CIA World Factbook).

32. Agriculture also has one of the highest potentials for reducing carbon emissions and helping vulnerable people adapt to climate change. Globally, between 17–30% of greenhouse gas emissions come from agriculture. Unabated climate change could cost the world at least 5% of GDP each year (*Stern report*). According to an academic study by Burney *et al*, improvements in crop yield since the 1960s have reduced emissions by up to 13 billion tones of carbon dioxide equivalent units per year (161 Gigatonnes from 1960 to 2005).

33. Water management is also crucial and is probably agriculture's critical limiting factor. Around 1.2 billion people, or almost one-fifth of the world's population, live in areas of physical water scarcity, and a further 500 million people are approaching this situation. Improving water productivity in agriculture through increased yields and drip irrigation is key; in theory, a 1% increase in water productivity in food production makes available an extra 24 litres a day per person. (International Water Management Institute (“IWMI”).

34. Also, large areas of the world's cropland are seriously degraded. By 2050, an estimated half of current arable land will become unusable due to desertification and soil degradation. The large majority of this degradation comes from wind erosion and water erosion (International Fund for Agricultural Development (“IFAD”). Minimum or no-tillage techniques can help reduce soil erosion by 50–98% and also improve soil quality and moisture retention (FAO).

Priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy

35. As global leaders prepare to meet at the Rio+20 (United Nations Conference on Sustainable Development (“UNCSD”)) summit in 2012, they should not neglect the central role of agriculture in delivering a green economy, nor the role of farmers as the main drivers of these changes.

36. Comprehensive solutions are needed for sustainable agriculture, and Farming First's six-point action plan offers a comprehensive view of how this may be achieved. These are:

1. *Safeguard natural resources:*
 - Land management should be improved through the widespread adoption of sustainable practices of land use.
 - Conservation agriculture can be used to prevent soil erosion and land degradation.
 - Manage watersheds and water use more efficiently.
 - Protect wildlife habitat and biodiversity through an integrated ecosystems approach.
 - Provide incentives for improving ecosystem services.
 - Promote a sound management of chemical substances, including through the improvement of health and safety conditions for agricultural workers.
2. *Share knowledge:* While much of the knowledge needed to improve global agriculture already exists, including within remote indigenous communities, it often does not reach those farmers that could benefit most.
 - Increase the level of education on crop and natural resource management for farmers and agricultural workers, including women.
 - Take substantive measures to eliminate child labour and make sure children benefit from decent work conditions and access to education.
 - Promote the development of village-based knowledge centres.
 - Provide access to scalable information technologies for farmers, including women and young farmers, to receive weather, crop and market alerts, as well as other early warning systems to help them make the right decisions for sustainability and productivity.
 - Establish open and transparent two-way exchanges that capture the “voice of the farmer” in the process of policy formulation and implementation.
3. *Build local access and capacity:* Fundamental resources should be available to farmers, including women and young farmers, to help them manage their production process more reliably and at less cost.
 - Secure access to land and water resources, especially for women farmers.
 - Provide rural access to microfinance services, especially to microcredit.
 - Build infrastructure—particularly roads and ports—to make supplies available to farmers.
 - Establish training programs in infrastructure management, operations and maintenance for local and regional settings.

- Improve access to agricultural inputs and services, including mechanical tools, seeds, fertilizers, and crop protection materials.
 - Encourage and co-ordinate multiple local actors to ensure information and supplies get into farmers' hands.
 - Invest in bioenergy where it contributes to energy security and to rural development.
4. *Protect harvests:* In many of the poorest countries, 20–40% of crop yields are lost because of inadequate pre- and post-harvest support. Likewise, vast quantities of food are squandered during production and consumption phases of the food chain.
- Build local storage facilities and transportation mechanisms, including cold chain storage for food preservation.
 - Localise the application of agronomic knowledge, pest-identification and meteorological information.
 - Educate the public on sustainable consumption and production needs and behaviours, including on the need to reduce food waste.
 - Provide risk management tools to support farmers in managing weather and market variations.
5. *Enable access to markets:* Farmers need to be able to get their products to market and receive equitable price treatment when they do.
- Provide remote access to up-to-date market pricing information.
 - Develop well functioning markets through transparent information, fair prices, sound infrastructure and reduced speculation.
 - Encourage co-operative approaches to marketing for smallholders.
 - Improve smallholder farmers' marketing skills through entrepreneurship training.
 - Reduce market distortions to improve opportunities for all strata of agriculture worldwide.
6. *Prioritise research imperatives:* Achieving sustainable agriculture requires intensified, continuous research, prioritising locally relevant crops, stewardship techniques, and adaptation to climate change.
- Conduct agronomic research on issues of water, soil fertility, post-harvest losses, climate change, and alternative uses for by-products.
 - Conduct research into crop varieties needed by the poorest and most vulnerable regions.
 - Promote farmer-centred research in accordance with their needs.
 - Improved productivity through the responsible use of science and technology.
 - Establish public-private research collaboration around integrated solutions.
 - Increase investments from governments and business toward relevant R&D.
 - Investigate alternative uses for agriculture-based by-products along the value chain.

The role of consumers, businesses, non-government organisations, and international bodies in delivering, and stimulating demand for a green economy

37. As we move towards action on global food policies, Farming First urges all stakeholder groups to:

- (1) Promote a clear joint focus on a common goal for food security at the global level through policy and operational coherence.
- (2) Encourage increased transparency on how much of pledged funding for agricultural development has been committed and to what types of programmes.
- (3) Engage a wide range of stakeholders to ensure that efforts are coordinated, clear, collaborative and ultimately successful.

38. Returning farmers to the centre of policy decisions is fundamental to sustainable development. Governments, businesses, scientists and civil society groups must focus attention on the source of our food security. Women farmers should become specially targeted recipients because of their vital roles in the agricultural workforce, household procurement and preparation, and family unit support.

39. Productivity levels along with efficiency in most developing countries have to be raised exponentially while considering environmental sustainability. Policies encouraging investment in developing countries' agricultural sectors should be supported.

40. Governments should invest in their agricultural sectors and devise long-term agricultural development strategies supporting the development of local agricultural markets and farmers' ability to answer market demands.

41. Local production should also be stimulated by providing farmers with the technology, the knowledge and the adequate financial services they need.

26 August 2011

Written evidence submitted by Scottish Renewables

Scottish Renewables is Scotland's leading renewables trade body. We represent over 320 organisations involved in renewable energy in Scotland. Further information on our work and membership can be found on our website www.scottishrenewables.com.

Firstly, many thanks for the opportunity to respond on what is an important issue for the renewables industry in Scotland.

This industry is playing a crucial role in the Scottish and UK Government's efforts to tackle climate change and increase Scotland's energy security, and must continue to do so in order to meet our carbon emissions reduction target of 42% by 2020. Scotland has ambitious targets to source 80% of our electricity demand and a fifth of all energy consumption from renewables by 2020.

1. The Economic, Social and environmental outcomes that a green economy should aim to deliver, and the appropriate tools and indicators to monitor progress towards such outcomes

1.1 Creating a green economy will deliver jobs and help to promote sustainable economic growth at national, European and global levels. Investment, innovation, more efficient use of natural resources and preventing damage to the environment and human health are some of the tools that will get us there. Furthermore, placing natural resources at the centre of the economy will allow us to better understand the costs and benefits of our resources and the impact of our consumption patterns.

1.2 The renewable energy industry is playing a crucial role in the Scottish and UK Governments' efforts to move towards a green economy and must continue to do so by placing natural resources at its heart. The Scottish Climate Change Act (2009) sets an international example by giving our commitment to meet our carbon emissions reduction target of 42% by 2020. Scottish Renewables has been a representative voice of the renewables industry since 1996 and our work has driven more challenging targets and significant progress towards these indicators. This progress has been backed by ambition in industry and government in Scotland, with a desire to continue to set an example in the international community when it comes to renewable energy. We welcomed the Scottish Government's recent decision to raise Scotland's targets to source 100% of our electricity demand and 30% of all energy demand from renewables by 2020. This highlights the success of setting ambitious targets and carefully monitoring our progress towards them. Along with making steady progress towards our electricity targets, early indications also show that we are on track to meet our existing target of 11% renewable heat, and with the introduction of the Renewable Heat Incentive we can expect significant growth in this industry. In order to meet our European renewables targets, the same ambition needs to be applied to the creation of a green economy across the UK.

2. The nature of any barriers preventing the transition to a green economy

2.1 Despite the success to date in making progress towards our renewable energy targets in Scotland, it should be noted that, within the context of a green economy, a one size fits all model will not work; policies should be defined to taking in to account local, regional and country specific factors. Even within the Scottish model for renewable energy there are still barriers in place that have prevented or are continuing to prevent us from realising our potential.

2.2 Project TransmiT is taking place to review the transmission charging systems and the integration of increasing levels of low carbon resources into the system. The current regime works by levying higher charges on those generators using the transmission network located furthest away from the main centres of demand. This is intended to encourage generators to locate closest to where generation is needed, and discourage investment in capacity located further away from these demand centres. However, our best natural resources are not always located closest to these demand centres and in order to put these resources at the centre of our economy we must bring the transmission charging system in line with the green economy by providing the appropriate pricing mechanism to encourage the uptake of renewable energy, balanced with economic efficiency.

There is concern within the industry that the current review appears to favour the latter over the national policy requirements. Fundamentally, the current transmission charging system was designed for another time and another set of challenges. The moral, social, and economic imperative of tackling climate change means that we now have to affect a radical shift in the way that we generate, distribute and consume energy, and the charging system should be designed to support that goal, not to work against it.

2.3 The forthcoming comprehensive review of the Feed-in Tariff (FIT) needs to bring clarity and certainty to the market by outlining a clear and well defined review process for future years to allow investors to properly

and fairly assess risks. In addition, it is important that any changes which are made under the comprehensive review are accompanied by appropriate transitional arrangements.

DECC should ensure that cost effective tariffs that provide the desired rate of return on investment are given. Our members have highlighted concerns that the uncertainty in the tariffs is hampering investment in projects, so it is crucial for government to ensure that clarity around the post April 2012 tariffs is given as soon as possible. We would urge DECC to work with the industry to ensure that all technologies and support levels are given careful consideration and that, where changes are made, clear financial evidence is presented.

2.4 The UK Government initiated reform of the electricity market in 2010. The reform package includes changes to how revenues for renewables generators are supported. Needless to say, this process has introduced a great deal of uncertainty into the investment market for what has now been a prolonged period of time. The new mechanism for financial support, a Feed-in Tariff with Contract for Difference, will be introduced in 2014. Additionally, the level of financial support under the current system, the Renewables Obligation, is being re-evaluated over the coming year. As such, those wishing to invest in renewable generation will not have a clear idea of the support they are likely to receive under either system. This will undoubtedly impact upon investors' financial forecasts, and therefore their ability to seek capital investment. These factors are likely to have an adverse impact upon investment in renewable generation in the UK. Scottish Renewables generally supports these reforms, but we are keen to see further clarity on the above concerns in a timely manner. In particular, we look forward to achieving an outcome that supports the renewable energy industry, and we see the following principles as paramount in securing the optimal investment environment for reaching mandated climate change targets:

- viable levels of income for typical projects, and not just the best;
- a clear route to market at initiation of development;
- certainty and stability for a reasonable period of time; protection of existing projects and of projects already in the pre-commissioning pipeline; and
- avoidance of temporary or permanent deferral of investment in projects or the supply chain.

2.5 Renewable energy projects are highly capital intensive and their success is threatened within current capital constrained markets. Therefore, we support the coalition government's decision to create a Green Investment Bank (GIB) with the mission of "accelerating private sector investment" and an initial remit to focus on "high risk projects which are otherwise likely to proceed slowly or not at all" as a positive move towards reaching our targets. Scottish Renewables believes that the case for investment into the marine energy sector is clear: capital intensive projects that require testing in some of the harshest conditions where they will perform at their optimal capacity for generating electricity. However there is concern within the industry that the marine energy sector will not become a priority for investment until the GIB's third phase of development in 2015—this, we fear, will be too little too late.

We also fully support the bid to locate the GIB in Edinburgh—the UK's second largest financial centre and fourth in Europe in terms of equity assets, not to mention the synergies between the GIB and the size, scale and potential of the renewable energy industry in Scotland.

2.6 Scottish Renewables wants to see the immediate release of the Scottish Fossil Fuel Levy for investment without impacting on the Scottish block grant. These funds can only be used for the promotion of renewable energy development and could be used for financing the wave and tidal industry and increase the uptake of rail electrification and ultimately the decarbonisation of transport. Scottish renewables believes that there is a one off opportunity to catch up on the failure of many administrations to be able to draw down these funds.

2.7 The planning system must work with regulation in order to warrant that delays are minimised, costs reduced, and applications for responsibly sited projects are dealt with as efficiently as possible and in line with national policy. Significant modernisation of the Scottish planning system has created a much more inclusive culture and positive attitude towards renewable technology which ultimately has led to a faster decision making process. However, determination times remain slow for many projects, and local plans, guidance and decision making often fail to reflect national policy and priorities.

2.8 The renewable energy industry is a key economic driver for Scotland which is projected to deliver 40,000 new jobs up to 2020 with the opportunity to create up to 28,000 new jobs directly employed in the offshore wind sector alone. However in order to capitalise on this opportunity, we need to provide our workforce with opportunities to develop the skills required. In order to achieve this, it needs to be reflected across the nation's academic institutions building upon the success of developments such as the Scottish Energy Research Academy and the Centre of Engineering Excellence for Renewable Energy at Strathclyde University and the cluster of activity emerging around Tayside Fife, and Edinburgh colleges to support wind technologies and microgeneration.

2.9 Current output of STEM graduates and technicians is insufficient to even meet the need to fill vacancies that come about through retirement let alone to simultaneously help drive the rise of new innovative industries which will create a green economy for the UK.

2.10 We are encouraged by the Scottish Government's policy to promote these subjects and financially support new modern apprenticeships in renewables. We hope this support continues and is matched by similar initiatives across the UK.

3. The approach required to deliver a green economy, and the aspects of the current economic model that require development, eliminating and/or new approaches found. What tensions there might be between economic Growth and the green Economy? Would Greening the Economy deliver the outcomes needed?

3.1 In order to achieve the transition to a green economy, we shall have to employ the commitment, ambition and coordination that have helped to facilitate the recent increase in renewable energy development in far greater measures. Placing natural resources and renewable energy at the heart of the economic system is an important first step. However, developing a system which maximises the benefit from these resources is essential. Scottish Renewables is working with Ofgem, DECC and other key stakeholders to ensure that the outcomes of Project TransmiT and EMR match this requirement.

3.2 Renewable energy will play a key role in driving sustainable economic growth. There are already significant drivers within the current system, however as we move closer to our targets they will require further development. It is imperative that we take a long term view and meet the desire for economic growth within the framework of a green economy. Employment figures provide a wellness indicator for economies globally. Renewable UK's skills report⁷¹ indicates that on a medium trajectory up to 2020 there will be 55,600 workers directly employed by the wind industry and 88,300 across the supply chain. This will require 30,000 FTE's and 45,000 workers to be given the opportunity to train upskill and reskill in order to benefit from the industry. This is an example of the scale of opportunity that can be delivered through growth in the green economy.

4. The policy and institutional "framework" required to create the right conditions for the green economy to thrive, and whether the Governments forthcoming green energy roadmap provides this framework. Does the roadmap deliver a clear vision of the green economy?

4.1 The UK Government's green energy roadmap provides a base from which we can grow the green economy. Green energy will drive this transition and the necessary reforms and financial incentives that we put in place now will ultimately make or break the success not only of the renewable energy industry but of our chances in successfully making the transition to a green economy.

4.2 We must carefully address barriers around renewable energy deployment outlined in the renewable energy roadmap with a long term view that matches our ambition and desire to be world leaders both within renewable energy and the green economy.

5. Priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy

5.1 *Political Leadership*—Strong political leadership driven by a desire and ambition to exceed renewable energy targets is a necessity. However, communicating this ambition to industry through consistent messages such as the Scottish Climate Change Act (2009) will allow crucial sectors of the economy to respond with equal measures of enthusiasm to reach our ambitious targets and continue to set an international example as we move towards a green economy.

5.2 *Investment and Financial Support*—Given the capital intensity of renewable energy projects and the current economic climate—it is essential that financial incentives and reforms such as EMR deliver the message to investors that renewable energy is a growth market that is here to stay. Scotland's National Renewables Infrastructure Fund (NRIF) is helping to deliver this same message to manufacturers and has already resulted in at least one wind turbine manufacturer committing to locate in Scotland. We would therefore like to see the government do all that it can to extend the level of support available.

Scotland's wave and tidal power sector is a genuine world leader, however it is still in early stages and we must ensure that funding mechanisms are in place to allow developers to bridge the gap between deploying single full scale marine devices to installing the first small arrays.

5.3 *Grid*—Significant new connections and a new charging framework are required for the National Grid to support our renewable energy ambitions. Without upgrades and new power lines to export clean power generated by businesses here in Scotland to consumers in the rest of the UK and ultimately Europe we will never meet our aspirations. Likewise we need new connections to resource rich parts of the country such as Shetland and the Western Isles which have huge potential for both onshore and offshore wind, wave and tidal, but simply lack the necessary connections to the grid.

5.4 *Heat*—This demand sector counts for over half of Scotland overall energy use, yet the absence of district heating networks will make implementing the use of renewable energy into this sector extremely challenging. However, early indications show that we are on track to hit our existing target of 11% renewable heat by 2020. We can expect significant growth in this industry, with the introduction of the Renewable Heat Incentive.

⁷¹ Working for a green Britain vol 2, http://www.bwea.com/pdf/publications/Working_for_Green_Britain_V2.pdf

Scottish Renewables would like to see the ambition and effort being applied in this sector matching the scale of the challenge, as we have seen with other renewable technologies.

5.5 *Transport*—Total energy consumption from Transport accounted for 37% of total UK final energy consumption in 2010. Biofuels will make a significant contribution towards replacing this sector’s reliance on fossil fuels with renewable resources, however we must ensure that biofuels used are resourced sustainably. Moreover, developing a renewable transport sector will require an entirely new infrastructure, not least to support the likely expansion of electric vehicles. We must begin to assess the likely architecture required to make this transition now.

5.6 *Supply Chain*—The UK’s oil and nuclear interests in the 1980s meant that the wind industry was not considered a priority, allowing countries like Denmark to develop their comparative advantage;⁷² as such the onshore wind industry largely relies on imports. However, the offshore wind and marine experience does not have to be the same. We should learn from our onshore wind experience the importance of a steady regulatory regime and incentive policies in attracting investment into and developing supply chain. The NRIF has attracted one wind turbine manufacturer to locate in Scotland. Scottish Renewables would like to see the level of support being extended and a similar scheme developed to support the wave and tidal fabrication and deployment facilities.

6. *Whether any models that more closely resemble a green economy exist elsewhere that the UK should aspire to; and how the UK’s policies to deliver a green economy relate to actions needed to deliver a the global green economy (a theme of the June 2012 Rio Summit)*

6.1 Scotland has set an international example through its ambitious renewable energy targets and the significant progress that it continues to make towards them. However there are still lessons that can be learned from the international community. The German model⁷³ for renewable energy uptake has proven to be particularly successful. Its current onshore wind capacity equates to 50% European installed capacity. This has been facilitated through a stable and predictable policy framework.

6.2 There are further lessons to be learned from the Danish experience.⁷² The Danish wind industry has a 20% share of the global wind turbine market employing 28,000 workers and contributing £1.2 billion in gross value added (GVA) to the economy each year. The support mechanisms that allowed Denmark to grow a domestic wind industry can be used as a guide for the UK Marine industry as it develops and aspires to capture and deliver its full value to the UK Green Economy.

26 August 2011

Written evidence submitted by PowerPerfector

SUMMARY

1. PowerPerfector agrees that there is scope for enormous growth and job creation in the energy efficiency sector, but this requires a coherent and consistent policy framework. PowerPerfector submits that:

- To create a platform for growth the government should establish a single policy framework that has energy reduction and investment in zero/low carbon energy sources at its heart.
- The government should create simple effective taxation policies which reduce energy consumption and accelerate the uptake of zero/low carbon energy sources.
- The government must put in place well designed public procurement standards and financing to drive green investment.

ABOUT POWERPERFECTOR

2. PowerPerfector is an innovative company with a technology that delivers carbon and energy savings for organisations and helps the UK meet its carbon emissions reduction targets. PowerPerfector is a British SME which was established in 2005, it supplies energy saving Voltage Power Optimisation technology to the government estates, local authorities and private sector companies such as Tesco, Waitrose, Hilton and EDF Energy. To date we have installed ~4,000 units and saved ~0.5 million tonnes CO₂ and ~£90 million in energy costs for our clients.

SINGLE POLICY FRAMEWORK

3. PowerPerfector welcomes the government’s commitment, as set out in the August 2011 publication, *Enabling the Transition to a Green Economy: Government and business working together*, to “develop a green

⁷² The Danish Wind Industry 1980–2010: Lessons for the British marine energy industry, International Journal of the Society for Underwater Technology, Kyle Smith for Aquamarine Power, 2011, <http://www.aquamarinepower.com/sites/resources/Published%20papers/2914/The%20Danish%20wind%20industry%201980%20-%202010%20Lessons%20for%20the%20British%20marine%20energy%20industry%20International%20Journal%20of%20the%20Society%20for%20Underwater%20Technology.pdf>

⁷³ Germany—Renewable Energy Factsheet, European Commission, January 2007, http://ec.europa.eu/energy/energy_policy/doc/factsheets/renewables/renewables_de_en.pdf

policy framework which is effective, clear, stable and as streamlined and minimally burdensome as possible". However, UK governments past and present have generated a plethora of policies to tackle climate change—climate change levy (CCL), carbon reduction commitment (CRC), feed in tariffs (FIT), renewable heat incentive (RHI) and the green deal, each designed to address specific market failures rather than address the root cause.

3.1 Policy (and fiscal) overlaps have distorted our clients' investment decisions, away from our voltage power optimisation technology, and towards selected other technologies. Examples of duplicate policy (and fiscal) incentives include; biomass boilers (ECA scheme and the RHI); heat pumps (ECA scheme and the RHI); solar thermal (ECA scheme and the RHI); and CHP (levy exception certificates under the CCL and ECA). Another example is the misalignment between the enhanced capital allowances (ECA) scheme for energy saving technologies for automatic monitoring and targeting, and the CRC.

3.2 Establishing a single cohesive policy framework for the whole of the UK economy is central to unlocking the green economy and achieving the UK's emissions reduction targets for 2020 and 2050. The current climate change policies give block exemptions for some businesses, and exclusions for others, creating a market distortion amongst UK businesses. A singular approach should replace the piecemeal approach that has led to the fragmented policy landscape today.

SIMPLE EFFECTIVE TAX STRUCTURE

4. The government should introduce a simple taxation system which reduces energy consumption and accelerates the uptake of zero/low carbon energy sources. The taxes that we propose to create the necessary stability and market confidence to bring forward private sector investment are summarised below.

- (i) A tax on energy consumption and prices. The government should move the UK from a volume discount model that encourages energy consumption ie lower price per kWh for greater energy use, to one that rewards lower energy consumption with cheaper per unit costs. Initiating a series of taxable bands similar to those for income tax would help to incentivise energy reduction in the domestic and non-domestic sector.
- (ii) An emission based fuel tax. The government should implement variable taxation at source based on the emission factors of fuel sources, as per the CCL, to encourage investment in energy conservation and incentivise consumers to opt for low and zero carbon energy sources.

FINANCING ENERGY EFFICIENCY INVESTMENT

5. For the UK to meet the legally binding carbon emissions reduction targets for 2020 and 2050, greater investment in energy efficiency must come forward. The May 2011 OECD report *Towards green growth: A summary for policy makers*, stressed how important well designed public procurement standards and financing are to strengthening markets for green innovation and so help deliver green growth.

5.1 In the US, investment has been achieved through the use of energy saving performance contracts (ESPC). ESPCs accelerate investment in cost effective energy conservation because the government does not pay up-front capital costs for energy saving projects. The energy saving provider undertakes the improvements that will generate energy cost savings sufficient to pay for the project over the term of the contract. As of May 2011, more than 570 projects worth \$3.9 billion were implemented in the United States through ESPC. However, in the UK, energy saving performance contracts (ESPC) have had little impact to date and investment in energy efficiency is suffering as a result.

5.2 The Cabinet Office/OGC should create public procurement standards that support the use of proven investment techniques. Given the success of ESPC in the United States, and the size of the challenge the UK government faces, the government should use public procurement to support ESPC to realise greater emission reductions.

