Agenda Item No: 10

CAMBRIDGE UNIVERSITY SCIENCE AND POLICY EXCHANGE: GREENHOUSE GAS EMISSIONS BASELINE AND FORECAST TO 2050 FOR THE CAMBRIDGESHIRE AND PETERBOROUGH AREA

To:	**General Purposes Committee**
Meeting Date:	**22nd October 2019**
From:	**Steve Cox, Executive Director Place and Economy**
Electoral division(s):	**All**
Forward Plan ref:	**Not applicable** *Key decision:* **No**
Purpose:	**To present Cambridge University's Science and Policy Exchange (CUSPE) research report identifying the current carbon footprint for the geography of Cambridgeshire and Peterborough and opportunities to deliver Government's net zero carbon emissions ambitions by 2050.**
Recommendation:	**The committee is asked to accept the CUSPE research report and its use as part of the evidence base to inform the development of the Council's Climate Change and Environment strategy and Action Plan (CCES).**

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1. BACKGROUND

1.1 In October 2016, Cambridgeshire County Council initiated an annual collaboration with the Cambridge University Science and Policy Exchange (CUSPE) society, which brings teams of researchers together to explore challenges faced by the County Council.

1.2 In March 2019, a range of different challenges were offered to researchers including the question 'What actions must Cambridgeshire County Council take today to meet government's pledge of 80% carbon emissions reduction by 2050?' Researchers were keen to work on this challenge, adapting the proposal to reflect significant policy changes brought forward during May 2019.

1.3 The first significant policy change came via a report by The Committee on Climate Change requested by central government on 'Net Zero – The UK's contribution to stopping global warming'. The report identified that a net-zero Green House Gas (GHG) target for 2050 was needed to deliver on the commitment that the UK made by signing the Paris Agreement. It identified the 2050 target as achievable using known technologies and within the expected economic cost that Parliament accepted when it originally legislated on the existing 2050 target for an 80% reduction from 1990. However, the Committee stated that to achieve this target it is only possible if clear, stable and well-designed policies to further reduce emissions are introduced across the economy without delay and that current policy was insufficient to meet existing third and fourth carbon budget targets. Government subsequently legislated a net-zero carbon target for 2050.

1.4 The second significant change in May saw Cambridgeshire County Council approve a motion to declare a climate emergency and commit to producing a Climate Change and Environment Strategy and Action Plan (CCES).

1.5 Through discussion, the research team agreed to develop an evidence base of current carbon emissions for Cambridgeshire and Peterborough. The aim of this research is to inform the development of the CCES and provide a baseline position for the wider community.

2. MAIN ISSUES

2.1 The report covers 6 sectors namely:

- Domestic buildings
- Commercial and Industrial (including public sector) buildings
- Transport
- Agriculture
- Waste
- Afforestation (positive contribution) and Land Use

2.2 For each sector, current emissions are presented (per district when possible), and two scenarios modelled for 2050 presented as: "business as usual" and "net zero emissions by 2050". The difference between the emissions forecasted in both scenarios highlights the policy gap to reach government's ambition of net zero carbon by 2050.

2.3 The models developed by the research team during this work are available for the County Council to use and update should assumptions need to be revised.

2.4 The main results of the report are presented here as an executive summary and the full report is available in **Appendix A**.

2.5 **Highlights from the CUSPE Report**

2.5.1 Cambridgeshire and Peterborough communities produced 6.1 million tonnes of carbon dioxide equivalent (CO2e) in 2017. The challenge is to reduce this to net-zero by 2050.

2.5.2 If Cambridgeshire and Peterborough communities continue with 'Business as Usual' projections, emissions could reduce to 3.5 million tonnes (Mt) of CO2e by 2050. Implementing an ambitious decarbonisation strategy could deliver emissions reductions to 0.6 Mt CO2e by 2050. In order to deliver net-zero carbon emissions, Cambridgeshire & Peterborough communities will need to offset the residual emissions through a mix of afforestation, bioenergy with carbon capture and storage (CCS), direct air capture with CCS, demand reductions, peatland restoration and future unknown technologies.

2.5.3 The CUSPE report provides an emissions baseline against which Cambridgeshire and Peterborough communities can measure their performance. In order to achieve net zero, Cambridgeshire and Peterborough communities must build on the existing support for climate action. Importantly, both Cambridgeshire County Council and Peterborough City Council along with the district councils and Combined Authority will need to consider the emissions impact of every future policy decision, from health to transport, and from buildings to waste. Now is the time for public sector leadership across all levels of Government. Cambridgeshire County Council has a significant role to play in the global effort to tackle climate change. Below are the sector emission highlights.

2.5.4 *Domestic homes* contribute 21% of current Cambridgeshire and Peterborough emissions, arising from energy used for heating and appliances. To deliver ambitious decarbonisation of heat and improvements to the energy efficiency of the housing stock, domestic emissions could fall by 91% by 2050. This would require swift roll out of low-carbon heating technologies, including hybrid heat pumps and district heating.

