WSP Submission to Zero Carbon Economy Consultation

TO	Committee on Climate Change	**FROM**	WSP
DATE	**10 December 2018**	**CONFIDENTIALITY**	**Public**
SUBJECT	**WSP consultation response to Committee on Climate Change Building a Zero Carbon Economy Report**		

WSP is delighted to submit its response to the Committee on Climate Change's consultation on its Building a Zero Carbon Economy Report. We have long supported the work of the Committee on keeping climate change adaptation and mitigation at the forefront of the UK political and business agenda, and making the case for the win win outcomes of driving decarbonisation and economic prosperity together. We stand ready to help the Committee as it attempts to drive forward the main findings of this report, and helps the UK to deliver a Future Ready, zero carbon Britain.

Part 1: Climate Science

Question 1 (Climate Science): The IPCC's Fifth Assessment Report and the Special Report on 1.5°C will form an important part of the Committee's assessment of climate risks and global emissions pathways consistent with climate objectives. What further evidence should the Committee consider in this area?

ANSWER: No comment

Question 2 (CO_2 and GHGs): Carbon dioxide and other greenhouse gas gases have different effects and lifetimes in the atmosphere, which may become more important as emissions approach net-zero. In setting a net-zero target, how should the different gases be treated?

ANSWER: No comment

Part 2: International Action

Question 3 (Effort share): What evidence should be considered in assessing the UK's appropriate contribution to global temperature goals? Within this, how should this contribution reflect the UK's broader carbon footprint (i.e. 'consumption' emissions accounting, including emissions embodied in imports to the UK) alongside 'territorial' emissions arising in the UK?

ANSWER: No comment

Question 4 (International collaboration): Beyond setting and meeting its own targets, how can the UK best support efforts to cut emissions elsewhere in the world through international collaboration (e.g. emissions trading schemes and other initiatives with partner countries, technology transfer, capacity building, climate finance)? What efforts are effective currently?

ANSWER:

The UK has developed a significant body of knowledge and expertise in emission trading and carbon reduction technologies over the last 20 years, including a lead role in designing the EUETS. Some regions such as the Middle East and China wish to adopt these best practices to help reduce industrial and transport emissions which are growing rapidly but do not have the know-how. The UK can take a lead role in developing capabilities and transfer of knowledge in these regions, both in terms of technical expertise and policy incentives and also financing.

For example, WSP's clients in the Middle East and Singapore have recently commissioned projects on carbon pricing, marginal abatement cost curves and also the setup of ESCo frameworks. In many case the emissions reduction options involve large projects that will save millions of tonnes of CO2e per annum but require major investment decisions at a corporate rather than a site level. Increasingly pressure from investors, for example via the CDP is leading to an increased awareness in these regions of the importance of carbon trading and carbon pricing as a means of achieving carbon targets. The setting of science based targets is also a growing area for advisory work as many sectors have unique factors which lead to a different approach being adopted in each sector and each region.

Question 5 (Carbon credits): Is an effective global market in carbon credits likely to develop that can support action in developing countries? Subject to these developments, should credit purchase be required/expected/allowed in the UK's long-term targets?

ANSWER:

A number of internationally accredited carbon credit schemes exist already such as the Joint Implementation/Clean Development Mechanism and these also link with the EUETS. It is valid for the UK to seek to invest in such carbon saving projects in developing countries but only if they meet stringent standards for additionality and wider sustainability such as the WWF Gold Standard.

However, overseas carbon credit projects should typically contribute only a relatively small percentage of total carbon reduction investments, as reducing emissions at home from UK operations should be a first priority. However, many imported goods and services have high embedded carbon emissions and therefore supply chain carbon saving initiatives are also a valid route to the UK contributing to emissions reductions overseas. Life Cycle Assessment and Input-Output analysis methods are important when considering UK carbon impacts and credits across the whole life-cycle, and to avoid burden shifting between countries.