CONCLUSION

6. Having a single policy framework would make sure that all parts of the UK economy played their part in mitigating climate change. It would give investors confidence in the technology that will underpin green growth.

6.1 Our proposed single policy framework and taxation measures would incentivise lower energy consumption. They would also reward the use of low and zero carbon energy sources. Our proposal to use ESPCs for public procurement would speed up investment in cost effective energy saving projects. Taken together these measures would provide investor confidence in energy efficiency technology, incentivise low energy consumption and promote growth and job creation in the energy efficiency sector.

Written evidence submitted by the Institute of Ecology and Environmental Management

The Institute of Ecology and Environmental Management (IEEM), as the leading membership organisation supporting professional ecologists and environmental managers, welcome the opportunity to comment on *The Green Economy*.

IEEM was established in 1991 and currently has over 4,000 members drawn from local authorities, government agencies, industry, environmental consultancy, teaching/research, and voluntary environmental organisations. The Institute has led the way in defining and raising the standards of ecological and environmental management practice with regard to biodiversity protection and enhancement. It promotes knowledge sharing through events and publications, skills development through its comprehensive training and development programme and best practice through the dissemination of technical guidance for the profession and related disciplines.

IEEM is a member of:

- Society for the Environment.
- European Network of Environmental Professionals.
- IUCN—The World Conservation Union.
- Europarc Federation.
- Professional Associations Research Network.
- United Nations Decade on Biodiversity 2011–2020 Network.

IEEM comments on:

THE GREEN ECONOMY

1. Introduction

(a) In working towards sustainable development and a green economy, IEEM urges the Government to recognise the three aspects of sustainable development—economic, social and environmental—and remember that they are interdependent and must be addressed together. Moving towards a green economy must also be about more than just reducing carbon emissions, we must protect *and* enhance our natural capital—the ecosystems and biodiversity upon which we depend—and take into account their true value, for example, to our economy and our health and well-being.⁷⁴

(b) Ecology and environmental management has the potential to play a significant role in moving to a green economy in terms of creating jobs, promoting sustainable development and also in protecting and enhancing our natural capital, upon which our financial economy ultimately depends.

2. Ecological and Environmental Management Knowledge and Skills Shortages and Gaps

(a) Regarding barriers preventing the transition to a green economy, IEEM would like to highlight the current knowledge and skills shortages and gaps in the ecological and environmental management profession. It is to our profession that businesses and industry will need to turn to access expertise and competence to enable them to move to a greener economic model. Yet there is a danger that needs and expectations will not be fully met. Until now, anecdotal evidence has provided the only basis to support claims of skills shortages and/or gaps in the profession, but IEEM has recently published a report, *Ecological Skills: Shaping the Profession for the 21st Century*,⁷⁵ that provides the evidence for this claim. Some of the key findings from the report are included below.

(b) There are many emerging challenges for the ecological and environmental management profession, including:

- (i) the requirement for ecologists and environmental managers to work effectively in multidisciplinary teams on a par with other professionals;
- (ii) the need for improved collation and management (including quality assurance) of ecological data for national and international databases and access to these;
- (iii) decline in the availability of both professionals and volunteers with fieldwork skills in both species identification and survey methods and techniques (including the use of advanced technologies);
- (iv) the need for ecologists to understand and manage risk and uncertainty, and, furthermore, to be able to communicate risk, uncertainty and probability to clients and policy-makers;
- (v) the critical state of taxonomy and systematics, due to many factors, including the retirement of experts and the lack of investment in taxonomy by universities, statutory bodies etc;
- (vi) the need for ecologists and environmental managers to have knowledge, understanding and skills of economic models and tools so as to be able to plan for sustainable development and

⁷⁴ See *The Economics of Ecosystems and Biodiversity* reports (www.teebweb.org)

⁷⁵ Freely available to download at <http://www.ieem.net/skillsreport.asp>

incorporate ecosystem values into Strategic Environmental Assessment, Environmental Impact Assessment, Sustainability Analysis and Biodiversity Offsetting;

- (vii) soil science, environmental epidemiology (including biosecurity), microbiology, energy supply and its impact on the environment, and freshwater science were also priorities raised in our research;
- (viii) reduced resources for ecological and environmental management activities as a result of significant budget cuts across the statutory and education sectors and reduced margins in the consultancy and industry sectors in both Britain and Ireland;
- (ix) constantly developing legislation and regulations and the lack of coherence between legislation at one level (eg European) and its application at another (eg national);
- (x) changes to the spatial planning system and the devolution of powers to local and neighbourhood levels;
- (xi) the lack of understanding of the concept of ecosystem goods and services amongst professionals, the public and policy-makers;
- (xii) the need to adopt an evidence-based approach to demonstrate the benefits of biodiversity and ecosystem services;
- (xiii) the challenge of engaging stakeholders at all levels, including clients, policy makers and the public; and
- (xiv) the specific challenge emerging from those working in the marine environment to develop professionals' appreciation that marine planning and monitoring requires different methods and techniques to those employed on land.

(c) Knowledge Gaps and Shortages:

- (i) Environmental economics, including understanding of ecosystem goods and services, is an area where not all professionals are fully confident that their knowledge is sufficient to meet foreseeable future challenges. There is a need for ecologists to demonstrate value through the use of economic models and emphasise the links to ecosystem valuation and biodiversity offsetting.
- (ii) Professionals recognise their lack of knowledge in freshwater, coastal and marine systems and processes (relative to terrestrial systems and processes). This is again confirmed by employers and stakeholders who have concerns that reduced funding will exacerbate the problem. Professionals not specialising in marine ecology have a poor understanding of marine systems and processes and that marine biotopes are subject to different planning principles to those that apply to terrestrial environments.
- (iii) Professionals identified gaps in their knowledge of cartography and data, environmental management systems and audit, and industry and organisational structures.
- (iv) By contrast, professionals are relatively confident in their knowledge of environmental legislation and policy.
- (v) Microbiology was an area of knowledge need raised as a priority by a number of stakeholders in different contexts. For example, microbes in marine biotopes, micro aquatics, micro invertebrates, plant pathology and biosecurity.
- (vi) Stakeholders also drew attention to the need for ecologists to have a good understanding of the requirements of spatial planning systems at various levels and of construction techniques to mitigate threats to habitats.

(d) Specialist Skills Gaps and Shortages:

- (i) The erosion of skills in taxonomy and systematics which is giving cause for concern, as highlighted by the House of Lords Science and Technology Committee's report in 2008: *Systematics and Taxonomy Follow-up*. Taxonomy was raised as a key priority by a number of stakeholders, including the Linnean Society, the Natural History Museum and the Heritage Council Ireland.
- (ii) Closely related to taxonomy and systematics are species identification skills. Species identification skills are reasonably good in respect of mammals, birds, reptiles and amphibians and higher plants, but poor in respect of fish, lower plants, lichens, algae and fungi. The causes of lack of species identification skills are manifold—lack of fieldwork in schools, lack of species identification teaching at universities, decline of active participation in natural history activities, ageing population of naturalists—and there are a number of initiatives in place to address these causes. However, the research emphasised the need to tackle the erosion of species identification skills in a strategic way, possibly linked to addressing the deficit in taxonomic skills.
- (iii) Professionals recognise there are gaps in their ecological survey, sampling, analysis, assessment, evaluation and monitoring skills, particularly in respect of invertebrates, fish and bird communities.

- (iv) Professionals are fairly confident about their skills in habitat creation, restoration and management in woodland, lowland grassland and urban/brownfield environments. They are less confident about their skills in marine, coastal and upland environments, where fewer respondents are required to practise. Stakeholders made the point that habitat translocation will become a skill increasingly in demand as a result of climate change and biodiversity offsetting.
- (v) There is an urgent need for ecologists and environmental managers to develop skills in the use of new technologies, particularly IT, mobile technology and genetics, which have the potential to revolutionise survey approaches.
- (vi) Other priority skills areas identified included developing effective and ethical approaches to invasive species and combating the spread of diseases.
- (vii) Finally, there is the need for ecologists and environmental managers to focus less on individual species or habitats and instead to take a landscape approach, recognising the importance of ecological networks and connectivity.

3. Recommendations

(a) Regarding priorities for action, IEEM recommends that, in relation to the knowledge and skills gaps and shortages in the ecological and environmental management profession, a robust structure of education, training, continuing professional development and accreditation must be developed. This will ensure the profession and its professionals are able to deliver the knowledge and skills required to achieve effective protection and enhancement of the natural environment, biodiversity and the provision of ecosystem goods and services which will underpin a green economy. The following recommendations collectively set out an ambitious but critically important agenda of actions.

(b) Strategy for Education, Training, Career and Professional Development of Ecologists and Environmental Managers:

- (i) A strategy for the education, training, career and professional development of ecologists and environmental managers should be developed, including:
 1. the definition of a set of core competences;
 2. the definition of role profiles;
 3. a system of accreditation of first degrees and postgraduate courses based on a detailed Knowledge, Skills and Applications Framework;
 4. the definition of competence requirements linked to recognised professional standards and professional body membership grades;
 5. the production of materials and activities to promote the career opportunities in ecology and environmental management to secondary school and post-16 students;
 6. planning tools to help ecologists and environmental managers develop their careers and the competences required to take the next step;
 7. a system of accreditation for short courses;
 8. the accreditation of professionals' specialist areas of competence;
 9. a structured approach to continuing professional development (CPD); and
 10. support to employers in providing structured professional development programmes.

(c) Further Development of a Knowledge, Skills and Applications Framework (KSA):

- (i) Originally conceived simply as a tool for identifying, classifying and analysing skills needs, the KSA Framework for Ecologists and Environmental Managers has developed into an important output in its own right, since it identifies the core knowledge, skills and applications for the profession.
- (ii) The KSA Framework should be developed further, in particular:
 1. expanding the knowledge, skills and applications to finer levels of detail; and
 2. developing levels that describe the various depths of knowledge or skill required by professionals at different stages in their careers.

(d) Addressing Knowledge and Skills Gaps and Shortages:

- (i) A strategy for addressing the knowledge and skills gaps and shortages identified in the above research should be produced to stimulate a range of accessible, flexible and affordable learning opportunities to meet these needs.
- (ii) The priority knowledge and skills requirements identified in this research should be published. Members of the profession should be encouraged and supported to address their individual CPD needs in these priority areas, either through self-study or through a range of accredited courses and other learning opportunities.

(e) Assuring the Quality of Professional Work:

- (i) To ensure that ecologists and environmental managers deliver work to the highest standards (for example in survey work) a needs-based programme of training, tools and good practice guidance should be provided. Whilst not a regulated profession, self-regulation should continue to be promoted through membership of the appropriate professional membership body that has the mechanisms in place to take action against those whose competency falls below the required standards.

(f) Communicating the Importance of the Natural Environment, Biodiversity and the Value of Ecosystem Goods and Services:

- (i) Communicating to and influencing politicians, policy-makers, other professionals and the public of the importance and value of the natural environment and biodiversity and the ecosystem goods and services they provide is fundamental to meeting biodiversity targets and hence human welfare requirements. Succeeding in this communications challenge will lead to a greater understanding and valuing of the role of ecologists and environmental managers in protecting and enhancing these assets which, in turn, will make a career as an ecologist or environmental manager more attractive to future generations. Key stakeholders should consider formulating a communications strategy to achieve these goals.

4. Further Information and Engagement

(a) IEEM would be pleased to provide further information and advice in the process of this inquiry or beyond should this be of value.

26 August 2011

Written evidence submitted by EEVS Insight Ltd

INTRODUCTION

1. EEVS Insight Ltd is the UK's leading energy performance measurement and verification specialist, providing independent and expert third-party performance evaluation for energy-efficiency projects in the UK. Our work is founded on, and guided by, the leading good practice framework the *International Performance Measurement & Verification Protocol (IPMVP)*.

2. EEVS supports the Committee's examination of the Green Economy concept and, in particular, the barriers preventing the transition to its development. We welcome the opportunity to comment on these issues, all of which are based on our experience of the market for energy efficiency projects, products and services.

SUMMARY

3. The detail of the EEVS submission is contained overleaf. Our key recommendation to the Environmental Audit Committee is as follows:

For the government to consider adopting a good practice standard for measuring and verifying the financial and environmental performance of energy saving products and services in the UK. Our recommended solution is the International Performance Measurement and Verification Protocol (IPMVP) developed by the US Department of Energy.

4. IPMVP is a tried-and-tested global protocol and its adoption would help to overcome a range of barriers to the green economy and deliver the following benefits:

- (a) *Improved transparency to the market for energy efficiency products and services.* A current lack of transparency means it is difficult for investors to risk investing in the energy efficiency sector. Equipped with reliable performance information, however, investors would be better positioned to confidently invest in energy efficiency improvement projects and technologies.
- (b) IPMVP helps to provide all-important proof of performance—essential to overcoming existing customer inertia and to boost the credibility of the best products and services. Performance proof is currently lacking and unsubstantiated and unreliable product performance claims work to undermine the attractiveness of the industry and damage its reputation.
- (c) IPMVP provides a platform for the Government to set a good practice leadership example in the procurement and evaluation of energy efficiency projects. This, in turn, could help to drive good practice momentum into the private sector.
- (d) *A core part of a good practice Energy Performance Contract (EPC),* a structured framework for ensuring that a building's energy-efficiency is improved at little or no upfront cost. Independent IPMVP-adherent performance verification is however an essential part of any energy performance contract.

THE CONTEXT: THE YOUNG AND DEVELOPING MARKET FOR ENERGY EFFICIENCY PRODUCTS AND SERVICES

5. To bring about the transition to a green economy it is widely accepted that the uptake of energy-efficiency measures and technologies needs to be accelerated. Without more widespread adoption of these measures in the UK it will be difficult to claim “green economy” status and to meet challenging targets set down for carbon reduction.

6. A key problem is that the energy efficiency industry is young and the market relatively unsophisticated. Accepted commercial infrastructure, readily available in more mature markets, has not yet developed here and a key example relates to the availability of robust management—and product-performance information. In short, unlike other markets the developing energy efficiency market lacks a credible performance information base on which to drive high-quality decision-making and stakeholder communications.

7. This lack of information—or structure for attaining this information—means that the vast majority of energy upgrade projects are undertaken without considering how the energy and financial savings will be measured and evaluated. Yet not only is this essential for a robust, evidence-based assessment of a project’s success, but it enables suppliers to *prove* their products’ performance credentials. In turn, this provides customers with much needed comfort that they will get value for money—and so are more likely to make a purchase.

8. Indeed, the availability of high-quality performance information helps to create this virtuous circle that is likely to boost the uptake of more and better energy saving projects and help support the transition to a green economy. The remainder of this paper sets out some of the key issues associated with this lack of market information, alongside key recommendations that the EAC could consider taking forward to improve market sophistication.

ISSUE 1—LACK OF MARKET TRANSPARENCY IS A BARRIER TO GREATER INVESTMENT

9. To confidently invest in any market, investors need robust and reliable performance information to inform the decision-making process and manage their risk. As a bottom line, investors need to know the financial (as well as the environmental) savings potential of energy efficiency products, projects and services. Only then can they confidently commit capital to the market.

10. However, the current lack of transparency in the marketplace and uncertainty around, for example, Return on Investment (ROI) or other financial metrics means that capital is not flowing into the market as quickly as it could. The result is that organisations tend to focus on small scale and low-cost measures, such as behavioural change, before considering reducing energy use through capital improvement projects. However, as demonstrated in several reports and studies over the last decade,⁷⁶ energy-efficiency should ideally be the first step for any organisation trying to minimise their impact on the environment, as well as their costs—the cheapest form of energy is the one that is not used!

Recommendation 1

11. Improving the transparency and attractiveness of the market for energy efficiency products by adopting a good practice standard for measuring and verifying financial and environmental performance of energy efficiency projects, products and services. By setting a solid foundation for greater investment to the market, our view is that this will be key to the successful delivery of the UK green economy concept. The *International Performance Measurement and Verification Protocol* (IPMVP) fulfils this role and armed with IPMVP-quality performance information, investors at all levels will be better equipped to assess—and more confidently invest in—energy efficiency improvement projects and technologies across the UK.

ISSUE 2—UNPROVEN TECHNOLOGY PERFORMANCE HAS LED TO PURCHASE INERTIA

12. In the absence of reliable and impartial performance information, customers currently rely heavily on the supplier of a technology or service to advise them on its savings performance. This situation is far from ideal and unsubstantiated claims only serve to undermine the credibility and trust in the industry—ultimately acting as a barrier to the uptake and adoption of improvement measures.

13. In the same way the suppliers of the very best technologies can be confronted with scepticism and an unwillingness to invest in their products and services because they are unproven. Again, this slows down the pace of adoption and will act as a barrier to the shift towards a green economy.

Recommendation 2

14. Adoption of a good practice standard for measuring and verifying performance claims will help customers overcome inertia and buy with confidence; at the same time addressing the key issue of unsubstantiated and unreliable product performance claims. The *International Performance Measurement and Verification Protocol* (IPMVP) provides a widely used and accepted standard for doing this—a transparent, robust and universally applicable framework for measuring and evaluating energy efficiency products, projects and services.

⁷⁶ Example, Carbon Trust, *Building the Future, Today*, 2009

ISSUE 3—LEADERSHIP IN GOOD PRACTICE PROCUREMENT IS NEEDED TO HELP DRIVE INDUSTRY MOMENTUM

15. Given the size and scale of estate-related procurement in the Civil Estate, central government has a potentially key pathfinder role supporting the transition to the green economy. This can help build momentum within the industry as well as embedding good practice principles into a standardised procurement process—which can be transferred to the private sector.

Recommendations 3 and 4

16. For the Government to consider embedding the good practice principles of IPMVP into its own procurement processes to help verify the performance of any technology that has been (or will be) procured as part of energy savings initiatives across government. By doing this the Government would also benefit from much-needed assurance that the energy saving projects being procured across the civil estate do indeed offer value for money.

17. The Government has a further the opportunity to lead and promote industry innovation through the development and adoption of a good practice *Energy Performance Contract* (EPC). EPCs provide a sound and structured framework for ensuring that a building's energy-efficiency is greatly improved at little or no upfront cost for the owner. It is our view that Independent IPMVP-adherent performance verification is an essential part of this process, and that by leading the development and adoption of energy performance contracts the Government can help accelerate the shift towards a green economy.

26 August 2011

Written evidence submitted by INEOS

EXECUTIVE SUMMARY

- The transition to the green economy must involve, rather than exclude, energy-intensive industries. The UK will continue to need the products manufactured by energy-intensive industries, and it is better to meet this need domestically—not just to protect UK jobs and investment, but also to avoid carbon leakage and ensure that energy-intensive industries support and make the move to a low-carbon economy.
- Energy-intensive industries have a large economic and environmental contribution to make to the green economy. They provide tens of thousands of highly-skilled jobs in the UK and are vital to regional recovery and economic growth. The chemicals industry is a key ally in delivering the innovation and products required to realise the vision of a low-carbon future. The Chemical Industry Association calculates that on average for every tonne of CO₂ emitted by the chemicals industry, at least two are saved downstream.
- Substantial mitigation must be brought forward to protect energy-intensive industries from the introduction of a unilateral carbon price floor in 2013. Without mitigation energy-intensive industries will be overburdened by high production costs, reducing their ability to compete in global markets. This loss of business will undermine efforts to maintain plants and continue investing in low-carbon technology and efficiency improvements. If uncompetitive energy prices force energy-intensive industries out of the UK, we will lose jobs and investment and global emissions will rise as production moves to less-regulated jurisdictions.
- Mitigation should not be seen to compromise or water down the environmental objectives of the carbon price floor and the green economy, but to help realise them. In addition to protecting UK manufacturing, mitigation would prevent carbon leakage and ensure that energy-intensive industries have the financial capacity and time to continue to invest in low-carbon technological development and to continue to improve the efficiency of production methods.
- INEOS has developed a unique biorefinery process that can convert any biowaste and lignocellulose material into bioethanol and renewable electricity. The technology could play a vital role in meeting the challenges of climate change, energy security and sustainable waste management in the UK. INEOS is ready to construct a biorefinery on Teesside and is urging the Government to further support this exciting technology that could be rolled out across the UK as a real renewables success story.
- INEOS recognises that to encourage private investment in new low-carbon technologies there has to be confidence that there is clear policy and Government support. We therefore welcome the establishment of the Green Investment Bank, and the Government's acknowledgement that support needs to be given to green businesses while the Green Investment Bank is still being set up. In this respect we would particularly advocate the use of loan guarantees based on our experience in the USA.

INEOS

1. INEOS is a global manufacturer of refined oil products, petrochemicals and plastics. Our products are the raw materials for the manufacturing industry and can be found in construction materials, medical equipment, pharmaceuticals, vehicles and computers. INEOS is the largest chemicals company in the UK and the third largest in the world with 61 manufacturing sites in 13 countries. INEOS employs 3,800 permanent staff and over 1,000 contractors in the UK.

2. INEOS is committed to improving energy efficiency and reducing emissions. At Runcorn we have reduced CO₂ emissions by over 33% since 1998 through replacing mercury cell rooms with the most up-to-date modern membrane technology. We have plans to reduce direct emissions by a further 75% and indirect emissions by 10%. We are currently completing the construction of a £400 million Energy from Waste CHP plant at Runcorn, which will produce around 20% of our total energy needs from renewable sources.

3. INEOS invests in the green economy. We have developed a biorefinery technology that can turn municipal waste into renewable fuel and electricity. Our technology could provide a local solution to waste management while providing secure green energy.

THE ROLE OF ENERGY-INTENSIVE INDUSTRIES IN THE GREEN ECONOMY

4. INEOS' production techniques are by necessity energy-intensive. At our Runcorn site, for instance, where we produce chlorine and caustic soda using electrolytic processes, electricity represents around 60% of our manufacturing costs.

5. Energy-intensive industries underpin manufacturing in the UK, producing an array of essential goods including chemicals, steel, glass, paper, aluminium and ceramics. INEOS makes the chlorine that purifies the UK's water. Our plastics and chemicals are used across industry in construction materials, medical equipment, paint, detergents, telephones and computers.

6. The green economy must accommodate the UK's energy-intensive industries because we will continue to have need of these products and it is right to meet this need with domestic production. The alternative would be to export jobs and investment, lose tax revenues, and cause global emissions to increase as production moves to less-regulated jurisdictions. It is better that we keep energy-intensive industries within the low-carbon economy rather than lose control of emissions in these sectors. The UK already has better emissions performance than coal-based economies and has ambitious plans to decarbonise the electricity market. If we are serious about climate change mitigation, energy-intensive industries must be included in the transition to the green economy and adoption of low-carbon energy.

7. Energy-intensive industries have a large economic contribution to make to the green economy. Energy-intensive industries employ tens of thousands of people in the UK and are crucial to regional economic recovery and growth. INEOS employs 3,800 permanent staff and over 1,000 contractors across the UK.

8. Energy-intensive industries have a large environmental contribution to make to the green economy—they are not “sunset industries” standing in the way of environmental improvements, but a vital source of raw materials and innovations required to make the green economy a reality. Operating in a highly competitive global market, energy-intensive industries continue to be at the forefront of employing technologies that improve performance, make better use of raw materials and drive efficiencies that reduce waste and energy consumption.

9. The chemicals industry is leading developments in energy efficiency and emissions reduction in the UK. It is estimated that on average for every tonne of CO₂ used in the chemicals industry, more than two are saved downstream. INEOS' products contribute to the manufacture of a range of environmentally beneficial goods including catalysts, insulation, and wind turbines. We also invest in developing the sort of new low-carbon technology that will help deliver the green economy. Our biorefinery technology could help reduce UK emissions and provide energy security while providing a flexible solution to local waste management.

UK CARBON PRICE FLOOR

10. Energy-intensive companies like INEOS are acutely affected by fluctuations in energy prices. Energy is our main production cost, and in the face of global competition we cannot pass costs on to our customers. As a consequence it is not possible to operate competitively in jurisdictions where energy is more expensive. It is vital to ensure that in pursuing the green economy we do not force energy-intensive industries out of the UK with uncompetitive energy prices and thereby lose their important economic and environmental contribution.

11. The introduction of a unilateral carbon price floor in 2013 will significantly increase the cost of energy in the UK. Without substantial mitigation this will seriously undermine the competitiveness of the UK's energy-intensive industries. Through carbon price support rates the Government intends to establish a carbon price of £30/te in 2020 (in 2009 money). This would increase the annual production costs at our Runcorn site by £30 million—1.5 times its average earnings before interest, taxes, depreciation and amortisation. This would simply be an unsustainable situation for the company, and would lead to the site entering into decline and investment being redirected out of the UK.

12. If energy-intensive industries are not appropriately protected from the effect of carbon price support we risk putting in jeopardy thousands of jobs and directing investment out of the economy. This would undermine the green economy, setting back growth, and damaging UK manufacturing and regional recovery.

13. Pricing energy-intensive industries out of the UK would also undermine the environmental goal of mitigating climate change, which is central to the vision of the green economy. Emissions would simply move out of the UK and very likely increase as industry moves to less-regulated and less-technologically-advanced jurisdictions and products have to be transported further as a consequence. In the case of PVC—one of INEOS' main products—the carbon emissions from production in China are six times higher than in the UK. This process of carbon leakage is already starting to occur.

14. We must be careful not to overburden energy-intensive industries with higher production costs as a result of the carbon price floor because this will only prevent them from continuing to invest in the energy efficiency improvements and low-carbon technology that are vital to the green economy.

15. INEOS welcomes the Government's commitment to bringing forward mitigation from the carbon price floor for energy-intensive industries this autumn, and is keen to work closely with DECC and BIS to ensure that they understand the gravity of the threat to UK industry and develop appropriate measures. The mitigation announced in the 2011 Budget, such as extensions to Climate Change Agreements will have almost no impact on our business, and further measures will have to be of a very different order if they are to succeed in their purpose.

16. Mitigation should not be seen to compromise or water down the environmental objectives of the carbon price floor and the green economy, but to help realise them. In addition to protecting UK manufacturing, mitigation would prevent carbon leakage and ensure that energy-intensive industries have the financial capacity and time to continue to invest in low-carbon technological development and improve the efficiency of production methods. It is vital that the transition to the green economy is managed in this way, incorporating and utilising energy-intensive industries rather than leaving them out of low-carbon improvements to the detriment of global emissions and the UK economy.

17. INEOS is advocating two approaches to mitigation in the UK that we believe would appropriately protect energy-intensive industries from the effect of the carbon price floor and help with the transition to the green economy. One approach, which already operates successfully in France, is for the Government to facilitate an industry deal that would see low-carbon energy producers supply energy-intensive industries at a competitive fixed price. Low-carbon producers of electricity will receive a large windfall as a consequence of carbon price policies so it seems fair that they should enter into such an arrangement that would ensure the transition to a low-carbon economy, which is the intention of the policies. This is not only a green solution, but also one that would not cost the taxpayer.

18. Although an industry solution would be ideal, the limited supply of competitively priced low-carbon energy in the UK means that it is almost certain that such an arrangement could not be up and running in time for the introduction of carbon price support in 2013. For this reason INEOS is also proposing a scheme wherein energy-intensive users could claim back the carbon price support rates paid on their electricity, modelled on the Levy Exemption Certificates used for Combined Heat and Power stations. This relief could be limited to companies signed up to rigorous environmental commitments, which would ensure that mitigation helps deliver the green economy.

ADVANCED BIOENERGY FROM WASTE

19. INEOS has developed a unique biorefinery process that has the potential to play a vital role in meeting the challenges of energy security, climate change and sustainable waste management in the UK. The INEOS Bio process can convert waste into bioethanol through a combination of gasification and fermentation. The entire process is not only self-sufficient in energy, but exports surplus renewable electricity to the grid.

20. Unlike first generation biofuel, our technology does not use food or cause indirect land use change. On the contrary, it redirects waste from landfill and has an excellent carbon profile. Our biofuel far outstrips the RED and FQD sustainability criteria: a lifecycle GHG assessment carried out by independent consultants Eunomia calculated that our bioethanol achieves around 100% Greenhouse Gas savings when used instead of petrol.

21. INEOS aims to deploy this technology in the UK at our Seal Sands site on Teesside. We are very grateful to have received support from DECC and One North East for the initial stages of the project but are looking to secure further investment to ensure that construction goes ahead. The technology has the potential to be rolled out across the UK providing a flexible solution to waste management while providing green and secure fuel and energy.

22. Our technology has been developed and proven at pilot-plant scale in the USA since 2003, and a first commercial biorefinery is under construction in Florida. This is being supported by the US Department of Energy, which awarded INEOS a grant of \$50 million towards the development, and by the Department of Agriculture through a \$75 million loan guarantee. The project is at the forefront of the US initiative in biofuels development referred to by President Obama earlier this year, and was cited by his Government as one of the top three of more than 300 projects submitted for support.

23. INEOS is encouraged by the Government's commitment to providing support for low-carbon infrastructural projects through the Green Investment Bank. We have found that private investment in new technologies can often be reticent due to the uncertainty involved. We welcome the Government's response to the EAC, which acknowledges that action must be taken to support green businesses while the Green Investment Bank is still being set up. To this end, INEOS would particularly encourage the Government to consider the use of loan guarantees, which have worked so well in our experience in the USA and would not require capital investment. With appropriate support there is no reason that the UK could not be home to Europe's first full-scale advanced biorefinery. This technology could then be rolled out across the country in a real renewable energy success story.

24. The UK generates more than enough biodegradable waste from household and commercial sources to meet the UK's demand for bioethanol in 2020 through the INEOS process. The Government's Waste Policy Review quotes a UK biowaste production of around 100 million tonnes per year. This could produce 10 to 20 million tonnes per year of carbon-neutral bioethanol, depending on the biowaste properties, if used in the INEOS Bio process. Furthermore, the Eunomia report confirms that producing biofuel from waste is an environmentally sensible use of the waste as a resource compared to the alternatives, including composting and anaerobic digestion.

25. The advanced biofuel industry could develop quickly in the UK with the right level of partnership between industry and the Government. The INEOS Bio technology is market ready—the first industrial scale plant is under construction in Florida and should be operational in 2012. The Seal Sands Phase A plant is "spade ready" subject to financing and could be operational in 2013. The INEOS Bio business model is one of technology licensing, hence allowing for rapid deployment. It is a credible scenario that one new licensee project at 150,000 t/yr scale could come on stream each year between 2016 and 2020. Hence, by 2020, there could be five plants operational in the UK, producing a total of 750,000 t/yr of bioethanol from waste. This would count towards 1.5 million t/yr of the RTFO target. The UK consumes around 15 million t/yr of petrol. Hence, five INEOS Bio plants together with existing or planned 1G bioethanol production could provide enough bioethanol to meet the UK's bioethanol requirements for 2020 from UK production.

26. The current UK policy on fuel taxation, which taxes clean, renewable transport fuels at a higher rate than fossil fuels by energy content, hinders the uptake of biofuels in the UK and, in particular of high biofuel blends such as E85. The revision of the EU Energy Taxation Directive proposes that fuels be taxed on the basis of CO₂ emissions and energy content and sets minimum taxation levels. This is in support of EU energy and climate change policy. While it is right for the UK to maintain its independence in terms of setting taxation policy, the UK should take this opportunity to revise its biofuel taxation policy in order to encourage the uptake of the best performing transport fuels in terms of GHG emissions and sustainability criteria. Transport fuels with the best carbon and sustainability performance should be available to the consumer at the lowest cost in terms of "pence per mile driven".

26 August 2011

Written evidence submitted by Environmental Treatment Concepts Ltd

THE PURPOSE AND ROLE OF PROPERLY APPLIED ELECTRONIC WATER TREATMENT TO SERVE A "GREEN ECONOMY"

Summary of Main Points:

- (1) (a) A "Green Economy" should address priorities including:
 - (i) Climate Change.
 - (ii) Energy Security.
 - (iii) Peak Global Oil Production.
- (b) Any policies, actions and research which seek to maximise energy efficiency and carbon reduction will have a positive impact on all three of these priorities.
- (c) A Green Economy should aim to deliver a society which:
 - (i) Minimises its carbon footprint.
 - (ii) Reduces its environmental impacts, by using whatever means and *technologies* available.
- (d) This evidence *is focussed on*:
 - (i) The additional "carbon loading".
 - (ii) The increased water consumption.
 - (iii) The chemical and other environmental impacts.

All imposed by "hard" water.

(2) It appears to be widely accepted that there is "*no choice*" in dealing with hard water but to use traditional chemical means.

(3) *There is at least one alternative choice:*

This choice is a properly applied electronic water treatment (EWT) system to hot water and cooling systems where hard water scaling impacts on efficiency.

- (a) This alternative method of treating hard water will have positive impacts on Climate Change; Energy Security, and the impacts of Peak Global Oil Production and thus *represents a solid stepping stone to a more sustainable society.*
- (b) *Therefore EWT should be recognised as having a valuable role in a “Green Economy”.*

Factual Information for consideration of the Select Committee concerning the concept of a “Green Economy” in the UK.

THE ADDITIONAL “CARBON LOADING” ELEMENTS ASSOCIATED WITH HARD WATER

(A) *Water Treatment Chemicals*

(4) The negative impacts of hard water is a global issue. In the UK approximately 65% water users are supplied water that is hard. Approximately 300,000 tonnes of salt for use in water softener are consumed in Western Europe per annum. The UK’s share is approximately 22,000 tonnes. Anti scaling and corrosion along with aggressive descaling chemicals are also very widely used.

(5) Each tonne of salt produces a carbon footprint of approximately 0.234 tonne for the brine evaporative production process only. This figure will increase considerably if replacement water pumping; packaging; storage and transport carbon emissions are included. The carbon footprint of hard water treatment chemicals demonstrates *an additional carbon loading element* associated with hard water. Please see *Appendix 1* for outline estimate of Carbon Footprint of water softening salts. Additionally millions of cubic metres of water are used daily to re-generate water softeners; both wasteful in water and the associated carbon footprint of production and supply.

(B) *Heating System Damage, Safety, Repairs & Replacement*

(6) It is well known and accepted that hard water produces scale build up on heat exchangers in boilers, calorifiers and both heating and cooling systems. Scale causes electrical immersion elements to frequently fail; prevent stop cocks and valves functioning (health & safety risks), and cause pipe work and heating systems to completely block up. Another H&S consideration is that water systems with hard water scale will have high bacteria levels and increase the Legionella risk.

(7) It is also well known and accepted that the damage caused by hard water leads to the replacement of boilers, calorifiers, heating elements, valves and heating systems much more frequently than that experienced in soft water areas. We are informed by many hard water customers that such boiler and hot water system replacement can be as frequent as every three to five years, with frequent breakdowns between complete replacements!

(8) Breakdowns usually lead to a call out for repair engineers. The energy used by the engineer travelling to the site and the embodied energy in replacement parts represents *another direct additional carbon loading element* associated with hard water.

(9) The carbon embodied during the manufacture, packaging, storage, delivery and multiple re-installations of replacement equipment must be considered as a *hugely significant additional carbon loading element* associated with hard water.

(C) *Reduced Energy Efficiency of Heating & Cooling Systems*

(10) Scale in a water system acts as an insulator and therefore boilers and chillers have to operate for longer periods in order to transfer heat. Boilers’ and chillers’ water circulating pumps operate for longer periods consuming more fuel thus increasing the carbon footprint of a scaled up system and demonstrating *an additional carbon loading associated with hard water.*

(11) The Carbon Trust’s Technical Overview document CTV 008 suggests that energy consumption will typically increase by 7% for each millimetre of scale present in a hot water system. It is not uncommon or disputed that some water systems can have an average of several mm of scale, or even more, thus some systems could well consume up to 50% more energy than necessary, before chemical descaling or complete system replacement. This energy, and its carbon emissions, can be readily and easily saved.

(12) The previous paragraphs demonstrate that *electronic water treatment prevention and descaling would have a significant impact on The Green Economy.*

APPLIED ELECTRONIC WATER TREATMENT FOR HARD WATER

(13) We have evidence that Electronic Water Treatment technology, properly applied, has continued to operate satisfactorily on original equipment for up to 20 years-so far. In the majority of cases equipment and appliance breakdowns are significantly reduced or negated and water softening, anti-corrosion or descaling

chemicals are no longer required. In other cases, such as swimming pool applications there is a significantly reduced need for pool treatment chemicals, including chlorine, and filter *back flushing*, with the associated savings in water and pool water re-heating costs.

(14) Electronic Water Treatment not only *prevents scale* formation on pipe work, valves, heating elements, calorifiers and boilers it also *removes existing deposits* of scale over a few to several months thus returning heating (and cooling) systems *back to as new condition in terms of energy and water efficiency*.

(15) With improvements in reliability of electrical components there is every reason to expect that our technology could well continue to operate as designed for 20–40 years, or more. This operational lifetime could well protect boilers and hot water systems for up to four to 10 times their otherwise expected life cycles in hard water areas *thus achieving hugely significant carbon reductions and a positive impact on Climate Change, Energy Security and the impacts of Peak Global Oil Production*.

(16) *The UK Government, Local Authorities and organisations would also be assisted to reach carbon reduction targets.*

ELECTRONIC WATER TREATMENT (EWT)—DOES IT WORK? PROOF THAT ELECTRONIC WATER TREATMENT WORKS

(17) There are numerous case studies and other evidence which demonstrates or proves that EWT does work and achieves the results referred to.

(18) Despite this there remains tremendous resistance to accept it. However, the UK Parliament and Government have access to this evidence via the Ministry Of Defence which is a major customer of ETC. Furthermore, the MOD selected Electronic Water Treatment to deal with hard water for its Project SLAM (Single Living Accommodation Modernisation). The MOD considered all other choices and selected Electronic Water Treatment after monitored trials on a whole life cycle cost basis. Hot water systems in hundreds of SLAM buildings have been treated and protected over the last seven years. They are opened annually for inspection and found to be scale-free. The SLAM project is therefore positive *independent* proof that Electronic Water Treatment works. Project SLAM results are available to UK Parliament so it would seem unnecessary and repetitive to submit additional evidence from additional sources in this regard.

PROJECT SLAM: WHOLE LIFE CYCLE COST BENEFITS OF EWT

(19) The Compliance Technical Manager for the MOD's Project SLAM calculated that for a typical MSS block the WLC (whole life cost of 35 years) for water softeners was estimated at £188k, per building. The estimate did not include the cost of water for daily softener regeneration. This was compared with the typical cost of Electronic Water Treatment of only £3k per building and was why it was selected for Project SLAM. *Electronic water treatment has been estimated by the MOD as being in the region of 62 times cheaper than chemical treatment on a whole life cycle cost basis for that application! Over a 35 year life cycle this represents a pay-back period of less than six months!* Other applications may offer less, or even more, advantageous benefits. *See Appendix 2 for SLAM report.*

(20) A spokesman for the former Office of the Deputy Prime Minister (ODPM) observed that Project SLAM was a model for UK Government/Business liaison partnership working initiatives.

REDUCED COSTS AND PAY-BACK PERIOD

(21) Electronic Water Treatment service by skilled and informed engineers is considered by some to be *reasonably expensive*. The *pay-back* period, however, is usually less than three years, and frequently less than two years. However, customers usually only feature the obvious immediate operational savings in the calculation of *pay-back* period and rarely include all the potential savings of this treatment. If the *pay-back* was calculated on a whole life cycle cost basis in the region of 60 times cheaper then customers may be more pleasantly surprised with their business acumen in making such an investment. *SLAM calculated pay-back period is less than six months.*

REDUCED CHEMICAL ENVIRONMENTAL IMPACTS

(22) Because both water softener and aggressive descaling chemical use can be significantly reduced, Electronic Water Treatment would achieve a significant environmental impact.

REDUCED WATER CONSUMPTION

(23) With a chemical water treatment regime one needs to use significant quantities of water to flush away aggressive de-scaling chemicals. Billions of cubic metres of water are used daily to re-generate salt-fed water softeners and back-flush pool filters. Additional millions of cubic metres are expended replacing water following drain-downs on water fed equipment breakdown repairs or system renewal. This water consumption can be negated or significantly reduced with a properly applied Electronic Water Treatment regime.

REDUCED MAINTENANCE COSTS

(24) Because scale related breakdowns and the replacement of parts is negated or considerably reduced then *downtime* inconvenience and costs as well as maintenance costs are significantly reduced.

REDUCED LEGIONELLA RISKS

(25) Hard water scale provides a medium for the persistence of legionella bacteria and a scaled up system may not achieve sufficient temperatures to deal with this. Because scale is removed by Electronic Water Treatment, it not only removes the *medium* that supports and protects the bacteria, it allows the water to act as a biocide.

REDUCTION IN DIFFICULTY OF pH CONTROL AND CORROSION PROBLEMS

(26) The water from a salt-fed water softener is high in sodium and can be aggressive enough to cause corrosion, resulting in increased maintenance, repair and replacement costs. These problems are eliminated with properly applied Electronic Water Treatment.

BARRIERS TO ACCEPTANCE OF ELECTRONIC WATER TREATMENT AS AN ELEMENT OF THE “GREEN ECONOMY”

(27) Because it appears *too simple to be true* EWT is neither clearly understood nor accepted. It is *human nature* for people to keep doing what they have always done; stick to chemical treatment. There is also an entrenched and powerful chemical treatment lobby.

(28) Because a massive increase in the use of *traditional* treatment would result in a major negative environmental impact and also cause water supply companies an unsustainable challenge to supply quality water, advice on water treatment remains non-existent.

(29) A *poor press* resulting from the reputation of other water treatment methods such as magnetic or electrolytic devices and *apparently* similar electronic units which may have given poor performance, due to ill-fitting or poor design.

(30) The Building Research Establishment (BRE) appears to not give advice regarding hard water treatment. However, it is our understanding that they have *apparently* tested a number of devices or methods which has led to statements such as *these gadgets do not work*. It has proved difficult to engage the BRE in discussion or debate concerning which devices or methods do not work and how such the testing was carried out? We do know with a degree of certainty that with insufficient knowledge of Electronic Water Treatment devices it is easy to design a test that demonstrates failure. We have commercially sensitive information, built up over 21 years, about how we apply our system for maximum effect and it is unlikely that the BRE has similar knowledge. So it is possible that they have tested our technology (and others) but are unaware of how to conduct a fair test. *Thus it is both possible and probable that MP's could receive inaccurate or plainly wrong advice from this source and other advisors.*

(31) Lack of knowledge within government regarding alternatives to chemical treatment and the efficacy of these alternative treatments. This is revealed by Joan Ruddock MP, former Minister for the Environment, in a letter to Mark Hoban MP dated 7 July 2009. See copy of letter in *Appendix 3*.

(32) The same letter observes that effective chemical means are recommended in good practice guides and acknowledges that the effectiveness of non-chemical treatments is less well known but suggests *that this is an issue that suppliers must address*. Such a dismissive approach to the acceptance of chemical environmental impacts when approached concerning a technology which can avoid them represents an odd view of sustainability. Furthermore, failure to take the opportunity of working with the business community on new issues or technologies to aid a Green Economy demonstrates a lack of understanding of developing sustainable communities by partnership liaison initiatives as demonstrated by SLAM and positively mentioned by the former ODPM.

This letter also demonstrates a missed opportunity to find out more. Is it possible that Joan Ruddock MP was wrongly advised by the BRE or other advisors who are not as well informed or experienced as the MOD Project SLAM team?

(33) The additional carbon loading, increased water consumption and increased environmental impacts of hard water are not properly reflected in the Building Regulations. There is no provision for application to commercial premises and the water hardness level suggested for consideration for domestic buildings is poorly specified and far too high. The specification of “total water hardness exceeds 200 ppm” can be interpreted as 200ppm of calcium (Ca). Hardness is more commonly expressed as mg/L of calcium carbonate (CaCo3). The relationship between these two measurement protocols means that 200 ppm Ca equates to 500 mg/L as CaCo3, a level that no water company in the UK delivers to customers. So, as it stands this section of the Building regulations could easily be ignored and sadly never be implemented.

(34) Also the requirement to treat water is only for water heaters and combination boilers and only if required by their manufacturer. This requirement should be mandatory and applicable to all methods of heating water.

Additionally it should be required for non-dwellings. Further still there should be a requirement to include cooling systems which are known to be one of the largest consumers of power, particularly when scaled.

(35) Furthermore, although chemicals, electrolytic scale reducers and water softeners are listed the 2010 Regulations, Domestic Building Services Compliance Guide, there is no mention of Electronic Water Treatment despite 21 years of successful applications.

(36) The suitably amended Building Regulations will only address the “Green Economy” in respect of new buildings. There is no mechanism to reach and gain the massive savings available from the UK’s existing building stock. This could be addressed by Government or Local Authority/Industry partnership projects (similar to Project SLAM) and we are keen to progress with such ventures. Please see *Appendix 4* for draft approach to Southampton City Council following the launch of their Low Carbon City initiative.

The main attraction to this, as far as electronic water treatment is concerned, is that existing scale would be removed, thereby greatly adding to the reduction in carbon use. Water softening does not achieve this.

(37) A suitable standard independent test for non-chemical treatment of hard water has not yet been devised. The absence of such a test is a barrier to new businesses exploring and adopting non-chemical means of water treatment. We have spent almost three years attempting to design such a test, however scant resources prevent success. The problem is not that such a test is able show a unit performs or not, it has been impossible to grow scale in a controlled and repeatable manner. This is a very expensive exercise for small business, but a relative small amount of Government funding would result in massive future reductions in carbon consumption, due to the resulting take-up of this and similar technologies.

RECOMMENDATIONS FOR THE SELECT COMMITTEE TO CONSIDER INCLUDING IN ITS REPORT

- (a) That committee accepts that a case has been made that “hard” water imposes an additional “carbon loading”, additional water consumption and environmental impacts on society. That there is evidence that hard water can be treated successfully by alternative non-chemical means, such as correctly applied electronic water treatment, which uses fewer resources than traditional chemical methods. Therefore the committee recommends that all successful methods which treat hard water without the need for chemicals and with a lower whole life cycle cost than chemical treatment should form part of a “Green Economy”.
- (b) That the committee recommends that a government review be undertaken of all alternative means to tackle the carbon intensive nature of “hard” water and whether these technologies can also demonstrate sustainability benefits in other applications such as effluent treatment, milk processing, etc.
- (c) A standard independent test for non-chemical means should be devised. This review should seek to identify how successful each measure is in terms of whole life cycle costs. Such a review could be undertaken as a Government/Local Authority/University/Industry liaison initiative similar to Project SLAM. Perhaps Southampton City Council could lead such an initiative in partnership with Central Government?
- (d) That the committee recommends that the Building Regulations be amended to deal more effectively with hard water for both domestic and commercial properties; that realistic water hardness treatment action levels are more clearly specified; and that all successful non-chemical means to deal with hard water are listed in the Regulations.

26 August 2011

Written evidence submitted by Gentoo Group Limited

The inquiry wishes to seek out and act upon the “sectors of the economy crucial for creating the conditions for a Green Economy.” As such an influential sector with huge potential to grow the Green Economy, housing should be included and looked to improve. The UK’s housing stock, amongst the oldest in Europe, contributes to over a quarter of the nation’s CO₂ emissions. With 80% of the housing stock still expected to be standing in 2050, it is vital the sector is recognised as an area needing improvements. Legal obligations are already in place, for instance from 2016 all new build housing must be zero carbon. The need to improve the efficiency of our housing stock is something Gentoo strongly advocate, having started to act upon this ourselves through schemes such as Retrofit Reality, Pay as You Save and the Energy Saving Bundle.

In order for our housing stock to be improved, one must take a step back, looking at how. The argument that new, “green-collar” jobs must be created to allow these improvements to take place is something which Gentoo support profoundly and feel will be vital in achieving targets. Improvements in this area will benefit the environmental, social and economic aspects of society—the triple bottom line concept, which shall be referred to regularly throughout this document.

There is a need to focus upon the communication aspect of the Green Economy. In order to further encourage and increase the chance of a sector-wide buy-in, the messages communicated must be carefully considered and selected in order to ensure understanding. The way in which messages are communicated must also be carefully

considered. Too prescriptive of an approach may ultimately disengage the public, potentially leading to negative results. Too soft of an approach is likely to be ineffective and not result in any significant action. If engaged with and communicated to effectively, this consumer “empowerment” to change their behaviour and provide positive results can be tied in to the Big Society concept.

The big six energy companies are extremely influential within the Green Economy. The current, heavy levels of regulation must continue. Gentoo believe that the current legislation around carbon taxes is something that should continue to be used as a motivation for improving the Green Economy and improving environmental performances. To ensure the Green Economy is effective and successful, there is a need for this top-down approach (targeting influential organisations within the industry) as well as a bottom-up (empowering consumers) approach.

It is essential that the correct “carrots and sticks” are provided, to ensure a wide-scale buy in to the Green Economy. This needs to be the case for all parties involved—the industry, the Government and the customers. For all three aspects, Gentoo strongly believe there is a need for the implementation of appropriate incentives and penalties.