Part 3: Reducing emissions

Question 6 (Hard-to-reduce sectors): Previous CCC analysis has identified aviation, agriculture and industry as sectors where it will be particularly hard to reduce emissions to close to zero, potentially alongside some hard-to-treat buildings. Through both low-carbon technologies and behaviour change, how can emissions be reduced to close to zero in these sectors? What risks are there that broader technological developments or social trends act to increase emissions that are hard to eliminate?

ANSWER:

The 2050 Industrial Decarbonisation Roadmaps, developed for UK Government by WSP / DNV-GL identified the key technologies that should be applied to achieve deep decarbonisation of energy intensive industries. The single most important technology identified was carbon capture and storage (CCS). CCS can uniquely reduce industrial emissions resulting from both the combustion of fuel and from chemical conversion intrinsic to the process itself. The development of CCS infrastructure is therefore key to achieving deep decarbonisation of industry. https://www.gov.uk/government/publications/industrial-decarbonisation-and-energy-efficiency-roadmaps-to-2050

The 'Fossil Free Sweden' initiative has recently published English summary versions of nine fossil free competitiveness roadmaps. The sectors covered include aviation and a number of high energy intensity industries. The roadmaps target climate neutrality by 2045 and refer to the low carbon technologies required, including CCS. http://fossilfritt-sverige.se/in-english/

The challenge for the hard to treat buildings sector is that they have both higher overall demand and peak demand which is a challenge for heat pumps to provide. High temperature CO_2 heat pumps are available but are still not widespread and it would be useful to trial these as they may be the answer to this challenge, where deep retrofit to reduce thermal demand is too challenging.

There is evidence of the ability to retrofit hard to treat buildings to a high standard but it is very expensive because each building requires very detailed work, unlikely to be viable on a national scale. Our work for the Welsh government and undertaking EPCs has shown there are still substantial energy efficiencies that can be realised without deep retrofit. Smart controls, double glazing, LED lighting, draughtproofing and insulation can still provide substantial benefits in reducing overall, and perhaps more importantly, peak demand.

Our energy performance certificate (EPC) team have concerns that the correlation between EPC band (A-G), and real-world performance, is minimal. (See Better Buildings Partnership report.) There are subtle reasons that may explain some of this but, it is clear that EPCs are not significantly correlated to actual energy performance to allow them to be a good mechanism to measure and drive performance.

A major issue that we have found, and which is confirmed by our professional bodies, such as CIBSE, is that there is a lack of enforcement of existing regulation and policies in the refurbishment market. This is hindering performance and creating a lack of confidence in the retrofit market for solutions like cavity and external wall insulation.

Question 7 (Greenhouse gas removals): Not all sources of emissions can be reduced to zero. How far can greenhouse gas removal from the atmosphere, in the UK or internationally, be used to offset any remaining emissions, both prior to 2050 and beyond?

ANSWER:

There are several means to remove carbon dioxide from the atmosphere, and these will have a role in offsetting emissions from sources which are too challenging to decarbonise directly. Reversing deforestation, and implementing a large-scale programme of reforestation, offers the potential for large-scale natural atmospheric carbon dioxide removal.

At an industrial level, the implementation of carbon capture and storage (CCS) on CO2 emissions originating from the combustion of sustainable biomass offers the potential for net negative CO2 emissions from such facilities. However, the sources of biomass used for bioenergy generation must be carefully monitored, to ensure that this approach does not run counter to the desire for reforestation set out above.

A further technological approach offering the potential to remove carbon dioxide from the atmosphere is Direct Air Capture (DAC) of CO2. However, DAC, attempting to remove CO2 at very low concentration from the atmosphere, will always be more expensive and less efficient than capturing CO2 from high-concentration flue gas and process streams. Therefore, DAC should not be actively pursued if this will result in the diversion of resources from other, more effective decarbonisation technologies.