This document refers to the triple bottom line aspect, and the appropriate tools and indicators to monitor progress. Economic and environmental indicators are already visible, however Gentoo question what would the social indicator be. For instance, would financial and health impacts be the only measurements used? From Gentoo’s experience of retrofitting property’s with more energy efficient measures, we have found our customers to use the savings to heat their homes for longer, meaning they are more comfortable in their property, increasing both happiness and customer living standards. Though it is not something we have been able to measure historically, the associated health benefits of such retrofits are also likely to have increased (our new Green deal pilot, the “Energy Saving Bundle,” has been designed in a way which we can work with PCT’s to analyse this information following the retrofit work). However, our retrofit experience has taught us that consumer’s maximum potential financial savings have not always been realised.

As well as the health impacts of housing, there also needs to be consideration placed into the education around the occupants behaviour in the house and knowledge into how to best use measures and properties. Though there are clear benefits available through occupant engagement and behaviour change (in terms of potential carbon savings), it is often an aspect that is missed, under-valued or even ignored. There is little point installing expensive, energy efficient measures if the end user does not understand how to use them. Potential carbon savings will not be realised, action must be taken at the front end to ensure this does not occur.

The UK’s current provision of energy from renewable sources stands at less than 10%. With the obligations in place to increase this, the UK must look to start advancing upon this. Not only will this help reduce carbon emissions, but it will help reduce the need to rely on energy from abroad, resulting in greater energy security. Gentoo believe there is a need to focus upon the renewable energy market in terms of both new, innovative products and (more importantly) current, tested products. Incentives such as the Feed in Tariff and Renewable Heat Incentive must continue to be strongly supported, maintaining investor confidence, if our national obligatory targets are to be met.

As well as the focus on renewable energies, if the Green Economy is to be turned into a successful industry then a great consideration must also be placed on waste. As with the vast majority of industries, environmental performances and carbon emissions can be massively improved through the careful control over waste. For instance, waste contributes greatly to the carbon footprint of the building process in housing; a focus on handling waste in the most environmentally friendly manner will have a significant impact on carbon emissions.

It is apparent there is a need for a radical and holistic approach to developing a Green Economy. There are a number of outcomes that are desired from the growth of the Green Economy, covering the economic, social and environmental aspects. Economically, there must be an increase in the number of installations of more environmentally friendly measures, resulting in an increase in the number of green-collar jobs. There is also a need for an increase in new, green business start ups, and a reduction in their failures. Within the careers aspect of the Green Economy, there is also a need for the improvement of the training available. As proven successful with the MCS accreditation process, there is a need for tighter regulations and training processes. This holistic approach to the business aspect of the Green Economy can only be beneficial in increasing market value and assisting with the long-term success of the Green industry.

As well as all of the economic areas that need attention (and the benefits that will be made available if action is taken), socially there is a need for greater savings to be made available for consumers, especially when considering rising energy bills. Any savings provided will assist in moving consumers away from fuel poverty, provide more disposable income to spend (for which the economy shall benefit) and increase the living standards of occupants. The environment will also undoubtedly benefit from such improvements—reductions in carbon emissions will ultimately reduce our impacts on climate change. Essentially, the triple bottom line is something that must be worked around at all times without question.

Written evidence submitted by Paul Crossley

THE GREEN ECONOMY

1. A green economy has to be based upon inclusion, thus avoiding separation. Our current economy is the best green economy we have at this moment; based upon the paradigm in which we have been living.

2. That paradigm is in the process of change. This consultation is part of that change.

3. The closing paradigm was based upon “ancient sunlight”. Coal, oil and gas have provided the energy to drive the current paradigm. A growing awareness that these resources are reaching the end of their influence has caused those who wish to provide for future generations to rethink the strategy.

4. The awareness is now reaching enough people for the idea of change to take place.

5. The world banking crisis has facilitated some people’s awareness to the need for change and how a rethink of that system could facilitate the changes needed.

6. The new paradigm requires growth. Growth, with the appropriate definition, can be a positive influence upon society.

7. Growth in understanding, in compassion, in sharing, in the flow of money……. Growth in inclusion rather than separation.

As a country the United Kingdom is a relatively stable democracy. It is moving, by coalition government, through the transition from old to new paradigm. I am not sure how many people are aware that this change is occurring. If there is any attempt to stifle the change and hold on to the old then the change will arrive with more disruption than if the changes were embraced. Accepting that the change is inevitable and facilitating the process will allow the new paradigm to enter as a positive step for all people.

The old paradigm was latterly based upon, and driven by, fuel sources from ancient sunlight. As those resources now dwindle and come under increasing demand we need to re-evaluate what we have and how we live. Just as the premise was that the oil, coal and gas were limitless so our banking system developed whereby money was created out of thin air. As this practice is reduced and ultimately stopped then the adjustments can be made which allows us to live within our energy means. Our economy has been based upon an illusion. Anyone who has previously tried to make this point has been ridiculed yet it is now becoming clear that it is a greater part of the truth than previously recognised.

The new paradigm has to thrive upon local energy supplies and live, in the main, on current sunlight and adjust accordingly. It is not known how many years the transition will have to take place because it is not known how quickly people will embrace the changes needed or how long the old energy supplies will last. What has evolved using the ancient sunlight is an unbalanced world; in order to offer a chance of rebalance then bold steps need to be taken for the benefit of ALL. Recognising that the changes will bring benefit to most people and will not result in increased hardship is an important point to make.

To provide for ones children sustainably is not to try to amass money/assets but to create a fair society where all children can thrive. This is not something new but it is something which remains a problem. It is not helpful to focus upon the exploitation which has been a great part of the old paradigm. Our legal system, our banking system and our electoral system all have elements of exploitation within them. Addressing these issues could be a starting point. They DO NOT need radical overhaul but tweeks which make them accountable to ALL.

Understanding how the provision by inheritance is ill conceived would be another good starting point?

29 August 2011

Written evidence submitted by Carillion Energy Services

CARILLION ENERGY SERVICES—BACKGROUND

Carillion Energy Services (CES) welcome the opportunity to respond to the Environmental Audit Committee Consultation on The Green Economy.

In order to put our comments into context, it may be helpful to outline briefly our role in the provision of energy services across the UK and Ireland.

Carillion Energy Services was formerly Eaga plc prior to its acquisition by Carillion in April 2011. Carillion is one of the UK’s leading support services companies with a substantial portfolio of Public Private Partnership projects and extensive construction capabilities. The Group has annual revenue of over £5 billion, employs around 46,000 people and operates across the UK, in the Middle East, Canada and the Caribbean.

Carillion Energy Services, a division of the group are a leading independent energy services provider and one of the largest installers of renewable technologies and domestic heating services in the UK. We currently manage Warm Front on behalf of Department of Energy and Climate Change and we also have experience of working for the Welsh Assembly Government on the Home Energy Efficiency Scheme, the Warm Homes initiative in Northern Ireland and the Central Heating and Warm Deal programme in Scotland. We also worked closely with Utilities and Local Authorities in managing the delivery of energy efficiency programmes.

Carillion Energy Services are committed to helping the environment and combating climate change; we provide renewable energy solutions to private housing, specifically through the installation of solar thermal panels and air/ground source heat pumps. Our Clean Energy Programme works in conjunction with the Government's Feed-in-Tariff to install solar photovoltaic panels on social housing properties, we are working with a number of social landlords to provide free electricity to social tenants and have completed over one thousand installs to date. Over 1000 properties have benefited from the Clean Energy Programme due to our partnership with social housing properties.

Within our Carbon Services team, we support the largest number of area-based programmes in the UK, leveraging multiple funding sources to accelerate delivery against policy objectives and drive the Government's climate change and carbon reduction agendas. Our work with the UK's major utilities and energy suppliers allowed us to deliver a carbon saving of 11.9 million tonnes of Carbon Dioxide and 1.7 million innovative energy saving products in the financial year 2009–10.

For further information on Carillion Energy Services and our work across the principal market sectors of Defence, Education, Health, Facilities Management & Services, Rail, Roads, Building, Civil Engineering and Utilities Services please visit—<http://www.carillionplc.com/>

1. What are the economic, social and environmental outcomes that a green economy should aim to deliver, and what are the appropriate tools and indicators to monitor progress towards such outcomes?

1. Carillion believes that a successful green economy can deliver a range of integrated economic, social, and environmental benefits that are intrinsically linked. To achieve this a holistic approach is required from business, Government, and consumers, whereby the whole economy is transformed, rather than only those sectors that have traditionally been defined as “green industries,” such as the energy sector. We have pioneered mandatory sustainability targets throughout the company including responsible sourcing of natural resources, reducing landfill waste, and reducing emissions from business travel. This includes using FSC certified timber wherever possible, pledging to halve the amount of waste sent to landfill by 2012 (from 2008 levels), capping the engine size of business cars hired at 1.2 litres, and by holding an employee car-sharing database.

2. A transition to a Green Economy will result in increased energy security for the UK, mitigating the effects of volatility in the global energy market, which are by their nature, out-with Government's control. This will result in increased financial stability for business and consumers alike and may attract greater investment in a more resilient economy.

3. Social outcomes that result in changed behaviour may not be easily quantifiable. However, using a range of indicators examined in conjunction, such as the number of people employed in green industry, progress made towards achieving EU and UK carbon reduction and renewable energy generation targets and consumer take up of policy initiatives such as the Green Deal, should offer an accurate indication of progress.

4. We believe that the value of UK green industry, and the number of people it employs, currently 910,000,⁷⁷ will be a more meaningful economic indicator than GDP alone, which provides less insight into social benefits resulting from growth. Furthermore, given the UK's commitment to reducing carbon emissions by 80% by 2050, the monitoring process needs to be flexible.

2. Describe the nature of any barriers preventing the transition to a green economy:

5. Some financial barriers prevent the transition to a green economy, examples include weak consumer spending and the difficulties small and medium sized enterprises experience obtaining capital from borrowing. We would welcome any changes that Green Deal will deliver to address these issues, however, further detail on investment and managing risk associated with measures failing to meet the “golden rule” or customer default needs to be forthcoming.

6. Consumers and businesses considering renewable energy solutions realise that such technology is relatively new compared with traditional fossil-fuel burning appliances and this therefore poses a larger risk as the technology evolves. Lack of consumer awareness, potentially combined with scepticism concerning cost savings; could inhibit take-up of Green Deal measures. It is especially important, therefore, that Green Deal assessors are appropriately accredited and are required to offer objective information on potential cost savings to establish trust among consumers. Carillion's Clean Energy Programme, which installs Solar PV on to social housing properties at no cost to the resident or social landlord, overcomes these barriers by working in partnership with trusted and well-established organisations to offer reassurance to a potentially vulnerable customer base.

⁷⁷ <http://www.bis.gov.uk/assets/biscore/business-sectors/docs/10-795-low-carbon-environmental-goods-analysis-update-08-09.pdf>

7. Risk aversion may also be mirrored by investors looking to finance renewable energy solutions through the Green Deal as it has not been demonstrated that the investment will recoup original costs. This uncertainty amongst investors was compounded by unexpected changes to government policy, for example, the recently conducted Fast-Track Review of Feed-in Tariffs, which had an impact upon a number of investors such as SolarCentury and members of the Micropower Council.

8. Furthermore, there exists a perception that green levies and taxation may not be reinvested and can be seen as simply an alternative source of Government revenue as identified by the Environmental Audit Committee report on the 2011 Budget and environmental taxes.⁷⁸

9. Carillion also recognises that there are non-financial barriers to achieving a green economy including a lack of Science, Technology, Engineering, and Maths (STEM) skills when compared with other European countries⁷⁹ as highlighted in the 2011 Plan for Growth. Carillion are addressing this by focusing on our personal development of all of our employees—spending £20 million on personal development resources in 2010, sponsoring 2,500 apprentices across the business at any one time. More generally we work with partner organisations such as Business Action on Homelessness (BAOH), providing skills and mentoring advice for vulnerable adults who risk being excluded from the labour market.

3. What approach is required to deliver a green economy, and what aspects of the current economic model require development, eliminating and/or new approaches found. What tensions might there be between economic growth and the green economy? Would “greening” the economy deliver the outcomes needed?

10. As outlined above, we believe it is important to frame green taxation in the context of the Stern Review, which warns that the long-term costs of environmental inaction will prove much more costly than strategic action taken to mitigate climate change now.⁸⁰

11. It is also important to ensure that the benefits of a green economy are shared throughout society to encourage widespread support for change. Carillion is particularly interested in initiatives that benefit those groups most vulnerable to the effects of climate change, such as people on low-incomes, people living in hard to treat accommodation and the fuel poor, given our experience assisting these groups. With this in mind we welcome DECC’s decision to impose a cap on levies raised from energy bills, which affect the fuel-poor disproportionately.

12. We would welcome further details on the energy efficiency assistance available through the Energy Companies Obligation (ECO) for households who are either fuel poor and more likely to under-heat their homes resulting in no measurable cost saving from Green Deal installation and hard to treat homes where insulation costs are particularly unlikely to meet the “golden rule.”

13. Whilst Carillion agrees with Consumer Focus that the fuel-poor should remain a priority group for ECO funding to be spent,⁸¹ there may be insufficient funding for many non-fuel poor households living in hard to treat properties, who remain unable to privately finance energy efficiency measures but are unlikely to qualify for Green Deal assistance. We propose that further financial incentives from Government or utility providers may be required to assist take-up in this group.

4. What policy and institutional “framework” is required to create the right conditions for the green economy to thrive, and does the Government’s forthcoming Green Economy Roadmap provide this framework. Does the Roadmap deliver a clear vision of the green economy?

14. Carillion welcomes this Roadmap and its recognition that a range of policy measures are necessary to achieve the transition to a Green Economy, particularly the need for targeted community engagement and investment in skills, two areas where Carillion has considerable expertise. Carillion trains 1,200 apprentices each year at 18 training centers, in skills ranging from sustainable construction to green technology installation. Additionally, we work with BAOH by providing training and work placements for homeless and those at risk of homelessness through the “Ready to Work” scheme. Last year, we offered 111 two-week placements through which 47 people gained employment, a number of them with Carillion. This is in addition to offering a six-month programme of mentoring support.

15. We welcome the launch of the National Careers Service in April 2012 however, it is important to ensure that the skills necessary for technological innovation, are fostered at an earlier level within the education system. In addition to our work with apprentices, Carillion employs Community Liaison Officers whose roles include meeting with schools to promote the benefits of energy efficiency projects such as community solar PV installations or environmental building techniques, as demonstrated by our award winning York eco-depot.

⁷⁸ <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenvaud/878/87802.htm>

⁷⁹ *PISA 2009 Results*, OECD, December 2010

⁸⁰ <http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/d/.pdf>

⁸¹ <http://www.consumerfocus.org.uk/files/2010/12/Green-Deal-ECO-v1.pdf>

16. Further detail would be welcome on the Roadmap, particularly regarding the operation of the Green Investment Bank (GIB). It is encouraging that the Bank will commence lending from April 2012; however, we would like to see the Bank achieve borrowing powers earlier than the projected timeframe of 2015–16, which is also conditional upon levels of debt to GDP falling to target levels. More information on the type of projects that the GIB will initially assist would also be beneficial.

5. What are the priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy?

17. Carillion believes that a priority for action is to invest in providing green skills training for the future, in order to improve long-term employment prospects, for young people particularly, otherwise the UK risks its competitiveness. We welcome the Treasury and BIS's focus on STEM skills, however more work needs to be done with schools to encourage young people to attain sustainable and eco skills.

6. What is the role of consumers, businesses, non-government organisations, and international bodies in delivering, and stimulating demand for, a green economy?

18. We feel that green projects achieve most success when they have the support of the local community such as our Clean Energy Work working in partnership with organisations such as the Chale Community Project.⁸² Such projects have real economic benefits at a community level by increasing local employment and therefore socially benefiting the community. Government should ensure that a clear policy framework exists to encourage businesses and non-governmental organisations to form strategic collaborative partnerships. Carillion, along with Homebase, is currently involved in a trial being conducted by DECC and the Cabinet Office's Behavioural Insights Team⁸³ to gauge the different methods of gaining consumer support for the Green Deal. We welcome this type of innovative partnership.

7. Do any models that more closely resemble a green economy exist elsewhere that the UK should aspire to?

19. With regard to the remit of the Green Investment Bank, inspiration can be taken from Germany's KfW, a development bank with borrowing capabilities that was created in the aftermath of World War II. KfW provides commercial banks with liquidity at lower than market rate, which is utilised to offer specified energy efficiency loans. The Environment Audit Committee's second report on The Green Investment Bank notes that KfW has been instrumental in helping deliver 100,000 energy efficiency retrofits every year.⁸⁴ The Government has responded, however, stating that it is not yet clear what role the UK Green Investment Bank would play in the proposed Green Deal.

8. How do the UK's policies to deliver a green economy relate to actions needed to deliver a global green economy (a theme of the June 2012 Rio Summit)?

20. As the 2012 Conference aims to focus upon how a green economy can eradicate poverty, the UK's environmental policies that provide the greatest employment opportunities and most equitable societal benefits should be focused upon. As Green Deal is yet to be implemented, there may be limited opportunity to review success or failure of policies prior to the summit, as fledgling policies may not have made their impact.

1 September 2011

Written evidence submitted by Research Councils UK

EXECUTIVE SUMMARY

- The green economy signals a more pro-active integration of economic, social, and environmental agendas. It includes: the growth of new environmental sectors; the promotion of synergies between business development and environmental quality and realising the marketing, efficiency and competitive advantages of adoption of green business practices. It will encompass the development of new green products and services, new greener processes and more environmentally sustainable ways to carrying out existing processes.
- Publicly funded research has a critical role to play, alongside other instruments of government, in enabling the transition to a green economy. RCUK supports a broad portfolio of research covering the natural environment, engineering and physical sciences, biotechnology and biological sciences and economic and social research among other areas, much of which is delivered in partnership with a range of stakeholders including industry. RCUK has a long history of supporting research that has

⁸² <http://www.chalecommunityproject.org/>

⁸³ http://www.decc.gov.uk/en/content/cms/emissions/beh_change/beh_change.aspx

⁸⁴ <http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenvaud/505/50506.htm#a26>

influenced thinking, enabled technology development and enhanced understanding of the need for a green economy and the challenges associated with it. For example, researchers developed central concepts such as carbon footprints and ecosystem services.

- “Systems thinking” which considers interactions, environmental dependencies and opportunities for green growth across a broad range of sectors is essential to the success of the green economy. Relevant sectors include: manufacturing, infrastructure, energy, industrial biotechnology, agriculture, food, chemicals and the environment. Businesses, consumers, government and public sector bodies, non-government organisations and academics associated with each sector should all be involved. Strong links between industry, civil society and the academic research base will be particularly essential to progress.
- A major opportunity for government is providing the necessary cross-sector overview, and a clear, integrated policy framework.
- The strength of partnerships and activities supported by the Research Councils will enable UK to seize opportunities for growth in emerging market sectors based on green products and services. Key examples of Research Councils working in partnership include: The Living With Environmental Change programme,⁸⁵ The Energy programme⁸⁶ and the Global Food Security programme.⁸⁷ These programmes involve Research Councils working with government departments and agencies, businesses and non-government organizations.

INTRODUCTION

1. Research Councils UK (RCUK) is a strategic partnership set up to champion research supported by the seven UK Research Councils. RCUK was established in 2002 to enable the Councils to work together more effectively to enhance the overall impact and effectiveness of their research, training and innovation activities, contributing to the delivery of the Government’s objectives for science and innovation. Further details are available at www.rcuk.ac.uk.

2. This evidence is submitted by RCUK on behalf of the Research Councils listed below and represents their independent views. It does not include, or necessarily reflect the views of the Knowledge and Innovation Group in the Department for Business, Innovation and Skills (BIS):

Biotechnology and Biological Sciences Research Council (BBSRC).

Economic and Social Research Council (ESRC).

Engineering and Physical Sciences Research Council (EPSRC).

Natural Environment Research Council (NERC).

RESPONSES TO THEMES

(a) *The economic, social and environmental outcomes that a green economy should aim to deliver, and the appropriate tools and indicators to monitor progress towards such outcomes*

3. Prior to considering what the desirable outcomes of a green economy may or may not be, it is essential to understand what a green economy is. A successful green economy might, for example, simultaneously enable economic stability and growth, increased resilience, reduced and more efficient use of fossil and other fuels (and the development of “greener”, renewable alternatives), and of water and other natural resources, protect ecosystems and the environment from further degradation and pollution, support the repair of earlier damage and provide sustainable environmental services. Without common agreement and clarity with regard to what a green economy may or may not be making measurements, judgements and estimations about the outcomes of that economy has proven extremely challenging. Considerable research has been done by economists and social scientists to explore the meaning, form and function of a green economy.

4. RCUK broadly supports the overall philosophy and principles that underpin Government policy on the green economy as set out in recent policy documents eg the Natural Environment White Paper and the Green Economy Roadmap. However, these policy positions could be further enhanced, by greater clarity regarding the fundamental nature of what a green economy might be. Such clarity will be particularly important when steps are taken to implement policy with the wider stakeholder community, for example business, regulators and markets. In addition, further development of an employment and skills strategy for a green economy is required.

⁸⁵ <http://www.rcuk.ac.uk/research/xrcprogrammes/Pages/lwec.aspx>

⁸⁶ <http://www.rcuk.ac.uk/research/xrcprogrammes/Pages/Energy.aspx>

⁸⁷ <http://www.rcuk.ac.uk/research/xrcprogrammes/Pages/FoodSecurity.aspx>

5. Robust research evidence is essential to developing appropriate and accurate tools to monitor progress. RCUK supports numerous initiatives which contribute to this. Examples include:

- The UK National Ecosystem Assessment (UK NEA)⁸⁸ developed through The Living With Environmental Change (LWEC)⁸⁹ programme. The partners are in dialogue with a view to collaborating on a second stage.
- NERC supports national capability in monitoring a breadth of terrestrial, freshwater, atmospheric and marine environmental variables via its research centres.⁹⁰
- The £45 million Sustainable Urban Environment Programme funded by EPSRC supports research into new technologies, models and processes to help make cities more environmentally friendly.⁹¹
- BBSRC provides funding to institutes that conduct long-term, strategic research underpinning the green economy in areas such as food security, mitigating and responding to climate change, reducing green house gas emissions and improving resource use efficiency in agriculture, and sustainable production of food and energy crops (see Annex).
- The BBSRC Sustainable Bioenergy Centre (BSBEC) is developing a sustainability toolkit to optimise energy balance and to understand the environmental, social and economic impacts of producing bioenergy (see Annex).
- ESRC supports a number of relevant large research investments including the Centre for Sustainable Business Relationships, Accountability, Sustainability and Society and the Social, Technological and Environmental Pathways to Sustainability Centre (see Annex). In addition a wide range of relevant smaller research projects are also supported.
- The EPSRC Centre for Innovative Manufacturing in Industrial Sustainability⁹² delivers research to support the development of a sustainable UK industrial system.

(b) *The nature of any barriers preventing the transition to a green economy*

6. There are a number of key issues related to the transition to a green economy, including: ensuring clarity about the objective; reconfiguring supply chains; new business models and processes; training people with the right skills; increasing awareness and confidence in new greener technologies; addressing and preventing disconnect between the research base, businesses, policy makers and other stakeholders; changing end customer and user behaviour; reducing costs and providing access to finance.

7. Considerable influence is exercised on economic and market performance by regulation, including fiscal regulation. The extent to which measures have worked and what measures might work in the future are still not satisfactorily understood and requires further research. Legislative requirements and regulatory frameworks have the potential to drive green innovation, where the development of new practices and technologies is essential in order to deliver cost-effective strategies for compliance. For example, the EU Nitrates Directive will require the development of farming systems that make more efficient use of the nitrogen that is applied and boost demand for farm-level livestock waste treatment technologies. However, regulation and policy frameworks can also act as a barrier or disincentive to the introduction of new technologies. For example, genetic modification could enable the development of more resource-efficient crop varieties, but blocks to the approval of genetically-modified crops in Europe is widely perceived by researchers and industry to be a barrier to their commercialisation. This may limit the contribution that such technologies can make to a green economy. The goal should be “smart”, evidence-based and proportionate regulation of the green economy enabling the achievement of social and economic objectives rather than unduly blocking or constraining.

8. There is considerable research evidence about people’s behaviour, understanding of and response to the challenges of environmental change. A number of evidence based interventions are already available eg on how to promote recycling of domestic waste or to incentivise public procurement that is both cheaper and greener. The evidence base for further interventions to promote changes in economic behaviour and performance can readily be extended.

9. Gaps in knowledge remain in terms of how financial markets might function in a green economy, for example in relation to carbon trading mechanisms. Lack of investment finance and incentives are widely seen as barriers, with investors and insurers being an important group of enablers or disablers of economic growth and development⁹³ The NERC Financial Services Risk Management and Valuation Knowledge Exchange Programme⁹⁴ will use existing NERC science and inform future research activities to address this. ESRC is building on engagement with investment and insurance sectors through the Financial Services Knowledge Transfer Network and its special interest groups.

⁸⁸ <http://uknea.unep-wcmc.org/>

⁸⁹ <http://www.lwec.org.uk/>

⁹⁰ <http://www.nerc.ac.uk/research/sites/research/>

⁹¹ <http://www.urbansustainabilityexchange.org.uk/>

⁹² <http://www.industrialsustainability.org/>

⁹³ TUC (2009) “Unlocking Green Enterprise—A low carbon strategy for the UK economy” ISBN 978 1 85006 849 5

⁹⁴ <http://www.nerc.ac.uk/using/keprog/>

10. Although we have highlighted a number of individual barriers, the relationship between economic performance and sustainable growth is complex and full of feedback, so overcoming barriers cannot be addressed without adopting a holistic approach to the challenge. Such an approach necessitates drawing in and engaging in meaningful exchange with the full range of stakeholders—business, regulators, the markets and consumers.

(c) The approach required to deliver a green economy, and the aspects of the current economic model that require development, eliminating and/or new approaches found. What tensions might there be between economic growth and the green economy? Would “greening” the economy deliver the outcomes needed?

11. Numerous businesses are already demonstrating it is possible to have profitable business models while reducing environmental impacts. In order to build on these successes across a range of sectors, a whole systems approach is required that will provide a fuller understanding of the complete environmental system, including how to value different parts of the environment. In addition, development of new green products, technologies and services, such as renewable energies and feedstocks, must be coupled with whole systems analyses to ensure that they are economically and environmentally sustainable in the round.

12. There is scope for improvement in existing technologies to increase their efficiency and reduce their environmental impact. New ideas and technologies can also offer green alternatives with the potential for radical changes to established industries and the creation of new business opportunities. The UK research base can help businesses to benefit from these improvements and adapt to changes, including addressing issues that could impact on implementation, such as consumer confidence in new products and services.

13. The value of nature or biodiversity needs to be better understood regarded as a financial opportunity. Research is beginning to address this for example, the LWEC project Valuing Nature Network⁹⁵ (VNN) and the UK NEA are developing research capacity in valuing biodiversity, natural resources and ecosystem services with the aim of embedding the ecosystem approach in policy and decision making across sectors.

(d) The policy and institutional “framework” required to create the right conditions for the green economy to thrive, and whether the Government’s forthcoming Green Economy Roadmap provides this framework. Does the Roadmap deliver a clear vision of the green economy?

14. The Green Economy Roadmap usefully displays current policies and regulations and effectively articulates the scope of sectors and activities it will involve. However, it gives little clarity on what government is going to do in the future and how it will adapt the regulatory regime for business growth and environmental sustainability. It would also benefit from some more detailed consideration of skills development for the green economy, in particular STEM and research skills.

15. The LWEC Business Advisory Board (LWEC BAB), established to provide strategic business input into current and future LWEC programmes (eg by advising on research needs of business sectors and routes for business engagement) were presented with a draft version of the Green Economy Roadmap. The LWEC BAB gave recommendations on the content and how it should be presented to business, including:

- The Roadmap is very high level and is not a “what to do about it” guide for different business sectors explaining what action they need to take to transform their businesses to be fit for the future.
- There is little to show how progress might be measured; it would be helpful to have a description of what success will look like. A stronger sense of the destination would help to engage businesses in the journey.
- The Roadmap does not reflect the UK’s world-leading research base which puts the UK in a strong position to be internationally competitive in responding to the opportunities that transition to a green economy presents.
- Other than the Green Deal, government strategy on engaging the public to reduce greenhouse gas emissions is unclear. This is a significant omission if business is to develop services and products in support of government policy to reduce emissions.

16. Government may also need to consider providing incentives for early adopters of green technologies, and businesses developing green products and services. For example, there is currently little, if any, incentive for UK farmers to grow perennial energy crops, as this requires significant outlay without any income for two to three year periods, and without a secure market in the UK.

(e) Priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy

17. Cross-cutting issues that will affect all businesses in making the transition to a green economy include skills, investment and insurance, energy (particularly reducing reliance on fossil fuels and non-renewables), manufacturing, infrastructure and the use of water and other resources. Research Councils are active across these areas.

⁹⁵ <http://www.lwec.org.uk/activities/valuing-nature-network>

18. Developing the highly skilled people able to help the UK make the transition to a green economy must be a high priority. Research Councils are helping to develop the next generation of research and business leaders through funding for PhD training, often in partnership with industry, for example:

- CASE studentships⁹⁶ where students enhance their training by spending a portion with the CASE partner in a workplace outside the academic environment.
- EPSRC supports a number of relevant Centres for Doctoral Training, such as the “Sustainability for Engineering and Energy Systems”⁹⁷ Industrial Doctorate Centre and a new Industrial Doctorate Centre in Offshore Renewables, both of which combine collaborative research with technical and professional training.
- BBSRC’s Advanced Training Partnership⁹⁸ and Modular Training for Industry⁹⁹ schemes develop and deliver research-led, user-focused postgraduate training in close liaison with industry.

19. Engaging the investment and insurance sectors should be a priority (see paragraph 6 for rationale).

20. Decarbonising existing energy sources, developing and improving new clean energy technologies and reducing energy demand through increasing efficiency and changing behaviours will be vital to delivering a green economy. The RCUK Energy Programme¹⁰⁰ will be investing £540 million in energy research and training between 2011–15 aimed at helping the UK meet its energy and environmental targets and policy goals. A new £7 million NERC research programme “Mineral Resources: Science to Sustain Security of Supply in a Changing Environment”¹⁰¹ will develop models to predict the environmental impact of scaling up new technologies for low-carbon mineral extraction.

21. Manufacturing research is playing an important role in developing more efficient lean processes, lighter weight materials and products and designing out waste, as well as enabling the development and production of new green technologies. EPSRC’s Manufacturing the future¹⁰² programme will be investing £322 million over the next four years in research contributing to this. Energy-intensive, high-emissions sectors including agri-food (which is UK’s largest manufacturing sector) and chemicals will be important targets for the transition to a green economy.

22. Improvements and alternatives to existing infrastructure will be necessary to drive green economic growth. EPSRC’s £350 million portfolio of research in this area includes next generation communication systems and other digital alternatives to travel, sustainable networks, supply and generation of utilities, and transport systems.

23. The national system of green accounting should require businesses to account for their environmental costs and benefits in a comparable fashion. That would reveal opportunities for growth by highlighting areas where there is further potential for the sustainable exploitation of environmental assets, but also help stimulate the growth in market-based approaches to the provision of environmental service, such as:

- “Pay-back” schemes, to raise revenue for investing into measures that improve environmental quality and growth.¹⁰³
- “Payment for Environmental Services” eg through discretionary additions or charges to bills to support local conservation projects.¹⁰⁴
- Fiscal relief for targeted investment in new and existing businesses that can make a clear contribution to the development of a low-carbon economy.

24. NERC have established knowledge exchange programmes¹⁰⁵ on five priority areas of the green economy: Financial Services Risk Management and Valuation; Water security; Marine renewable energy; Environmental management for food and agriculture; Resource management (including minerals, waste). NERC has also identified three other areas where research could be developed into tools and solutions for end-users; these areas are: Environmental monitoring; Managing ecosystem services; Climate services. Engagement with users will utilise areas of strength across NERC’s research portfolio and inform future NERC funded research.

(f) *The role of consumers, businesses, non-government organisations, and international bodies in delivering, and stimulating demand for, a green economy*

25. Research will provide evidence to inform the activities of the all of the groups identified here, for example: the choices made by consumers; practices, investments and areas for product development pursued by businesses; the agenda, focus and strategies of non-government organisations and international bodies. RCUK works closely in partnership with all of these groups; for example, the LWEC partnership includes

⁹⁶ <http://www.rcuk.ac.uk/kei/ktportal/Pages/DoctoralStudentships.aspx>

⁹⁷ <http://www.surrey.ac.uk/feeps/study/pgri/dc/sees/>

⁹⁸ <http://www.bbsrc.ac.uk/business/training/advanced-training-partnerships.aspx>

⁹⁹ <http://www.bbsrc.ac.uk/business/training/modular-training.aspx>

¹⁰⁰ <http://www.rcuk.ac.uk/research/xrcprogrammes/Pages/Energy.aspx>

¹⁰¹ <http://www.nerc.ac.uk/research/themes/tap/tap-phase3.asp#mineral>

¹⁰² <http://www.epsrc.ac.uk/ourportfolio/themes/manufacturingthefuture/Pages/default.aspx>

¹⁰³ <http://www.scribd.com/doc/58611485/Paying-to-restore-peatland-with-carbon>

¹⁰⁴ <http://www.relu.ac.uk/research/projects/Fourth%20Call/Smith.html>

¹⁰⁵ <http://www.nerc.ac.uk/using/keprog/>

partners¹⁰⁶ from across the public sector, advisers¹⁰⁷ from a range of businesses with charities¹⁰⁸ involved in funding specific activities. The Energy Programme participates in the Energy Research Partnership along with other key funders from the private and public sector¹⁰⁹ and there is strong user engagement in areas such as engineering and the physical sciences where almost 50% of research projects involve collaboration with partners from the private and public sector.

26. Some innovative advances that could help to deliver a green economy pose challenges that must be addressed by society as a whole, for example, production of bioenergy crops, genetic modification (eg to produce crop varieties better suited to climate change or to be more resource efficient), or the use of synthetic biology approaches in industrial biotechnology. RCUK has a strong track record in public dialogue activities on topics including Synthetic Biology and Geoengineering^{110,111} and will continue to engage the public around the issues raised by the research it funds.

27. Businesses will need to clearly articulate their research needs in enabling the transition to a green economy. For example, in Industrial Biotechnology and Bioenergy, there is a clear need for industry to set out its key challenges, skills requirements and research priorities that it needs to address in moving from processes based on fossil fuels and feedstocks to those using renewables. Research Councils are helping to encourage knowledge exchange and joint working between industry and the research base through mechanisms such as the RCUK Bioenergy Strategic Coordination Group which is taking a holistic approach to integrating research with industrial pull, and the Integrated Biorefining Research and Technology Club¹¹² supported by BBSRC and EPSRC, which provides funding for industrially-relevant research and helps to build industry-academic links.

28. Businesses also have a role in providing adequate career opportunities, including a commitment to continued support and development, for people who have the skills needed to enable a transition to a green economy. By working in collaboration with training providers, industry will be able to ensure that postgraduate training incorporates the specific research, generic and professional skills that they need in their businesses.

(g) Whether any models that more closely resemble a green economy exist elsewhere that the UK should aspire to

29. RCUK do not have access to a comparative assessment of models to inform the UK's approach to developing a green economy. However, RCUK supported researchers have been involved in some relevant work which may be of interest to the committee.

30. UK academics funded by the Research Councils are often asked to be consultants on overseas developments. For example, researchers supported by the EPSRC EcoRegions Network who have been exploring how to make sustainable cities are involved in the £3 billion redevelopment of a city in China.¹¹³

31. A recent joint UK-Japan study and workshop on industrial sustainability by the Institute for Manufacturing, supported by EPSRC, identified a number of strengths from each country as well as opportunities for shared learning and future collaborations.¹¹⁴ The Institute for Manufacturing "International Approaches to Manufacturing Research"¹¹⁵ looks at different strategies adopted to engender sustainable manufacturing research in a number of competitor countries.

32. The ESRC Climate Change Leadership Fellow Dr. Harriet Bulkeley has investigated "Urban Transitions: climate change, global cities and the transformation of socio-technical systems"¹¹⁶. The research looks at how technical components (ie solar cells), institutions (ie planning laws) and the behaviours through which these operate to understand how rapid transformation of complex socio-technical systems can be managed and achieved.

33. Please note, in providing the examples RCUK are not endorsing any one particular approach.

(h) How the UK's policies to deliver a green economy relate to actions needed to deliver the global green economy (a theme of the June 2012 Rio Summit)

34. The Natural Environment White Paper which identifies action to grow a green economy is strongly informed by the UK NEA. The need for a UK NEA was identified in the 2005 global Millennium Ecosystem Assessment¹¹⁷ called for by the United Nations Secretary-General Kofi Annan in 2000. UK policy can therefore be seen stem from and to contribute to necessary international level activity.

¹⁰⁶ <http://www.lwec.org.uk/partners>

¹⁰⁷ <http://www.lwec.org.uk/people/advisers>

¹⁰⁸ <http://www.lwec.org.uk/activities/insect-pollinators-initiative>

¹⁰⁹ <http://www.energyresearchpartnership.org.uk/tiki-index.php>

¹¹⁰ <http://www.bbsrc.ac.uk/syntheticbiologydialogue/>

¹¹¹ <http://www.nerc.ac.uk/about/consult/geoengineering.asp>

¹¹² <http://www.bbsrc.ac.uk/business/collaborative-research/industry-clubs/ibti/ibti-apply.aspx>

¹¹³ <http://www.dongtanepsrc.org/>

¹¹⁴ http://www.ifm.eng.cam.ac.uk/sis/japan/japan_sust_report_web.pdf

¹¹⁵ <http://www.epsrc.ac.uk/newsevents/news/2011/Pages/IntApproachestoManufacturingResearch.aspx>

¹¹⁶ <http://www.esrc.ac.uk/my-esrc/grants/RES-066-27-0002/read>

¹¹⁷ <http://www.maweb.org/en/Index.aspx>

35. From a research perspective, RCUK is involved in international partnerships and working relevant to delivering a global green economy. Recent multilateral research funding initiatives organised through the G8 Research Councils are the first time that research organisations across the G8 have joined forces to address major global challenges, relevant to the global green economy. The latest call is directly relevant to a global green economy; it invites proposals on the topic of “Interdisciplinary Program on Material Efficiency—A first step towards sustainable manufacturing”.¹¹⁸ Similarly, the EU Framework Programme, which funds research at an EU level where appropriate, encompasses green economy objectives across most member states.

1 September 2011

Written evidence submitted by Northumbrian Water Group

EXECUTIVE SUMMARY

We support the Government’s ambition to deliver a Green Economy, where business growth drives improving environmental outputs. The Green Economy Roadmap should be a key tool in this process. The Government must help business to make sure-footed and long term decisions by giving a stable and consistent policy and regulatory platform for investment. We believe this is achievable, that the water industry is well placed to lead the way and is already demonstrating success in making the green economy a reality. As a company, we are building sustainability into everything we do and supporting a green economy is part of that. Connecting the solutions to regional economic imbalances to the emerging green economy agenda is vital.

Mrs Heidi Mottram OBE

Heidi Mottram is submitting this memorandum in her capacity as Chief Executive Officer of Northumbrian Water Group (which includes Northumbrian Water and Essex & Suffolk Water companies). The Group serves 2.7 million people in North East England with water and waste water services and 1.8 million people in Essex & Suffolk with water services. Mrs Mottram is also a member of the Government’s Green Economy Council.

MAIN POINTS

1. We support the Government’s ambition to deliver a Green Economy and believe that the water industry is well placed to lead the way. Water and waste water companies, such as Northumbrian Water (NW), have traditionally suffered from high energy costs and carbon intensive processes. In recent years we have made a number of investments for the long term which will see our carbon emissions reduce by up to 35% by 2020. This includes:

- (a) Two advanced anaerobic digestion plants for energy creation from waste. The first in the UK on Teesside is operational and one on Tyneside is being constructed.
- (b) We have a number of hydro electric schemes in the North East, including the largest at Kielder and our newest at Selset in County Durham.
- (c) A number of initiatives to improve energy efficiency, particularly pumps, on our sites and a drive to promote water/energy efficiency to customers.

2. In addition, we will soon use a reed bed solution at Hanningfield Reservoir in Essex to treat sludge arising from the water treatment process. The reed bed will be the largest of its kind in the world.

We are driving sustainability throughout our business and doing these things make good business sense as they lower our energy costs, reduce our carbon usage and create environmental and economically sustainable sources of energy for our Company. It is good for our customers, our business and the environment.

3. The challenge to the Government is to find ways of creating an incentivised and stable investment context that gives the business community the confidence to take the long term commercial decisions that help to “green” our economy. In our experience, these incentives have been subject to change impacting on the returns on which the investment is based.

4. The water industry should be at the vanguard of this agenda as it enjoys a relatively stable supply of raw material and can project forward reasonably accurately on supply and demand. The Government must outline how it intends to assist other sectors and industries in addressing uncertainties and perhaps actively discouraging short-term gains over the structural changes needed to benefit the UK economy and environment in the long term. This is where the Green Economy roadmap has an important role to play.

5. The Green Economy Roadmap has yet to be published but it provides a real opportunity to lay down what is necessary to deliver to a “Green Economy”. It will need to be bold and remove obstacles, but if it can provide some long term and consistent support to business, it will be worthwhile.

6. In order to support the development of the Green Economy, utility companies are ideally placed to work with large corporations with high energy use to help make better use of resources.

¹¹⁸ <http://www.rcuk.ac.uk/media/news/2011news/Pages/050711.aspx>

7. In the North East we work in partnership with the chemical and process industries on Teesside. Using the infrastructure networks available to NW we work to put an economic value on the waste from these large plants, helping them to connect with other parts of their sector who can use the waste from one company as a “raw material” in their manufacturing process.

8. Making this connectivity between large businesses means waste becomes a commodity, it is a far more efficient and environmentally friendly use of materials and it enhances the commercial context for industry on Teesside.

9. This kind of partnership working is a key part of making the Green Economy a reality and perhaps offers a role to Local Enterprise Partnerships to co-ordinate activity where there are clusters of suitable businesses.

10. Putting Small and Medium sized Enterprises (SMEs) at the heart of the Green Economy agenda will be an important dimension of making it a success. Again, utility companies, and particularly water companies can be at the forefront of helping SMEs to reduce their costs and carbon usage.

11. We work with hundreds of SMEs helping them to reduce water usage, and therefore reduce the energy demands on our systems. We have client managers that build relationships with companies and advise them about on-site treatment, better use of water and environmental considerations.

12. We see this as an important part of our role as a water company, helping businesses in our areas to be more environmentally considerate and to reduce their costs with regard to water usage. There should be scope to extend this kind of operation beyond the water industry to other sectors.

13. In considering the Green Economy it is vital to link it with the notion of rebalancing the economy, in terms of addressing regional economic disparities.

14. There is much speculation about the potential solutions to the scarcity of water in the coming decades in some parts of the country. This is something we are acutely aware of, having companies in both the richest and poorest water areas.

15. Transfer of water from one part of the country to another will be hugely expensive and energy intensive, both in construction and operation. In response to this it might make more sense to incentivise water intensive industries to locate in water rich areas. This would make environmental sense in terms of negating the need for expensive new infrastructure and would also go some way to supporting inward investment in water rich parts of the North of England, where there is recognition from Government of the need to build a stronger private sector.

16. We are very grateful to the House of Commons Environmental Audit Select Committee for launching this inquiry examining “The Green Economy” and we hope you will accept this written submission. We would be happy to provide more detailed information if required at a later date.

1 September 2011

Written evidence submitted by the Office of the City Remembrancer City of London Corporation

Introduction

1. The City Corporation welcomes the opportunity to contribute to the Committee’s inquiry.

2. In 2006, the City Corporation, along with BP, Forum for the Future, Gresham College and Z/Yen Consulting, launched The London Accord, a collaborative research project intended to share thinking on climate change mitigation, evaluate opportunities for investment and provide a better understanding of the role of public policy in this area. The project attracted interest from a wide number of leading City organisations who lent their research teams to support the project. The product was a series of papers incorporating both the wider agenda (energy security and environmental sustainability) as well as specific investment research. Since its launch additional papers have been added covering topics as diverse as Genetically Modified Organisms, Food and Corporate Social Responsibility. The Accord continues to grow as more organisations donate research free of charge, and with over 45 research papers available for download.

The nature of barriers preventing the transition to a green economy

3. Recognition that the green economy is merely part of the mainstream economy is a good place to start. As long as the market for environmental goods and services is labelled differently, it will not be considered part of the mainstream and will not receive the support it requires. Fundamentally, the majority of firms operating in a market valued at over £100 billion have their roots in more traditional sectors such as light engineering, waste management, water management, construction or professional services. Many of them are small and medium sized enterprises with much to gain from this new growth area.

The approach required to deliver a green economy, and the aspects of the current economic model that require development, eliminating and/or new approaches found

4. The primary requirement for the development of a new technological area is the development of a policy environment that is transparent in its motivations, long-term in its thinking and clear with regards to desired outcomes. There is also a need to eliminate of perverse incentives, such as subsidies and price signals that encourage unsustainable behaviour, short-term spending limits which discourage investment in sustainable development and inappropriate measures or indicators of success.

What tensions might there be between economic growth and the green economy?

5. This question illustrates the mind set which may be acting as a barrier to growth in this area. In line with para three above, it could be argued that there should be no tension as there is no such thing as the “green economy”, there is just the economy. In 1910 no one spoke about the “internal combustion economy”, yet the changes wrought by the widespread use of fossil fuels caused a seismic shift in society. The growth in the market for “eco-tech” or Environmental Services and Goods (ESG) is directly correlated to global macro-economic and demographic/environmental trends. The need to address these challenges creates economic opportunity.

Would “greening” the economy deliver the outcomes needed?

6. There are three primary drivers pushing the economy towards consideration this model; Energy Costs, Climate Change and the Economic Downturn.

- *The cost of energy* will see an inexorable rise over the next decade due to peak oil and rising demand. The International Energy Agency projects China’s net oil imports alone will jump to 13.1 million barrels per day by 2030, up from 3.5 million barrels per day in 2006. To this end, investment is needed in energy generation and supply infrastructure, innovation is required from businesses in the field of energy efficient products and services and changes are required in public attitudes to energy consumption . The scale of the investment required to meet UK climate change and renewable energy targets is unprecedented, with estimates of investment required reaching £550 billion between now and 2020. In contrast, only £11 billion was invested in Britain’s “dash for gas” during the 1990s, and that was considered transformational at the time.
- *Climate change* action is enshrined in law, through the Climate Change Act. This lays out stringent national targets for reducing greenhouse gas emissions. However it is worth noting that the issues of climate change and energy efficiency have a very strong synergy with the issue of energy security and over- reliance on imported gas and oil. To this end the development of low carbon goods and services has the potential to benefit UK exports as the demand for low carbon grows in overseas markets such as China.
- *The issue of the economic downturn* is more complex. Developing a Low Carbon Economy has become a central feature of rhetoric by politicians across the globe. There is a recognition that as the 21st century progresses the world is on the threshold of a “post industrial revolution” where technological advances will overturn the development paradigms of the 20th century and new types of infrastructure, goods and services will replace heavy industry as drivers of industrial growth.

7. Environmental pressures—climate change, population growth, resource, food and water scarcity, have resulted in a complex set of international, regional and national protocols and laws which have opened up new markets for environmental goods and services. Developed nations are now increasingly active in these new markets, which is likely to determine their economic strengths over the next few decades.

Priorities for action, including those sectors of the economy crucial for creating the conditions for a green economy

8. There are a number of areas where targeted action could help facilitate the green economy including, as a first step, conducting in depth research to identify where the UK is leading and what opportunities there are to support firms. Stringent environmental performance standards on new infrastructure development will encourage growth in the ESG Sector. One example could be the development of a new benchmark based on BREEAM¹¹⁹ for the environmental performance of new buildings and infrastructure.

9. Guidance and standards on procurement should be produced for the public sector Through their procurement strategies, the public sector can, potentially, play a major role in supporting local businesses. The development of a coherent national policy framework which mandates the inclusion of carbon emissions within tender considerations would enhance the opportunities available to the ESG sector. The development of regional Eco-Parks coupled with targeted tax incentives and grants could enable ESG SMEs to benefit from clustering effects. In addition, the skills gap in the ESG sector needs to be addressed. Consultation with employers, consumers and training providers, combined with links to schemes such as National Apprenticeships Skills and training could fill this gap.