There is a risk that there will be an over-reliance on atmospheric CO2 removal, so that other sectors feel that they have a free pass, and do not need to decarbonise. It should be emphasised that atmospheric CO2 removal is not a magic bullet, and can only be applied in parallel with emissions reduction from all sectors. It may be needed to achieve a net reduction in atmospheric CO2 levels if humankind overshoots current targets and corrective action is required to return to a sustainable atmospheric CO2 concentration.

Question 8 (Technology and Innovation): How will global deployment of low-carbon technologies drive innovation and cost reduction? Could a tighter long-term emissions target for the UK, supported by targeted innovation policies, drive significantly increased innovation in technologies to reduce or remove emissions?

ANSWER:

The driver of energy generation technologies should be a requirement to deliver zero or very low carbon energy, with the exact method left to auctions / competition. We have now entered a phase where with global deployment we are seeing consistent reductions in the price of renewable energy, plus the energy storage and demand side response required to increase its penetration.

The UK grid is proving a constraint to the rapid deployment of renewable energy technologies and the new RIIO-2 framework for DNOs offers an opportunity to ensure they continue to be

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incentivised to deliver more innovative ways to support renewable energy deployment, low carbon demands, such as electric vehicles (EVs), and maximise use of the existing infrastructure with efficiency, storage and demand side response.

Targeted innovation support around inter-seasonal energy storage would be welcome as this is still the partially missing piece of the puzzle to give us the very low carbon future we require.

One of the major barriers to the widespread implementation of carbon capture and storage (CCS) is cost – both the up-front capital cost of the facilities and the ongoing operational cost, primarily resulting from the energy penalty associated with applying CCS to power generation and industrial processes. Further technological innovation, to drive down capital cost from smaller, simpler equipment and reduce energy consumption from improving capture efficiency and minimising energy consumption, will facilitate the adoption of CCS.

For the decarbonisation of transport, further development in battery technology to reduce costs and extend range and life, together with advances in hydrogen storage and fuel cell technology are key areas of innovation to be targeted.

Question 9 (Behaviour change): How far can people's behaviours and decisions change over time in a way that will reduce emissions, within a supportive policy environment and sustained global effort to tackle climate change?

ANSWER:

There is a dimension to energy of which domestic consumers are, mostly, unaware; the "when" is as important as the "how much?" As our energy system incorporates more intermittent renewable energy the ability to change demand patterns to help match that is crucial to maximise the use of renewables. This can be undertaken by switching appliances on and off to increase or reduce demand, using energy storage, and smart charging electric vehicles.

Trials have shown that time of use tariffs can change consumer behaviour and reduce peak demand. http://www.networkrevolution.co.uk/customer-trials/domestic-customer-trials/%EF%BF%BCtime-of-use-tariffs/

Localised control systems can also maximise use of local renewable generation. A trial in the NW of England where we were technical advisors, looking at energy storage and solar in homes showed how we can increase self-consumption and reduce peak demand substantially, even when price signals are not there.

Question 10 (Policy): Including the role for government policy, how can the required changes be delivered to meet a net-zero target (or tightened 2050 targets) in the UK?
ANSWER: No comment

Part 4: Costs, risks and opportunities

Question 11 (Costs, risks and opportunities): How would the costs, risks and economic opportunities associated with cutting emissions change should tighter UK targets be set, especially where these are set at the limits of known technological achievability?
ANSWER: No comment

Question 12 (Avoided climate costs): What evidence is there of differences in climate impacts in the UK from holding the increase in global average temperature to well below 2°C or to 1.5°C?
ANSWER: No Comment

Part 5: Devolved Administrations

Question 13 (Devolved Administrations): What differences in circumstances between England, Wales, Scotland and Northern Ireland should be reflected in the Committee's advice on long-term targets for the Devolved Administrations?
ANSWER: No comment

Part 6: CCC Work Plan

Question 14 (Work plan): The areas of evidence the Committee intend to cover are included in the 'Background' section. Are there any other important aspects that should be covered in the Committee's work plan?
ANSWER: No comment

If you have any questions on the points raised in this consultation, please contact our Head of Public Affairs Charles Malissard by email: [redacted].