¹¹⁹ Building Research Establishment Environmental Assessment Method—an assessment to measure the sustainability of new non-domestic buildings in the UK

10. Currently a number of key sectors within ESG are experiencing very rapid growth. These include

- *Eco-tech and engineering:*
 - Cooling, and water saving technology.
 - Novel materials, photovoltaics, fuel cells and biofuels.
 - Carbon capture and storage.
 - Renewable energy and energy saving technologies.
 - Clean automotive technology.
- *Agribusiness and Genetically Modified Organisms (GMOs)*—The rising cost of energy and scarcity of productive agricultural land has led to a marked increase in global food prices. Technologies which enhance crop yields in the face of changing climate, new “eco-friendly” pesticides and Genetically Modified Organisms have therefore become an increasingly lucrative market. Recent changes in policy within the EU have opened the door to GMOs, and the use of tank bred GMOs to create plastics and pharmaceuticals is a growing field.
- *Energy and Carbon Management*—Rising energy prices, reduced profits and a number of current and forthcoming pieces of legislation (European Building Energy Performance Directive, Carbon Reduction Commitment) have increased the profile of this issue. Organisations with large estates employ energy managers (specialist engineers) to manage operations and energy purchasing, smaller organisations contract in specialist consultancies. There is also interest in energy efficiency and Carbon Avoidance Technologies (CAT).
- *Carbon Finance and Carbon Trading*—this is a major strength for the City of London and set to increase in importance as the ESG sector expands and Australian and Chinese domestic trading systems come are launched.

The role of consumers, businesses, non-government organisations, and international bodies in delivering, and stimulating demand for, a green economy

11. Consumers should be assisted in supporting the low carbon economy through the provision of appropriate consumer information on the performance of products. Businesses should be encouraged to seek out opportunities within this sector. International bodies such as the WTO should agree performance standards for products and services.

Whether any models that more closely resemble a green economy exist elsewhere that the UK should aspire to

12. Korea is leading the world in pursuing a low carbon future, with significant investment across industrial sectors and, despite its consumption of fossil fuels, China is also the world’s largest investor in renewable energy.

How the UK’s policies to deliver a green economy relate to actions needed to deliver the global green economy (a theme of the June 2012 Rio Summit)

13. The UK is a global trading nation and is regarded as a leader in the field of climate change policy. To this end it is essential to ensure that eminence is maintained.

7 September 2011

Written evidence submitted by The Office for National Statistics Measuring National Well-being Programme

SUMMARY

- the Measuring National Well-being Programme, launched in November 2010, aims to develop a range of indicators of the progress of the UK, to complement GDP;
- the vision of the Programme is to develop and publish an “accepted and trusted set of National Statistics which help people to understand and monitor national well-being in the UK”;
- the Programme builds, in particular, on the work of the Commission for the Measurement of Economic Performance and Social Progress (CMEPSP) by focussing on: classical GDP issues, people’s quality of life, the environment and sustainability; and
- this paper provides an overview of the Measuring National Well-being Programme and sets out the work plans for developing the well-being indicator set.

1. Background

1.1 Economic growth has long been considered an important goal of government policy. However, it has been recognised that to get a full picture of how the country is doing we need to look beyond GDP and consider how to measure national well-being and progress more widely.

1.2 The Commission for the Measurement of Economic Performance and Social Progress (CMEPSP), set up by President Sarkozy and led by Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi, aimed to:

- identify the limits of GDP as an indicator of economic performance and social progress;
- consider additional information required for the production of a more relevant picture; and
- discuss how to present this information in the most appropriate way.

1.3 The CMEPSP's 2009 report argued that "what we measure affects what we do; and if our measurements are flawed, decisions may be distorted. Choices between promoting GDP and protecting the environment may be false choices, once environmental degradation is appropriately included in our measurement of economic performance."

1.4 The CMEPSP's report provides a useful starting point for the Measuring National Well-being (MNW) Programme due to its widely accepted status and international recognition. The report discusses:

- the economy—focusing on consumption rather than production within the National Accounts framework, looking at income, expenditure and wealth at the household level and giving more prominence to the analysis of the distribution of income, consumption and wealth;
- quality of life—which includes domains such as health, education, personal activities including work, political voice and governance, social connections and relationships as well as subjective well-being; and
- the environment and sustainability—which includes clear indicators of our proximity to dangerous levels of environmental damage (such as those associated with climate change or the depletion of fishing stocks).

1.5 All three areas are connected and need to be looked at together to provide the fullest picture of national well-being.

2. *The Measuring National Well-being Programme*

2.1 The aim of the MNW Programme is to develop and publish an accepted and trusted set of National Statistics which help people to understand and monitor national well-being in the UK.

2.2 Well-being is a multi-dimensional concept and in order to understand how best to measure it a shared understanding of what it means needs to be developed. Between November 2010 and April 2011 ONS held a national debate in order to engage with experts on well-being, who would provide an insight into what to measure and how to measure it, and the general public, who not only know best about what matters to them but would also be affected by any policies that would result from this work.

2.3 ONS held 175 events involving 7,249 people. In addition, there was an online debate which achieved 26,755 responses bringing the total number of participants to 34,004. Debate responses have been used in developing a set of domains/indicators.

2.4 The MNW Programme is split into a number of phases:

- phase one—national debate and development of subjective well-being questions—Nov 2010 to April 2011;
- phase two—collection, analysis and publication of subjective well-being questions—on-going from April 2011, first annual publication 2012;
- phase three—development of indicative national well-being measures—April 2011 to March 2012; and
- phase four—regular publication, analysis and refinement of headline national well-being measures—April 2012 to March 2015.

2.5 The Programme is split into a number of projects and workstreams, the details of which are set out below:

3. *Classical GDP issues*

3.1 Work in this area builds on the following recommendations of the CMEPSP report:

- when evaluating material well-being, look at income and consumption rather than production (recommendation 1);
- emphasise the household perspective (recommendation 2);
- consider income and consumption jointly with wealth (recommendation 3);
- give more prominence to the distribution of income, consumption and wealth (recommendation 4); and
- broaden income measures to non-market activities (recommendation 5).

3.2 ONS has already published a number of reports in this area. Chiripanura (2010) presented analysis of the well-being implications of alternative National Accounts aggregates (other than GDP) and looked at the differences between mean and median income arguing that median analysis gives a better indication of the

level of economic well-being of the “typical” household as the income distribution is positively skewed (Chiripanhura, 2011). ONS has also developed estimates of the UK’s stock of human capital¹²⁰ by applying a lifetime labour income methodology to data from the UK Labour Force Survey (Jones and Chiripanhura, 2010). ONS (2011a) set out a review of ONS’s work on social capital and the availability of the measures of social capital.¹²¹

4. *Quality of life*

4.1 The term “quality of life” can be split into a number of domains. Recommendation 7 of the CMEPSP report stated that “quality of life also depends on people’s objective conditions and capabilities. Steps should be taken to improve measures of people’s health, education, personal activities, political voice, social connections, environmental conditions and insecurity.”

4.2 The project aims to establish a clear framework for reporting on national wellbeing, consistent with the National Statistician’s report on the National Debate (ONS, 2011b) and international guidance, with appropriate domains and dimensions and establish a limited number of key indicators of national well-being, demonstrating value to users, statistical validity and relevance, and agreeing appropriate data sources from inside and outside ONS. A consultation paper was published in October 2011¹²² with an initial set of well-being domains and indicators.

4.3 The CMEPSP report also recommended that “statistical offices should incorporate questions to capture people’s life evaluations, hedonic experiences and priorities in their own survey” (recommendation 6).

4.4 In recognition of the lack of official statistics on subjective well-being in the UK ONS introduced four experimental monitoring questions to the Integrated Household Survey (INS) in April 2011. This will enable the production of annual estimates of subjective wellbeing, not only for the UK as a whole but also for smaller geographies and sub-groups of the population. The estimates generated will be experimental in the first instance, further testing and development is planned. The first annual experimental statistics will be available in summer 2012.

4.5 The questions included in the INS are:

- Overall, how satisfied are you with your life nowadays? (*on a scale of 0–10, where 0 is not at all satisfied and 10 is completely satisfied*).
- Overall, how happy did you feel yesterday? (*on a scale of 0–10, where 0 is not at all satisfied and 10 is completely satisfied*).
- Overall, how anxious did you feel yesterday? (*on a scale of 0–10, where 0 is not at all anxious and 10 is completely anxious*).
- Overall, to what extent do you feel the things you do in your life are worthwhile? (*on a scale of 0–10, where 0 is not at all worthwhile and 10 is completely worthwhile*).

4.6 The project aims to:

- produce high quality National Statistics estimates of subjective well-being;
- influence the international agenda on the development of subjective measures by working with stakeholders on the OECD handbook and the well-being module for EU-SILC; and
- encourage harmonisation of questions on other ONS/GSS surveys so that they can be used in policy formulation and appraisal as well as overall monitoring of national well-being in the UK.

4.7 Further CMEPSP recommendations in this area include:

- quality-of-life indicators in all the dimensions covered should assess inequalities in a comprehensive way (recommendation 8);
- surveys should be designed to assess the links between various quality of life domains for each person, and this information should be used when designing policies in various fields (recommendation 9); and
- statistical offices should provide the information needed to aggregate across quality-of-life dimensions, allowing the construction of different indexes (recommendation 10)

5. *The environment and sustainability*

5.1 The CMEPSP report argued that “both current well-being and sustainability need to be measured. Sustainability poses the challenge of determining whether we can hope to see the current level of well-being at least maintained for future periods or future generations, or whether the most likely scenario is that it will decline...The assessment of sustainability is complementary to the question of current well-being or economic

¹²⁰ OECD defines human capital as “the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.” This is a broad definition, encompassing a range of attributes (such as knowledge, skills, competencies and health conditions) of individuals.

¹²¹ OECD defines social capital as “networks together with shared norms, values and understandings that facilitate co-operation within or among groups”.

¹²² www.ons.gov.uk/ons/about-ons/consultations/open-consultationsinmeasuring-national-well-being/index.html

performance, and must be examined separately. Confusion may arise when one tries to combine current well-being and sustainability into a single indicator. To take an analogy, when driving a car, a meter that added up in one single number the current speed of the vehicle and the remaining level of gasoline would not be of any help to the driver. Both pieces of information are critical and need to be displayed in distinct, clearly visible areas of the dashboard.”

5.2 The CMEPSP recommendations in this area were that:

- sustainability assessment requires a well-identified dashboard of indicators. The distinctive feature of the components of this dashboard should be that they are interpretable as variations of some underlying “stocks” (recommendation 11).
- a monetary index of sustainability has its place in such a dashboard but, under the current state of the art, it should remain essentially focused on economic aspects of sustainability (recommendation 12).
- the environmental aspects of sustainability deserve a separate follow-up based on a well-chosen set of physical indicators. In particular there is a need for a clear indicator of our proximity to dangerous levels of environmental damage (such as associated with climate change or the depletion of fishing stocks) (recommendation 13).

5.3 The CMEPSP report also listed a number of potential measures including: the Environmental Sustainability Index (ESI), the Environmental Performance Index (EPI), the System of Environmental-Economic Accounting (SEEA), Adjusted Net Savings (ANS), the Ecological Footprint (EF) or Carbon Footprint (CF).

5.4 Both classical GDP issues and environmental sustainability both have a strong connection to the National Accounts framework and the ‘stocks’ approach to measuring sustainability outlined in the CMEPSP report and promoted by the Social Impacts Task Force in the UK. Sustainability does not refer only to the environment and natural capital but also to social, human and economic capital.

5.5 Reference has already been made to the work on social, human and economic capital earlier in this report. Focusing on environmental sustainability, ONS is taking forward a full programme of work to follow up on the CMEPSP recommendations.

5.6 Before detailing the work programme, it is important to note that ONS recognises the synergy with the commitments of the Natural Environment White Paper (Defra, 2011) and the CMEPSP recommendations as regards a “stocks” approach to sustainability and the valuation of Natural Capital. The National Statistician has asked ONS and Defra statisticians to work together to deliver on the common goals.

5.7 The Natural Environment White Paper made the following commitment, reflecting targets for the period 2011–2010 set out by the parties to the Convention for Biological Diversity in Nagoya:

“We will put natural capital at the heart of Government accounting. We will work with the Office for National Statistics to fully include natural capital in the UK Environmental Accounts, with early changes by 2013. In 2012 we will publish a roadmap for further improvements up to 2020.”

Natural Environment White Paper (NEWP), June 2011

5.8 The NEWP builds on this to say:

“We will put natural capital at the centre of economic thinking and at the heart of how we measure economic progress nationally”.

“...we must account nationally for our natural capital. Economic gains and losses resulting from natural capital ought to be properly recorded. This includes changes to the value of physical environmental assets, such as fish stocks or forests, and also to the value of natural services provided by a healthy ecosystem, such as insect-borne pollination of crops. The Government will take action to capture the value of natural capital on the nation’s balance sheet. In doing so, we will end the situation where gains and losses in the value of natural capital go unrecorded and unnoticed.”

“Over time we will move from measuring the value of physical stocks to systematically valuing the services they provide. Further research will be undertaken to do this based on the results of the National Ecosystem Assessment.”

“We will also strengthen international efforts to value natural capital, including it in the agreed international standards for producing national accounts. We will contribute to the update of the UN’s System of Integrated Environmental and Economic Accounting. We will also support the World Bank’s Global Partnership for Wealth Accounting and the Valuation of Ecosystem Services (WAVES), which will look at the feasibility of including changes in the value of ecosystem services in measures of economic performance”.

5.9 Taking into account the CMEPSP recommendations and the NEWP commitments, the Measuring National Well-being programme aim to deliver the following:

- continuous development of the annual UK Environmental Accounts¹²³ in line with European Regulation on Environmental Economic Accounting¹²⁴ and international statistical standards;
- implementation of the NEWP commitment for the Office for National Statistics to fully include natural capital in the UK Environmental Accounts, with early changes by 2013 and publishing a roadmap in 2012 for further improvements up to 2020. The timing of Rio+20 is understood and efforts will be made to publish early work on the Roadmap but resource limitations and the need to consult widely mean a final Roadmap will be delivered later in the year. In support of this work, ONS is about to issue invitations for an expert and user engagement group which will primarily be managed on-line, supplemented by small meetings and seminars;
- full contribution to the development of the Central Framework of the UN System of Environmental Economic Accounting (SEEA)¹²⁵ which it is anticipated will be adopted as an international standard to sit alongside the System of National Accounts in February 2012. ONS and Defra have contributed to expert groups on the SEEA and SEEA-Energy;
- full contribution to the development of SEEA experimental ecosystem accounts. ONS and Defra will jointly host an international expert meeting convened by the UN, World Bank and European Environment Agency in December 2011 to examine the issues;
- delivery of a feasibility study to measure the Environmental Goods and Services Sector in line with European and proposed SEEA methodology. Following consultation with potential users, ONS published an article in December 2010 outlining how these statistics might inform policy, in particular contributing to the evidence base for the green economy (Livesey, 2010); and
- In September 2011, OECD approached Heads of Statistical Offices to support work at the national level to apply the OECD's Towards Green Growth: Monitoring Progress Framework in the lead up to Rio+20 (OECD, 2011). ONS, in liaison with government statisticians from Defra, DECC and BIS will need to assess what can be achieved with the resources available.

6. International initiatives

6.1 There are a number of on-going international initiatives to measure well-being or progress which ONS is engaged with.

6.2 The Eurostat/INSEE Sponsorship Group was set up in 2010 to study the feasibility of the CMEPSP recommendations and is due to report to the European Statistical System Committee (ESSC) in November.

6.3 The UK is a partner in the 'European Framework for Measuring Progress (e-frame)' Project the objectives of which are to:

- undertake a stocktaking of available results and of ongoing research activities on progress measurement;
- foster a European debate over the issue;
- define guidelines for the use of existing indicators;
- propose a coherent way of "delivering" information including advanced ICT tools;
- identify new research topics for future investigation; and
- harmonize NSIs' initiatives in measurement of progress measurement area.

6.4 The e-frame project involves a 19 partners-consortium, formed by major European National Statistical Institutes, universities, research centres, civil society and OECD.

6.5 The OECD's Global Project 'Measuring the Progress of Societies' exists to foster the development of key economic, social and environmental indicators to provide a comprehensive picture of how the well-being of a society is evolving. It also seeks to encourage the use of indicators to inform and promote evidence-based decision-making, within and across the public, private and citizen sectors.

REFERENCES

Chiripanhura, B (2010). Measures of economic activity and their implications for societal well-being. Available at www.ons.gov.uk/ons/rel/elmr/economic-and-labour-market-review/no-7-july-2010/index.html

Chiripanhura, B (2011). Median and mean income analyses: their implications for material living standards and national well-being. Available at www.ons.gov.uk/ons/rel/elmr/economic-and-labour-market-review/no-2-february-2011/economic-labour-market-review.pdf

CMEPSP (2009). Report by the Commission on the Measurement of Economic Performance and Social Progress. Available at www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf

¹²³ www.ons.gov.uk/ons/taxonomy/index.html?nsc1=Environmental+Accounts

¹²⁴ [http://eco.eurostatec.europa.eu/portal/page/oortal/environmental accounts/introduction](http://eco.eurostatec.europa.eu/portal/page/oortal/environmental%20accounts/introduction)

¹²⁵ <http://unstats.un.org/unsd/envaccounting/seea.asp>

Defra (2011). Natural Environment White Paper. Available at www.defra.gov.uk/environment/natural/whitepaper/

Jones, R, and Chiripanhura, B (2010). Measuring the UK's human capital stock. Available at www.ons.gov.uk/ons/rel/elmr/economic-and-labour-market-review/no—11—november-2010/measuring-the-uk-s-human-capital-stock.pdf

Livesey, D (2010). Measuring the Environmental Goods and Services Sector. Available at www.ons.gov.uk/ons/rel/elmr/economic-and-labour-market-review/no—12—december-2010/measuring-the-environmental-goods-and-services-sector.pdf

OECD (2011). Towards Green Growth: Monitoring Progress Framework. Available at www.oecd-ilibrary.org/environment/towards-green-growth-monitoring-progress/towards-an-oecd-set-of-green-growth-indicators_9789264111356-6-en

ONS (2011a). Social Capital Indicators Review. Available at www.ons.gov.uk/ons/rel/environmental/social-capital-indicators/review-paper/social-capital-indicators.html#tab-abstract

ONS (2011b). National Statistician's report on the National Debate. Available at www.ons.gov.uk/ons/guide-method/user-guidance/well-being/wellbeing-knowledge-bank/understanding-wellbeing/measuring-what-matters—national-statistician-s-reflections-on-the-national-debate-on-measuring-national-well-being.pdf

21 November 2011

Written evidence submitted by UK Sustainable Bio-Diesel Alliance (UKSBA)

THE DUTY DIFFERENTIAL AND THE LOW CARBON ECONOMY

The UKSBA believes the duty differential is the most simple, stable and effective incentive for sustainable biodiesel producers in the UK and is calling on the Government to urgently extend the duty differential for Used Cooking Oil beyond March 2012, in order to allow time for the industry to assess the effectiveness of the revised Renewable Transport Fuel Obligation in providing support for the industry.

Modelling and analysis clearly demonstrates that the Government's double certificate proposals for waste derived bioliquids under the RTFO will not be adequate to support the industry in place of the differential, given the extreme volatility of certificate prices which deters investors; the increased supply of certificates and reduced demand; and the impact on cash flow for producers. The industry are considering a range of solutions to smooth the transition to double certificates, however, these conversations need to happen as a matter of urgency if the Government is to avoid losing a successful industry, upon which it has been able to deliver over and above its greenhouse gas emissions savings target.

1. THE SUSTAINABLE BIODIESEL INDUSTRY

- There are around 250 million litres of used cooking oil (UCO) produced in the UK every year and a high proportion of this oil is disposed of down the drain or sent to landfill. Whilst there is no concrete data, industry estimates 150–200 million litres of that is from the commercial sector (food factories, restaurants etc), whilst 50–75 million litres of waste oil is produced by domestic households. The vast majority of the UCO used in biofuel production is collected from commercial sources with less than 5% of the domestic UCO available currently collected.
- A growing number of local authorities are working with local producers and private waste companies in setting up waste oil collection facilities in household waste recycling centres across the UK. These include, Cheshire East and Cheshire West; Merseyside; Greater London, Greater Manchester; West Midlands; Warrington; Norfolk; Suffolk; Hartlepool; Vale of Glamorgan; South Gloucestershire; Bridgend; Southampton and many more.
- Water companies in the UK currently spend £15 million per annum clearing used cooking oil from their sewers and 75% of the 200,000 drain clearance call-outs every year involve used cooking oil.
- Biodiesel produced from used cooking oil (UCO) is one of the most sustainable fuels available for transport and heat and power systems, delivering an 83% greenhouse gas saving versus fossil fuels.
- As UCO is a waste product it avoids a host of contentious and negative effects traditionally associated with biofuels, such as Indirect Land Use Change and the displacement of agricultural land for the growth of food crops.
- The majority of UCO collectors and biodiesel producers are based in traditionally industrial areas of the UK. For example the larger producers are based in Motherwell, Scotland (Argent); Teeside (Harvest); Immingham (Greenery); the North West of England (Agri Energy and Convert2Green) and London (Uptown Oil). Smaller producers are based in Cardiff, Armagh, Bristol, Mansfield, Southampton, High Wycombe, Chorley, Nottingham, Pembrokeshire and many more towns across the UK.

- There are some *30 registered medium and large UCO collectors and biodiesel producers in the UK* using waste products such as UCO to produce fully sustainable biodiesel for use in transport and in heat and power generation, *employing approximately 1,000–1,200 people*.
- The industry began in 2006–07 and has experienced *growth of 20–30% per annum*, although there have been many business failures. More and more vehicle fleets are now using high-blends of biodiesel, but the process of satisfying vehicle manufacturers, fleet managers and tender processes can take *two to three years*. For example, the Environment Agency runs its fleet on B25-B50. Initially, they ran a trial for one year from one depot to ensure all vehicle types and weather conditions were covered. The ensuing tender process to find a suitable supplier fulfilling all of their criteria took a further year, followed by a roll out to all sites including tank purchases, which took a further year. In addition, whilst UCO biodiesel has the same calorific value as regular diesel, requires no technological adjustments to fleet vehicles, and does not result in any vehicle warranty issues, many fleet managers continue to remain reluctant to switch to biodiesel as a result of perceived costs involved in making the transfer.
- *Key to further growth in this nascent industry is policy certainty* and stability for investors, producers and users, to ensure the necessary long term commitment to growth.
- *UCO biodiesel supplied in to high blend fleets is currently priced at the same level as mineral diesel* due to the support provided by the differential. This is vital for high-blend users (up to B100 blends), as they will only use the fuel if it remains cost-neutral to them. In the current economic climate and working on a 2% margin, customers cannot afford to support green fuels otherwise.
- UCO as a feedstock tends to track the price of virgin cooking oil and the crude oil price, whilst biodiesel production involves a significantly high fixed cost, *more expensive than the production of mineral fuels*. UCO biodiesel producers therefore work within a tight margin.

2. THE DUTY DIFFERENTIAL—STIMULATING THE GREEN ECONOMY

- The current 20p duty differential for biodiesel produced from Used Cooking Oil (UCO) has been a tremendous success in providing stability for the sector, promoting investment, training, employment and technical innovation in a vital part of the renewable energy industry.
- As a result of the duty differential *approximately 99 million litres UK UCO of was collected and turned into biodiesel last year*. With approximately 151 million litres still uncollected, the significant potential for growth of this sector is evident.
- Latest reports from the Renewable Fuels Agency (RTFO Quarterly report 12: provisional data April 2010 to April 2011) demonstrate that in just over a year, as a result of the stability provided by the duty differential, UCO has become the primary fuel source for biofuel used in UK transport, delivering 50% of the biodiesel and 30% of the volume of biofuel used on our roads. Its widespread use has also *helped the Government exceed its greenhouse gas savings target in road transport by 8%*.
- Biodiesel producers create local employment opportunities and are developing the green skills vital to the UK's low carbon economy, including green chemistry, research and development and specialist production skills. As customer demand for the retrieval of other waste streams increases, these skills are being adapted to drive future renewable energy development from waste, such as anaerobic digestion from food waste. In addition, producers are working with local authorities to set up waste oil collection and recycling centres for domestic households.
- Whilst the Treasury estimated the “cost” of the 20p fuel duty differential at £10 million per annum in the March 2010 Budget, given the significant increase in the amount of UCO biodiesel used in road transport seen in the last year as a result of the success of the differential, this is likely to be closer to £80 million at present capacity, with £19 million as the “cost” in relation to UK UCO biofuels only. However, should the differential be lost, industry estimates suggest that as a result of enforced business closures, *some £36 million in VAT, corporate and personal tax revenues could be lost each year* if the differential was to be removed. Over the next five years, based on the current growth trend, the expected tax revenues lost to the Government could increase three-fold, meaning *£108 million of taxable revenue would be lost each year to the Treasury*.

3. THE IMPACT OF THE REMOVAL OF THE DUTY DIFFERENTIAL

- In the 2011 Budget the Government announced that the differential is to be abolished from April 2012. The industry is deeply concerned about the potentially catastrophic impact this will have on the sustainable biodiesel industry. The removal of the tax differential means UCO biodiesel will become prohibitively expensive, and high blend users such as McDonalds, 3663, Bidvest Logistics, Stagecoach and Biffa Verdant will have no choice but to turn back to fossil fuels.

- With the removal of the differential, the industry estimates that some 3,000 *direct and indirect jobs could be lost over a five year period*. UKSBA members have built up considerable levels of green skills and expertise, the loss of which could seriously impede the development of the renewable energy sector in the UK, and consequently the growth of the green economy which will be worth an estimated £4 trillion by 2015. As the *Environmental Audit Committee's* recent report on Environmental Taxes and Budget 2011 stated, the Government's decision to remove the incentive is a "*strategically retrograde act*".
- A recent report by the NNFCC report, *Advanced Biofuels: The Potential for a UK Industry*, commissioned by the Departments for Transport and Energy and Climate Change warns that the UK is likely to miss its renewable fuel for transport targets without significant investment into second generation biofuels (£895 million) including those made from waste products, which it estimates could save the UK 3.2 million tonnes of CO₂ each year while creating 6,000 full-time construction jobs and over 2,000 permanent jobs in the supply and operation of the plants. However, current instability of demand as a result of the removal of the duty differential is preventing this much needed investment, hindering further development of new technologies and the growth of the UK low carbon economy.

CASE STUDY: GERMANY—DETRIMENTAL IMPACT OF THE REMOVAL OF BIODIESEL TAX INCENTIVES

Biodiesel has been produced for the German market since 1999 and Germany has been one of the EU's top producer of biofuels. In 2006, Germany was the largest European biofuel consumer, with a consumption estimate of 2.8 million tons of biodiesel, which was largely a result of the excise tax exemptions provided for biofuels. Since 2007, firms which market petrol and diesel in Germany are obliged to market a legally prescribed minimum percentage of such fuels in the form of biofuel. In 2008 the quota was set at 4.4% for biodiesel and 2% for petrol. However, following concerns at the European level about the environmental sustainability of biofuels, the German Government started to roll back some incentives.

On 1 January 2008 *Germany abolished the full tax exemption for liquid biofuels* and replaced it with a blending quota, thus instantly reducing the domestic market, and according to the Federation of Germany Biodiesel Manufacturers, the German biodiesel industry is currently running at less than 60% of production capacity.

The move led to a significant decline of the share of the German biofuels industry in the transportation sector from 7.1% in 2007 to 5.9% in 2008. According to the 2009–10 report on the German biodiesel industry published by UFOP, biofuels consumption has fallen from a high of 4.00 million tonnes in 2007 before the elimination of the biodiesel tax credit, to 2.605 million tonnes in 2010. Overall, the use of B100 (100% biodiesel blend) has also dropped more than 80% from its 2007 high, negating the progress in emissions savings that had previously been achieved. Recent years have seen the closure of several German biodiesel plants following the Government's decision to raise taxes on green fuels and scale back investment. Germany's biofuels industry has also said that the market is suffering from great uncertainty as a result of the mixed signals being sent by the Government.

4. THE INADEQUACY OF THE RTFO

- The Government's present position is that biodiesel made from waste will receive double certificates under the Renewable Transport Fuels Obligation (RTFO) which will act as a replacement for the differential. However, there are a number of reasons why the double certificates will fail to support the industry:
 - Certificate values are highly volatile and are affected by many global factors, outside of the Government's control—for example, the price of biodiesel and bioethanol in the market place. During 2011 a large import of subsidised US bioethanol meant that, for a period of time, certificates had no value in the market.
 - Government assertions that certificates are trading between 20p and 24p are based on prices from auction houses that only deal with a very small percentage of certificate trading. The majority of trading is carried out by producers direct through brokers and *many millions of certificates were traded in year four (2011–12) for far less than 20p*. The only known firm bid for next year's certificates (Year Five) stands at 13p per certificate—a level of deficit against the present 20p tax differential which will have very serious repercussions.
 - The *large fluctuations in certificate values* under the RTFO scheme mean that the mechanism will not be an adequate substitute for the targeted, stable, and cost effective duty differential. .
 - Unlike ROCs under the Renewables Obligation, there is *no minimum value* for the certificates and it is not possible to fix the certificate price in a narrow band of value.

- Double certificates will be offered to *all* waste derived biofuel, despite the 5% obligation, leading to an *increased supply* of certificates (minimum 30% increase as UCO contributes 30% of biofuel with one certificate, without other wastes accounted for), a cap in demand and a *reduced certificate price*.
- The proposed certificate validation system will lead to cash flow delays (a predicted £400k cash flow reduction on a one million litre per month production base) and increased cost of administration for SME's.
- Whilst the more stringent sustainability criteria under the revised RTFO could be seen to be of benefit to UCO biodiesel given the significant GHG savings it can achieve, the industry does not believe that the double certificate proposals will help to support the domestic UCO biodiesel industry. The *RTFO fails to provide support for UK producers* as obligated suppliers are free to meet their biofuel targets from a range of sources, including imported Argentinean soy which delivers much lower GHG savings (36%) in comparison to UCO.
- RTFO certificates only apply to biodiesel sold to obligated suppliers, such as BP and Shell, and therefore will not help to support individual consumers and HGV fleets that use high blends of biodiesel. In summary, the RTFO mechanism was designed to deliver a certain percentage of renewable fuel in to the transport sector, and *was not intended to support the production of biodiesel in the UK or encourage the use of high blend biodiesel, and is therefore an inappropriate substitute for the targeted differential*.
- The previous Government understood that removing the stable mechanism of the tax differential before the RTFO had been fully tested as a means of support going forward, would pose a serious risk to this developing industry. The tax differential was originally extended to provide a safety net during the implementation phase of the RTFO, anticipating at least a one year overlap between the two systems.
- Under EU law, the Renewable Energy Directive was expected to be incorporated in UK legislation through the revised RTFO by the *5 December 2010*. However, due to *delays in the RTFO consultation process, there will now only be a matter of a few months between the implementation of the RTFO on 15 December 2011 and the removal of the tax differential on 31 March 2012*, leaving little time for producers to adapt their business models and assess the effectiveness of the revised RTFO, gambling the very future of the sustainable biodiesel industry on the immediate success of the revised scheme.
- Further EU reviews of the Renewable Energy Directive will mean further revision of the RTFO up to 2014 and continuing uncertainty. This makes long-term planning in the industry difficult and creates *a lack of market certainty that discourages the capital investment and skills training necessary for renewable energy projects to get off the ground*.
- Without the stability offered by the differential or a minimum certificate price, the prospects for the biodiesel sector—a key contributor to the low carbon economy—will be extremely challenging. The net result is that the stable, efficient mechanism of the duty differential will be replaced with a highly uncertain and volatile system which will act as a barrier to the very industry it is meant to support.

CASE STUDY: FRANCE—TAX EXEMPTION FOR BIODIESEL CONSUMPTION

France is one of the leading EU Member States in terms of the production and use of biofuels in transport. The Government's energy strategy has focused on improving environmental assessments and developing second-generation biofuels, such as UCO biodiesel, which they hope will enable a more diverse raw material choice to be developed and competition for production with foodstuffs restricted.

France has been using tax reductions for bio-fuels since 1998 as well as capital grants for about 20 years. The French Government unveiled ambitious measures to encourage the production of biofuels and accelerate their development in 2004. Consequently, the target to include 5.75% of biofuels by 2010 was brought forward to 2007, and the 2010 target increased to 7%. The Finance Law 2005 introduced a general tax on polluting activities for biofuels, aimed at encouraging oil companies and distributors to incorporate a certain percentage of biofuels into the fuels made available for consumption in France. By way of an incentive, *the Government has maintained a system of partial tax-exemption for internal consumption tax (TIC) which allows for the offsetting of the additional cost of manufacturing biofuels in comparison with fossil fuels.* Other incentives include a tax exemption for ethanol incorporated directly into petrol, tax reductions on company cars that run on biofuels, and a 50% exemption on the additional tax for registration certificates.

As a result of these incentives, *France continues to be the second largest European producer and consumer of biofuels in transport.* Recent figures demonstrate it produced 2.5 million tonnes of biodiesel this year in comparison to only 0.4 million tonnes in the UK.

5. CONCLUSION

The UK Sustainable Biodiesel Alliance (UKSBA) is increasingly concerned about the Government's decision to the remove differential for biodiesel produced from used cooking oil (UCO) in March 2012. We are now just months away from losing a burgeoning industry that is uniquely well placed to help the UK deliver

significant carbon reduction savings required of it from transport emissions by 2020 and to drive economic growth through the creation of green collar skills for the low carbon economy.

Industry modelling suggests there may be a *range of solutions to smooth the transition to double certificates*, including a minimum certificate value, a reduced duty differential or a split of the biodiesel and bioethanol obligations under the RTFO. The Government might consider underwriting the 20p or the differential could be applied only to UK UCO biodiesel at much lower cost to the Treasury. However, as responsibility for waste derived biodiesel falls under the remit of four different departments—the Treasury, Defra, the Department for Transport and the Department for Energy and Climate Change—there is a lack of policy coordination and joined up thinking on support for the sustainable biodiesel sector, preventing meaningful discussions about the potential policy solutions from taking place with industry representatives. The UKSBA believe that *these conversations need to happen as a matter of urgency if the Government is to avoid losing a successful industry, predominantly made up of SMEs, that is uniquely well placed to help the UK deliver significant carbon reduction savings required of it from transport emissions by 2020.*

6 December 2011

Written evidence submitted by Combined Heat and Power Association

EXECUTIVE SUMMARY

Combined heat and power (CHP) contributes to the green economy and has the potential to facilitate the continued decarbonisation of energy use. The UK's industrial competitiveness can, and must, be maintained whilst addressing emissions and wider sustainability concerns.

CHP simultaneously generates heat and power (electricity) in a single highly efficient process. CHP is fuel-neutral with a range of plant designs that utilise renewable or fossil input fuel. Whatever the feedstock, *CHP represents the optimal use of that fuel.* With significant deployment across industry, CHP is already providing cost effective carbon abatement and supports the industrial competitiveness and employment for companies operating in a global marketplace.

- The CHP industry *employs 116,000 people*, which could more than double as installed capacity reaches its full potential of 14 GW.
- The six GW CHP capacity installed to date *saves 13 million tonnes of CO₂ per annum.*

As an energy efficiency technology CHP simultaneously improves industrial competitiveness and reduces emissions. The UK Government has recognised the value of CHP. HMRC stated:

“CHP provides one of the most cost-effective approaches for reducing CO₂ emissions and plays a crucial role in the UK Climate Change Programme.” HMRC Notice CCL1/2 July 2010

Until recently support for CHP through Climate Change Levy (CCL) exemption has enabled businesses to invest in, and operate, CHP plants. Last year, however, the Government announced the removal the CCL exemption for new and existing CHP, previously available to 2023, as part of the Carbon Price Support (CPS) scheme. *The removal of support for CHP will lead some plant to reduce operations or shutdown altogether. This will threaten the competitiveness of industry, increase UK emissions and put jobs at risk.* The removal of the CHP Levy Exemption Certificate (LEC) alone will cost industry £1 billion.

To ensure that the green economy prospers across all sectors, it is vital that the Government reinstates accessible, enduring, bankable support for CHP to ensure it is the natural choice over separate production of heat and power. The Government's proposals for a relief under the CPS are welcome but cannot achieve existing levels of support for CHP. This barrier to decarbonising industrial heat and electricity through CHP, however, can be removed if the Government acts now to address the following:

- Ensure there is sufficient relief for CHP from CPS, based on the proportion of fuel that is used in CHP for heat generation.
- Retain CHP LECs until 2017.
- Ensure that long term support replace the value of CHP LECs when these come to an end.

CHP offers a technology for energy users to participate in the decarbonisation agenda whilst retaining competitiveness and growing efficiency. With the right policy framework Government could open up a new front to tackle climate change whilst driving industrial growth.

ENVIRONMENTAL AUDIT COMMITTEE: GREEN ECONOMY INQUIRY

The Environmental Audit Committee is currently examining the concept of a green economy in the UK, what it should look like, and how it will help deliver sustainable development. Further to this, the Committee also wishes to examine the barriers preventing the transition to a green economy and the Government's role in tackling these and creating the conditions necessary for a green economy to thrive.

CHP AND THE GREEN ECONOMY

The Green Economy Environmental Audit Committee inquiry seeks to understand exactly how to bring together the two concepts encapsulated in the term “green economy”. It is essential that the greening of the UK economy must not be at the expense of industrial competitiveness, but neither should unabated emissions, a market failure, be allowed to continue.

Combined heat and power (CHP), can be used in many applications across the economy, from microCHP replacing domestic boilers to large-scale industrial CHP. CHP simultaneously generates heat and power (electricity) in a single efficient process. This contrasts with conventional ways of generating electricity where up to two thirds of the overall energy consumed is lost. CHP is fuel-neutral with plant designed for a range of fossil and renewable fuels, but whatever the input fuel, *CHP represents the optimal use of that primary fuel*. As CHP is essentially an efficiency gain it provides cost effective carbon abatement whilst increasing industrial efficiency.

This paper focuses on industrial CHP applications, as currently they account for the majority of installations and are under significant threat from current policy reform which, if not addressed, will result in significant impact on UK businesses.

CHP's role in greening the economy

The CHPA wholly supports the concept of a green economy that addresses not just carbon emissions reductions but wider sustainability and resource concerns. It is important, however, not to consider the “green economy” as separate to the wider economy. Rather, to meet the UK’s challenging carbon targets,¹²⁶ we must consider how to green the economy as a whole.

Industrial demand accounted for 27% (104 TWh) of the UK’s total (384 TWh) electricity demand in 2010,¹²⁷ and 30% (272 TWh) of the UK’s total (907 TWh) heat demand¹²⁸ in 2005. Decarbonising these businesses can make a considerable contribution to greening our economy.

Whilst CHP is deployed in commercial and domestic applications in the UK, the vast majority (89%),¹²⁹ of the six GWe installed to date¹³⁰ is in this industrial sector. Analysis in 2008, however, estimated that there is an additional eight GWe industrial CHP capacity¹³¹ not yet deployed in the UK.

CHP gets to the heart of the green challenge, tackling emissions from both heat and electricity generation. The carbon saved by CHP installations is calculated against a baseline of electricity generated by alternative means; fossil fuels. The UK Digest of United Kingdom Energy Statistics (DUKES) calculates the carbon saved by CHP annually and in 2010 estimated that the 6 GWe CHP capacity installed to date *saves up to 13 million tonnes of CO₂ per annum*.¹³²

<i>Carbon saved by CHP in 2010</i>	<i>tCO₂/MWe</i>	<i>Total CO₂ saved from CHP</i>
Carbon savings against all fossil fuels	2.17	12.98 MtCO ₂

CHP—Keeping industry competitive

In addition to playing a vital role in greening industry, *CHP also helps industry remain competitive*. As the most efficient use of primary fuel CHP reduces energy costs whilst reducing emissions. Combined, these cost reductions ensure UK products remain competitive in an international marketplace and that industry remains in the UK.

CHP—A green industry

The CHP industry itself is also one of the UK’s “green industries” contributing to the economy and providing jobs. The CHPA commissioned a report in 2009,¹³³ which, based on primary data from CHPA members, calculated the number of employees employed directly by the sector plus those in the supply chain. The report calculated that a total of *116,000 people were employed by the CHP industry* across the six GWe of installed CHP capacity. This could more than double as installed capacity reaches its full potential of 14 GWe.

¹²⁶ 80% carbon reduction on 1990 levels by 2050

¹²⁷ Industrial consumption of electricity in 2010, Digest of United Kingdom Energy Statistics (DUKES) 2011 p119 /120 <http://www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx>

¹²⁸ 2005 UK heat demand, BERR Heat call for Evidence 2008 p12

¹²⁹ DUKES 2011 p164

¹³⁰ DUKES 2011 p159

¹³¹ Poyry Energy Consulting, Potential for CCGT CHP generation at industrial sites in the UK 2008, p1

¹³² DUKES 2011 p167

¹³³ CHP Employment Survey, Delta Energy & Environment March 2009 p3 & 4

CHP AND THE POLICY FRAMEWORK

Government endorsement for CHP

HM Revenue and Customs (HMRC) made explicit the UK Government's endorsement of CHP recognising the cost and carbon reduction benefits of this energy efficiency technology.

"CHP provides one of the most cost-effective approaches for reducing CO₂ emissions and plays a crucial role in the UK Climate Change Programme."¹³⁴

Whilst the Government has recognised the potential of CHP at a strategic level, however, the policies that currently support its deployment are under threat.

Current support for CHP

In recognition of CHP's role in carbon reduction, current UK energy policy provides exemption from the Climate Change Levy (CCL) for CHP plant. This includes vital Levy Exemption Certificates (LECs) for all power sold off-site as well as an exemption on the tax on input fuel. *These exemptions have enabled businesses to invest-in and operate CHP plants.*

Removing support for CHP

From 2013, the Government will remove the CCL exemption for CHP, replacing the CCL CHP input fuel exemption, the new Carbon Price Support (CPS) tax on CHP input fuel. Whilst this tax is designed for the power market, the design proposes that fuel for heat in CHP will also pay this tax. This new tax will lead to a significant increase in costs for sites operating CHP, especially energy intensive industries and manufacturing sectors. These manufacturing sites are essential for providing new jobs and investment during fragile economic conditions.

As part of the CCL reform, the Government will remove CHP LECs from 2013. The Government's proposed solution is replacement of LECs with some measure of relief on the CPS but industry modelling (developed and shared with the Government) clearly shows that *even with 100% relief there is insufficient value or certainty to retain existing levels of support for CHP.*

Cost implications

The removal of LECs and introduction of CPS will have a significant impact on CHP operators in the UK. Industry modelling indicates that in real terms, the value of lost LECs from 2013–14 to 2022–23 will be *£1.56 billion.*¹³⁵

In addition to this, the impact of the introduction of the CPS from in the first year alone is an additional *£127 million.*¹³⁶

The combined impact of the removal of LECs and introduction of the CPS will mean that sites face *significant additional costs which will penalise CHP operators for having invested in CHP to reduce emissions.* The scale of this burden will render not only the investment case for new plant unacceptable, but as these changes also apply to existing plant, it is likely that these operators will revert to separate generation of heat and power, negating cost effective carbon savings and increasing their cost of operations.

How can CHP continue to contribute to greening the UK economy—removing the barriers

The major barrier to decarbonising industrial heat and electricity through CHP, the proposed reduction in financial support, is simple to address. To ensure that businesses, who responded to government signals and invested, continue to operate their CHP plant, the Government must ensure that support is not withdrawn. To enable CHP to fulfil its potential in greening industry affordably, *CHP must have enduring bankable support to ensure it is the natural choice over separate production of heat and power.*

The policy framework must:

- *Ensure fair treatment for CHP under Carbon Price Support, through an exemption based on the proportion of fuel that is used in CHP for heat generation (the carbon price support is designed to impact electricity generation NOT heat generation).*
- *Retain the Climate Change Levy CHP Levy Exemption Certificates until 2017.*
- *Ensure that accessible long term bankable support to replace the value of Climate Change Levy CHP Levy Exemption Certificates when these come to an end.*

Without these changes, not only will new stations not be built, but existing stations may close and the current carbon savings and low carbon energy supply from them will be lost. Replacing the value of LECs is the only way to ensure CHP electricity is sufficiently valuable for them to continue generating.

¹³⁴ HMRC Notice CCL1/2 July 2010 (subsequently replaced by CCL1/2 November 2011)

¹³⁵ CHP industry modelling, fully shared with Government.

¹³⁶ The actual level will depend on the level of relief given to CHP plant. Numbers based on no relief as no other information has yet been published.

Industry needs a commitment now that Government will ensure that CHP plant retain the full value of existing exemptions

CHP offers a technology for energy users to participate in the decarbonisation agenda whilst retaining competitiveness and growing efficiency. With the right policy framework Government could open up a new front to tackle climate change whilst driving industrial growth.

6 January 2012

Written evidence submitted by the Imperial Centre for Energy Policy and Technology, Sussex Energy Group and UK Energy Research Centre

This paper links three research centres: ICEPT, SEG and UKERC. The submission draws from the ongoing UK Energy Research Centre systematic review Low carbon employment: the evidence for net employment creation from policy support for energy efficiency and renewable energy
<http://www.ukerc.ac.uk/support/tiki-index.php?page=Low+Carbon+Jobs>

The review considers primary research that examines labour market impacts of investing in renewable energy (RE) and energy efficiency (EE). The research is due to be published later this year. This document provides a summary of key points, followed by more expansive detail on which these points are based.

Imperial Centre for Energy Policy and Technology (ICEPT) provides nationally and internationally recognised interdisciplinary research, policy advice and postgraduate training, specialising in the interface between technology and policy. We provide objective research, analysis and policy advice to governments, industry, NGOs, and other stakeholders.

The Sussex Energy Group (SEG) undertakes academically rigorous, inter-disciplinary research that engages with policy-makers and practitioners. The aim of our research is to identify ways of achieving the transition to sustainable, low carbon energy systems whilst addressing other important policy objectives such as energy security.

The UK Energy Research Centre (UKERC) carries out world-class research into sustainable future energy systems. It is the hub of UK energy research and the gateway between the UK and the international energy research communities. Our interdisciplinary, whole systems research informs UK policy development and research strategy.

The Technology and Policy Assessment (TPA) function was established to meet demand from policymakers, industry and other stakeholders for independent, policy-relevant assessments that address key issues and controversies in the energy field.

SUMMARY

- The review finds that academic research surrounding green jobs does not provide clear and simple answers. Evidence presents both positive and negative impacts of policy support for renewable energy (RE) and energy efficiency (EE) on employment creation.
- The evidence considered, in the form of academic papers, grey literature and consultancy documents varies significantly in quality and methodological approach.
- Unsupported job estimates that make their way into the media, only serve to obfuscate the realities of job creation through policy support.
- The best evidence is that which considers the full range of employment categories, including direct, indirect, induced and displaced employment impacts. Most research does not cover all of these employment types.
- To estimate “net” employment creation displaced impacts must be considered. These include jobs that are destroyed through shifting jobs from one industry to another. For both RE and EE investments these are likely to be jobs in other energy generation sectors.
- To comprehend the scale of net employment creation associated with a particular investment a “counterfactual” investment, which represents an alternative use of the finance, is used. It is important that such counterfactuals are appropriate.
- Input Output (IO) models are commonly used to estimate employment impacts. However, they tend to overestimate impacts as they assume that supply is passive, and that prices are not impacted by changes in supply and demand.
- The source of financial support is an important variable when considering job creation. The use of tax revenues for green investment is a key contention in the surrounding literature. Unfortunately most estimates of employment impact do not consider the source of financing.
- The source of finance (eg public or private) is also likely to affect the degree of “leakage” of employment and economic impacts outside the local economy. If the financial revenues remain in the local economy a greater number of induced jobs will be triggered through increased local spending.

- A large amount of evidence exists for regions of the United States of America. There is, however, a paucity of literature on quantitative employment impacts in the UK.

1. INTRODUCTION, JOB CREATION AND DISPLACEMENT

The impacts of investment in green energy or energy efficiency on employment creation (or destruction) are disaggregated into several categories, which we must first define. These are presented in Table 1 for the case of developing a wind farm.¹³⁷ The development of the project involves capital and operating expenditure, which provides a number of jobs. Some of the employment is in direct jobs, involving employment on the wind farm itself. Other employment consists of indirect jobs, involving the labour needed within the supply chain supporting the development. A third class of employment is described as induced, and relate to the additional jobs associated with the household incomes of those employed in direct and indirect employment (Figure 1).

Table 1
DEFINITIONS OF DIRECT, INDIRECT AND INDUCED EMPLOYMENT IN THE CASE OF WIND FARM DEVELOPMENT

<i>Direct employment</i>	<i>Indirect employment</i>	<i>Induced employment</i>
Employment that is directly linked to the wind farm. These jobs include manufacturing the wind turbines, constructing the wind farm, operating the farm once up and running, dismantling the farm at the end of its life.	Supportive employment from industries whose output will provide materials and services. Such as steel for wind turbines and lawyers who draft the legal contracts.	Employment that is connected to the increased household income resulting from direct and indirect effects. Some fraction of the money received by direct or indirect employee wages will be spent in local businesses and shops.

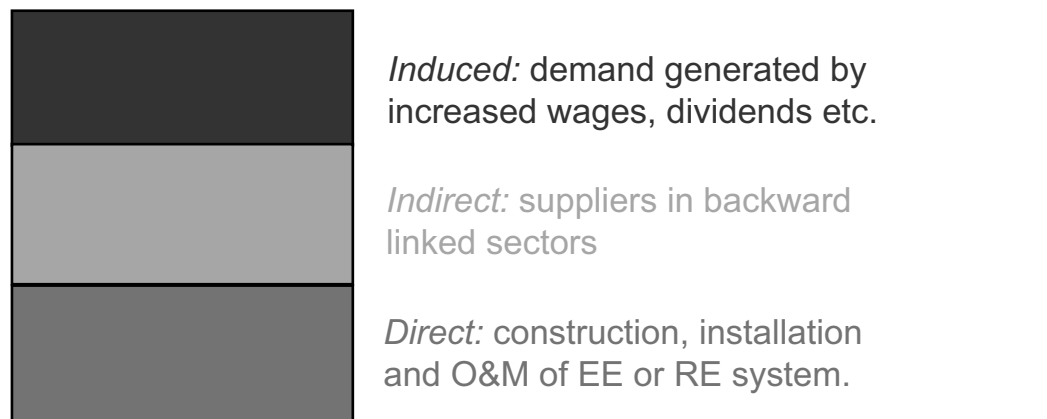
Displaced jobs refer to those that are destroyed from moving economic activity from one sector to another. Following the above example of the wind farm, the investment in the wind farm reduces investment in other areas. Thus, it is likely that there will be a reduction in employment elsewhere (see Displaced and net employment section below for more details).

The relationship between these different categories and how each job type is calculated is presented in the following section.

2. CALCULATING EMPLOYMENT IMPACTS

To estimate the total gross employment associated with a renewable energy or energy efficiency investment we must identify and add direct, indirect and induced employment types together. This estimate only includes new jobs—displaced jobs are not accounted for.

Figure 1
RELATIONSHIP BETWEEN DIRECT INDIRECT AND INDUCED IMPACTS



The number of direct jobs created by a new RE or EE project can be estimated by conducting a survey of companies involved in the associated construction and operation. The number of jobs is usually expressed as full-time equivalent (FTE).

Three models are typically used to estimate these wider employment impacts of investment: Input-Output (IO) models, Computable General Equilibrium models, and Econometric models.

¹³⁷ This economic classification holds for all types of employment including other “green economy” employment such as solar farms or energy efficiency projects.

IO models

IO models are most commonly used to measure the full economic impact of investment (including employment impacts) given their simplicity and transparency.

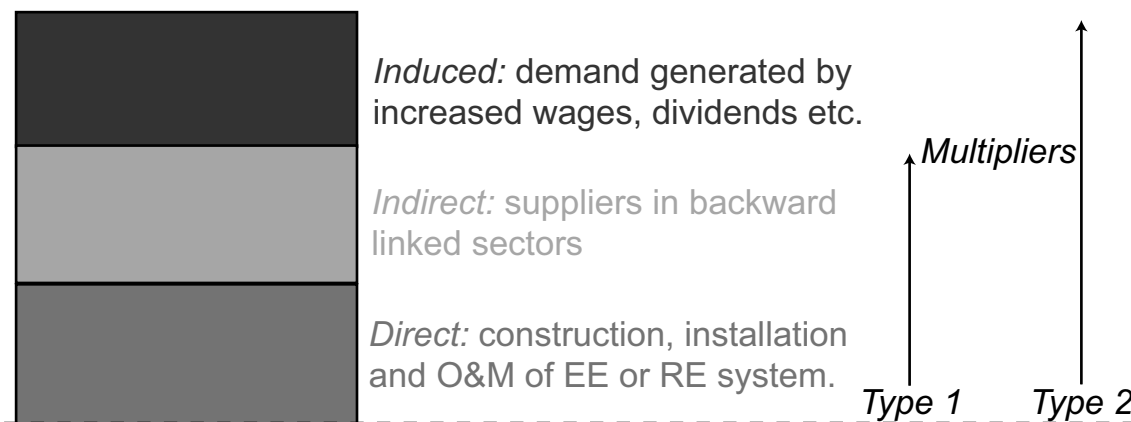
IO modelling begins with an IO table: a matrix of values which identifies the sectors of an economy, the economic input and output for each sector, and the economic relationship between each of these sectors through transactions. These tables are usually generated by public organisations and represent a “snapshot” in time (usually referred to by the year) for specific economic boundaries (ie the UK). The regularity with which these tables are updated and maintained can sometimes be an issue, with some tables several years out of date. Many economic regions of the world have no IO table.

IO models can calculate the effect of direct economic impacts on the backward-linked sectors (indirect impacts) and the spending effect (induced impacts). A “multiplier” captures the factor of those impacts. Additional indirect jobs are calculated using a “Type I” multiplier and induced jobs using “Type II” multiplier (Figure 2).

For example, a construction company spends £100 million on steel. The manufacture of that steel creates several FTE jobs which can be attached to the value of that steel (direct jobs). However, that steel required the mining, processing and transportation of ore, the smelting and rolling of steel and the forming and welding of steel into products suitable for the construction industry. These extra jobs (indirect jobs) are also associated with the steel’s value and that factor increase in jobs is represented by the Type I multiplier. Finally the workers employed in all of these jobs receive wages which they will spend on typical household expenditure, supporting a range of other businesses which create a number of extra jobs (induced jobs). The factor increase which accounts for the addition of indirect and induced jobs to direct jobs is represented by the Type II multiplier. Therefore, it can be said that by spending £100 million on steel the construction company have created not only the jobs required to manufacture the product purchased, but also a proportion of the jobs associated with that steels supply chain, and a proportion of the jobs associated with the household expenditure of direct and indirect employees.

Figure 2

RELATIONSHIP BETWEEN DIRECT INDIRECT AND INDUCED IMPACTS AND TYPE I AND II MULTIPLIERS



However, the use of steel in another industry, such as shipbuilding may lead to greater job creation. Thus to understand the scale of job creation a “counterfactual” investment scenario is used to provide a hypothetical alternative (see Displaced jobs and net employment section below).

IO models have several drawbacks. First, they implicitly assume fixed technical coefficients,¹³⁸ meaning that the economic impact of an increase in household income from £10 to £20 is the same as the impact of household income from £110 to £120. In reality, as householder income increases, the patterns of spending and saving are likely to change, from spending on essential items to luxury items and increased saving. Second, there is an assumption that demand is exogenous, or outside the model, and that supply passively responds to demand. In reality, as demand increases, price will also increase. Subsequently, supply and demand will both respond to this price shift. Using employment as an example, if there is a sudden demand for wind farm engineers the average wage for that employment might increase, either reducing the numbers of people employable for a given cost, or increasing the cost of projects.

It has been suggested that these issues creates a positive bias, where the type I and II multipliers overestimate the total economic or employment impacts.

¹³⁸ Type II multipliers assume fixed coefficients in endogenous, typically, household, consumption.

CGE and Econometric models

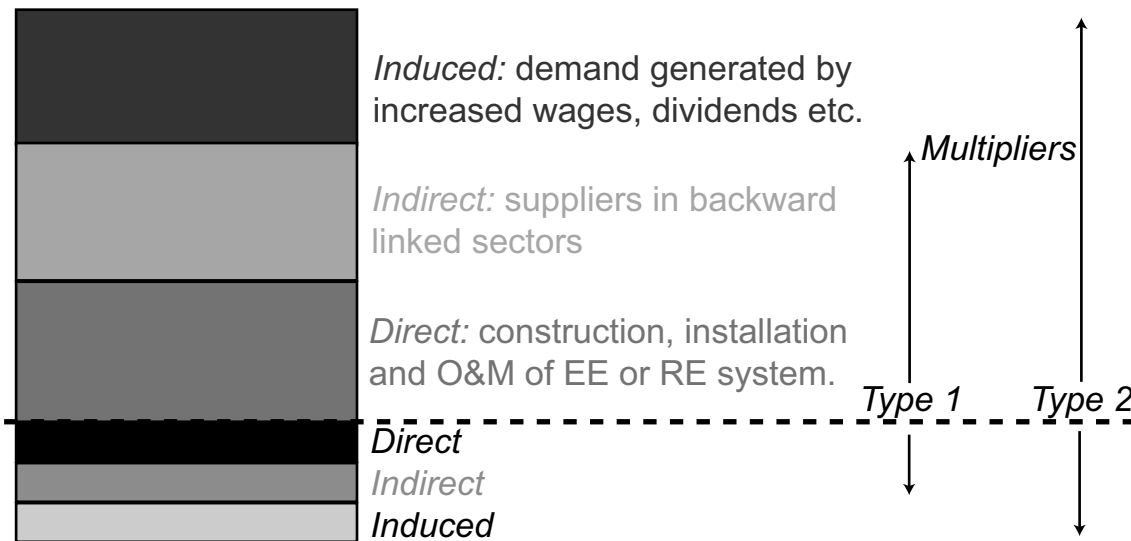
CGE and Econometric models provide an alternative to IO and deal with some of the limitations identified above. First, these models are dynamic, and calculate changes in economic variables over time. This allows them to include dynamic pricing, where the impact of supply and demand can impact on price. These models can also account for non-linear relationships between household income and induced impacts. However, these models are significantly more complex and significantly less transparent, limiting their use in many instances. It is notable that there is no firm quantitative understanding of the differences between model types.

Displaced jobs and net employment

As discussed, with new economic activity the employment that is created can displace employment from other sectors or industries. For example, if an economy invests in new electricity generating capacity in the form of wind turbines, it may reduce the available capital for coal fired power stations. We can count the employment that would have been generated at a coal-fired plant as displaced employment and we refer to this as a “displaced” impact (Figure 3).

Figure 3

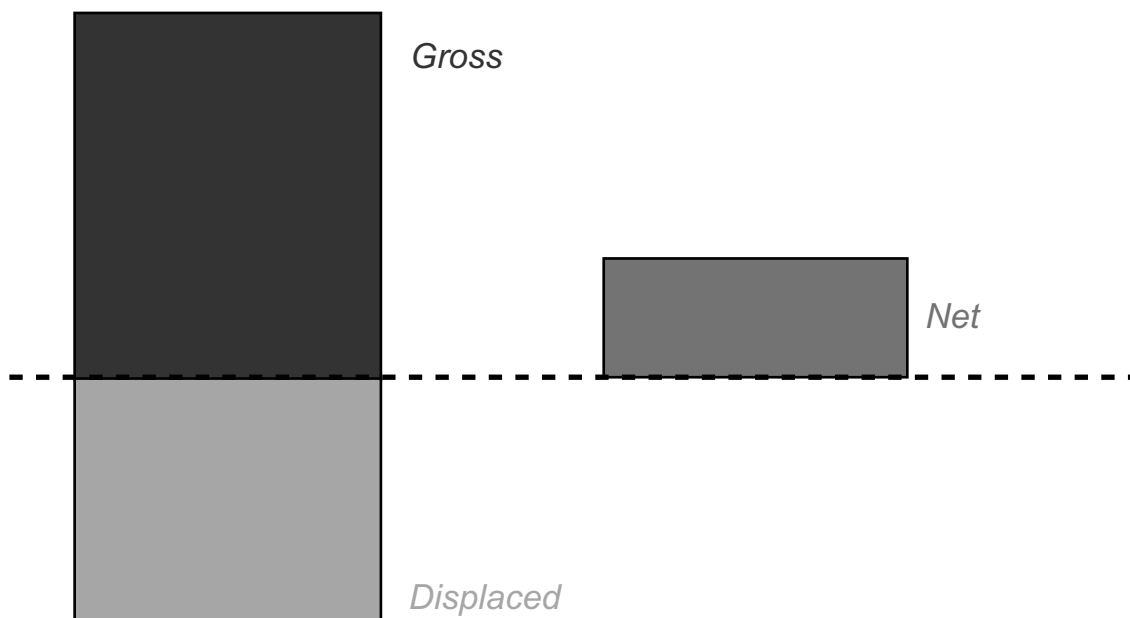
RELATIONSHIP BETWEEN DIRECT, INDIRECT, INDUCED AND DISPLACED IMPACTS; TYPE I AND II MULTIPLIERS; AND DISPLACED JOBS



Net employment is calculated by subtracting the displaced employment from the gross employment (being the sum of direct, indirect and induced employment) (Figure 4).

Figure 4

RELATIONSHIP BETWEEN GROSS EMPLOYMENT, DISPLACED EMPLOYMENT AND NET EMPLOYMENT



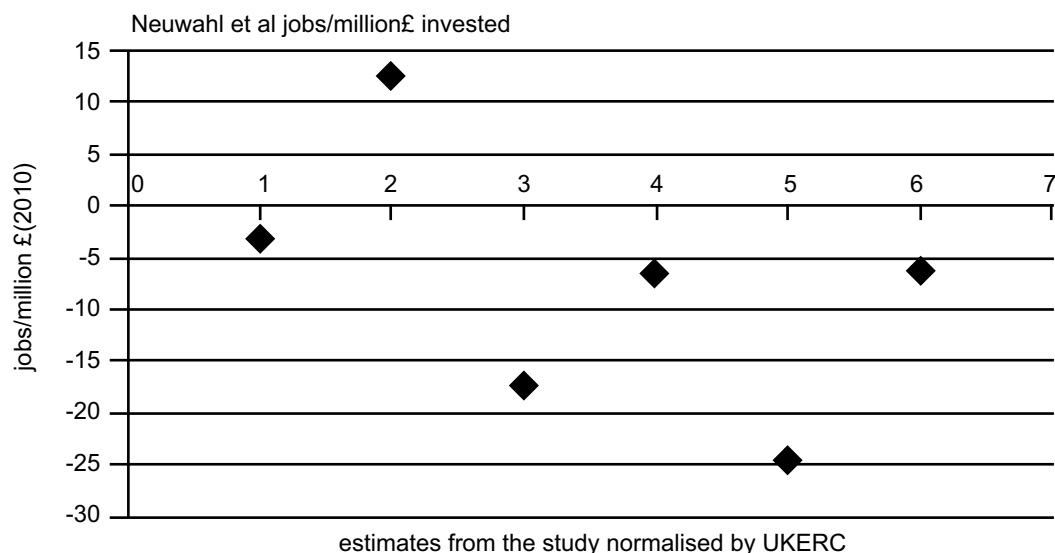
In some cases, policy makers have a choice between a number of investment options. To gauge which option leads to greatest number of jobs counterfactuals are used. The counterfactuals could include investment in two different RE projects of same total economic cost, investment in renewable and fossil fuel fired electricity generation projects of same total economic cost, or investment in electricity generation project measured against investment in energy saving or demand reduction projects. Other counterfactuals could also be considered including investment in non energy infrastructure projects, or the economic and employment impacts of a tax cut. However, in some instances the investment decision is in part directed by other considerations, such as to meet future electricity demand. In this case it is necessary to consider only those counterfactuals that are appropriate, therefore excluding non-energy counterfactuals. It is notable that most studies do not provide adequate and/or appropriate counterfactuals to support their investment decision.

A study that deals with displaced employment impacts and is included in the systematic review is Neuwahl *et al.*¹³⁹ This study considers the replacement of diesel with biodiesel across the EU25. The modelling carried out for the study finds that the displacement effects of jobs in diesel and related industries leads to a negative net impact in the majority of cases (five out of six estimates) (Figure 5). However, this net change in jobs is relatively small (+/-300,000 against a base case of 200 million jobs in the EU25). Hence the authors conclude that the other benefits associated with the replacement of fossil fuels with biofuels (reduced pollution, fuel security etc) would, in their view, outweigh the potential loss of jobs. The models job estimates reflect different policy scenarios and assumptions.

¹³⁹ Neuwahl, F, Loschel, A, Mongelli, I, Delgado, L, (2008). *Employment impacts of EU biofuels policy: Combining bottom-up technology information and sectoral market simulations in an input-output framework.*

Figure 5

NEUWAHL STUDY RESULTS—NET JOB CREATION THROUGH REPLACEMENT OF FOSSIL FUELS WITH BIOFUELS.



Methodological limitations

Few studies consider all impacts, including direct, indirect, induced employment effects and displaced effects. Research that does consider these different types and alternatives and uses the appropriate models to do so should be given most credence.

In practice, IO modelling is the dominant approach in the RE/EE literature—and for estimating employment impacts more generally. As mentioned IO models are fixed price, fixed coefficient, demand driven, economy-wide simulation models that can provide highly disaggregated projections for industry, government and households. These provide an upper limit on employment impacts because they do not allow for price adjustment and factor substitution.

A substantial fraction of the green employment studies are “grey literature” from industry, government or NGO sources. Many of these appear partisan and reach predictable conclusions given the source. There is a clear need for a greater number of peer-reviewed studies in this area.

3. ISSUES IN ESTIMATING EMPLOYMENT IMPACTS

The UKERC review has considered a wide range of relevant literature on employment creation through RE and EE investments. The findings fall along a continuum, including both positive and negative impacts on net employment through investment in RE and EE. In aggregate, the research findings tend towards the positive. Nevertheless, the range of estimates of employment impacts is very wide, reflecting the range of ways in which they are assessed. As such, it is very hard to make meaningful comparisons between the different studies. The range difference in studies is driven by a variety of assumptions, including: geographical location, technology, institutional environment, tax regime, local labour force skills levels, and counterfactual.

Geographical leakage

Geographical leakage reflects loss of employment or investment in a regional economy to another. A number of studies consider different ways of structuring a project so as to localise the beneficial employment effects. In most cases, if an economy has diverse industries it will benefit more from investments as more of necessary services can be provided within the local economy.

It should be highlighted how important the economic boundary is when estimating job creation. If the economy in question is at the local level, the impacts of the investment may lead to a significant increase in local revenue. For example, a new biomass plant that has been financed from sources outside of the economy may increase local jobs by an order of magnitude if the plant is located in a rural area. That withstanding, as mentioned above, a small economy is unlikely to have the diversity of industry as a large one. Thus it is likely that a significant proportion of the investment will be leak outside the region. When it comes to the international and international economic level, these issues become more pronounced, and it can be quite complex determining whether industry investments in a region lead to a net increase in employment and/or economic growth.

Ownership and financing

Several reports discuss this as an important variable and may have a significant impact on the location of economic impacts. For example, small-scale projects are more likely to be locally owned and financed. In this case very little of the economic impacts will leak. Large-scale projects on the other hand, are more likely to be owned and financed by large companies, who distribute the economic benefits further afield (see Lantz 2008).¹⁴⁰

Rose *et al* (1982)¹⁴¹ found a significant amount of the total financial benefits were leaked out of the economy through payments to shareholders. A number of US studies explore different financing options that demonstrate the impact of the source of financing and ownership on local employment and economic impacts.

Different sources of investment also impact on who will benefit from the employment creation. If schemes are financed through the private sector the burden on public expenses is less. However, a full economy wide analysis of this should be made to ensure that paying the profit required by the private sector does not end up costing more, potentially leading to a reduction in employment.

Employment lifetime

Short-term start-up employment and longer-term sustainable employment have been highlighted as being distinct, and it was noted that these are often combined in quantitative estimates. This obscures their relative difference, preventing analysis on the difference between capital intensive projects and operation and maintenance intensive projects.

Many studies attempt to estimate employment impacts over long time horizons—eg to 2030. But uncertainties compound as the time horizon extends. Such estimates are contingent upon assumptions about economic growth, energy prices, the evolution of costs for the relevant technologies (eg learning economies). These assumptions vary widely from one study to another and sensitivity tests are not always employed.

Hillebrand (2006)¹⁴² makes the point that an investment in RE will lead to a short-term spike in employment creation. Thus, the stimulus associated with this investment is short lived, and the long term trend in employment is not significantly affected.

Crowding in or crowding out investment?

There is some debate as to whether government support for RE or EE will encourage additional private investment (crowd in) or discourage private investment (crowd out). Whether government investment will crowd out or crowd in private investment depends on the macroeconomic conditions at the time, including how much capital is available and how liquid the employment market is.

Labour market conditions

Many studies point out the link between the construction industry and unemployment. However, it is important to consider current labour market conditions when considering whether the unemployed are suitably trained to carry out particular types of employment.

4. CONCLUSIONS

The impacts of RE and EE investments vis-à-vis job creation are complex to calculate. They require, not only a firm understanding of the sectors under consideration and the specific RE/EE projects in question, but also a clear idea of labour market dynamics, and an awareness of the different sources of finance and their characteristics used to fund the investment.

Estimating the number of jobs associated with an investment is only half the story. Displaced jobs have to be accounted for. Without considering these jobs we are left with no view of how many jobs are lost through the movement of finance from one area of the economy to another.

Economic boundaries play an important role in determining net job creation. It is important that those who use job creation estimates take into consideration the economic boundary of the research.

Models vary considerably, and in almost all cases models develop their own unique assumptions—relevant to their scenario. The bespoke nature of models makes it difficult to make meaningful comparisons between different models.

There is a paucity of research focusing on the UK. It would be beneficial if research programmes used similar models that compared multiple counterfactuals, enabling valid comparisons to be made.

4 April 2012

¹⁴⁰ Lantz, K (2008). *Economic development benefits from wind power in Nebraska: a report for the Nebraska Energy Office.*

¹⁴¹ Rose, A *et al* (1982). *Modern energy region development and income distribution: An input-output analysis.*

¹⁴² Hillebrand, B (2006). *The expansion of renewable energies and employment effects in Germany.*

Written evidence submitted by Air Products

Air Products has been an investor and employer in the UK for over 50 years, currently employs over 1,600 people in the UK and Ireland, and has built leading global positions in a wide range of markets and industries.

Air Products is planning to build a 49.9MW Energy from Waste power plant on Teesside in the Northeast UK. The proposed facility would use advanced gasification technology to provide renewable electricity for up to 50,000 homes in the North East and the project will create between 500–700 jobs during its construction and over 50 permanent jobs once it enters commercial operation. The project has received planning permission and an environmental permit, and we are awaiting the ROC banding draft legislation to finalise the financial commitment for the project from our board. If successful, Air Products anticipates that this facility could be the first of three to five advanced gasification plants that are brought forward and we see the UK as a good potential fit for these facilities based on current energy and sustainability policies.

If the current incentives and policy framework can be maintained or replaced with similar future policies, we believe the UK has the potential to be a global leader in the development of sustainable energy production with all the corresponding benefits to the UK public and the environment.

With respect to the consultation questions, we believe a green economy should aim to do the following:

- (a) deliver on the UK's commitment to EU renewable energy targets;
- (b) maintain UK solvency;
- (c) not place an undue additional burden on the average taxpayer; and
- (d) should strive for environmental performance that is an improvement over fossil fuel-based or current disposal options.

While these are reasonable aims, there is a balance to be struck between meeting environmental, economic, and green objectives that requires a holistic approach.

For example, the UK could try to meet one green economy objective for renewable generation by supporting wind farms. But if the cost to support that form of renewable energy is so high that the average taxpayer suffers and only an incremental fossil fuel reduction benefit is obtained, then the effect of this technology on a green economy is marginal. But if a renewable energy option such as the advanced gasification of waste solves not only the objective of closing the renewable, baseload energy gap, but also addresses a serious GHG issue by diverting waste from landfill and shows an improved efficiency and CO₂ emissions over existing waste technologies, and does all of this in a cost effective manner, then three objectives are met and a better green solution is realised. In this example, the indicators to monitor progress are quite straightforward and include tracking the renewable obligation credits awarded to advanced gasification, monitoring the percentage of the renewable target that is met by this technology and other waste technologies, and noting the amount of waste diverted from landfill in that same time period.

The barriers preventing the transition to a green economy are mostly related to money or the assurance of a steady cash flow. The renewable obligation scheme (or its replacement CfD scheme) seems on the surface to be a reasonable programme to support a green economy, but one key barrier hindering significant green economy growth is a renewable scheme that provides consistent support over long time periods. Without the longevity of support, investment in renewable energy projects is stifled at best and non-existent in the worst case. The confirmation of longer term (15–20 years) support for renewables, at a lower level for existing technologies and a higher level for emerging technologies, would reduce the one of the largest barriers for advancing a green economy that we are aware of.

With regard to the currently proposed CfD support mechanism for renewable energy, it is unclear whether the long term certainty or comparable level of support so critical to investment in the UK is intended to be part of that scheme. Without some level of certainty around the length or level of support for the programme, a global company is challenged to make long term commitments to aid the UK in meeting its objectives. The current CfD proposal is also complex, with some critical details (such as who the contracting party may be) that are important to investment still being sorted out. Without those details being defined in the near future, it is difficult for developers to commit to a path forward that complements a green economy. We propose that input be sought for the details of the CfD program from those companies who realistically can impact the green economy and that have relevant experience. If this is done at an early enough stage, this experienced-based input can help shape the proposals brought forth to the wider group of stakeholders and better position them for a successful outcome for all parties.

16 April 2012