2.5.5 *Transport* accounts for 39% of emissions in Cambridgeshire and Peterborough and emissions have stayed constant for the last 10 years. An ambitious strategy that requires 100% of cars, Large Goods Vehicles (LGVs), buses and motorcycles as well as 91% of Heavy Goods Vehicles (HGVs) to be electric by 2050 would reduce transport emissions from 2500 Kt CO2e to 81 thousand tonnes (kt) CO2e. Electrification of vehicles is not the only solution to decarbonising transport, and other measures that encourage shifting transport away from cars to walking, cycling and public transport must also be included.

2.5.6 *Agriculture* currently contributes 405.5 kt CO2e per year, or 7% of Cambridgeshire and Peterborough's emissions, but much of the emissions in agriculture are difficult

to abate. In the 2050 ambitious scenario, emissions are projected to be 239 kt CO2, which is 40% of total residual emissions. Achieving the 2050 ambitious scenario involves a significant reduction of food waste, reduction of demand for red meat and dairy by 20%, and on farm measures such as increased fertiliser efficiency, breeding measures, and livestock food additives.

2.5.7 *Commercial Services and Industrial* emissions account for 27% of current emissions in Cambridgeshire and Peterborough, and have decreased from 2543 kt in 2005 to 1538 kt in 2017. The lowest emissions which could be achieved through an ambitious abatement strategy are 137 kt CO2e. Implementation of low carbon heating and carbon capture and storage are vital for achieving this reduction.

2.5.8 *Waste management* contributes around 2% of current Cambridgeshire and Peterborough emissions (107 kt CO2e) with emissions from the Waterbeach landfill and compost sites and Peterborough energy recovery facility. In an ambitious scenario, net emissions would be 29 kt CO2e. Deployment of carbon capture storage, increasing capture of landfill and compost gas emissions and electrification of waste transport are considered and identified as priorities.

2.5.9 *Afforestation* as a means to reduce Cambridgeshire and Peterborough's net emissions has been explored extensively in this report. Land use, land use change and forestry (LULUCF) currently account for 4% of emissions. Abatement costs of £15-30 per tonne CO2e and total CO2 sequestration were calculated for various scenarios. Afforestation has the potential to play a role in helping to achieve net zero and the scale of afforestation required is calculated.

2.5.10 *Peatland* emissions are not currently counted in the emissions inventory, but could significantly affect Cambridgeshire's reported emissions - increasing them by as much as 90%. Whilst this is technically just a change in accounting, it does highlight the need for further research on peatland emissions and to prioritise the restoration and preservation of the area's peatland. In time and with the correct investment, peatland has the potential to change from a net emissions source to a net sink.

3. ALIGNMENT WITH CORPORATE PRIORITIES

3.1 A good quality of life for everyone

This research provides the evidence that will inform the development of the CCES. The CCES will be key to delivering quality of life for future generations.

3.2 Thriving places for people to live

As set out in Section 3.1.

3.3 The best start for Cambridgeshire's children

The CUSPE research will inform the CCES and its provision for a better future for Cambridgeshire's children.

4. SIGNIFICANT IMPLICATIONS

4.1 Resource Implications

This report has no resource implications. Any resource implications of future actions or potential policy changes will be considered as part of the CCES and on a project by project basis.

4.2 Procurement/Contractual/Council Contract Procedure Rules Implications

There are no significant implications within this category.

4.3 Statutory, Legal and Risk Implications

There are no significant implications within this category.

4.4 Equality and Diversity Implications

There are no significant implications within this category. The report will form an evidence base to inform the development of the Climate Change and Environment Strategy and Action Plan (CCES). The CCES will consider the equality and diversity implications of the policies and actions proposed.

4.5 Engagement and Communications Implications

- Officers from Cambridge City and South Cambridgeshire District Councils were invited and attended steering group meetings to shape and inform the CUSPE research to ensure consistency on assumptions across the three councils to inform developing Climate Change Strategies emerging from Climate Change emergency declarations.
- Peterborough City Council were engaged providing data to the CUSPE researchers where available.
- The Cambridgeshire Action On Energy Partnership were informed of the CUSPE research projects and updates provided to and from the group. The Partnership includes all the District Councils as well as the County Council.
- The Cambridgeshire and Peterborough Combined Authority was introduced to the research project, CUSPE researchers and how the findings from this project would inform the Council's development of its CCES.
- The CUSPE research findings were presented to Members on 17th September and 3rd October 2019. A total of 23 Members attended.

4.6 Localism and Local Member Involvement

There are no significant implications within this category. The CCES will use the CUSPE research to inform future actions for the Council. The impacts will be assessed as part of the CCES work.

4.7 Public Health Implications

As above.

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	Yes Name of Financial Officer: David Parcell
Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?	Yes Name of Officer: Gus Da Silva
Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or LGSS Law?	Yes Name of Legal Officer: Fiona Macmillan
Have the equality and diversity implications been cleared by your Service Contact?	Yes Name of Officer: Elsa Evans
Have any engagement and communication implications been cleared by Communications?	Yes Name of Officer: Jo Shilton
Have any localism and Local Member involvement issues been cleared by your Service Contact?	Yes Name of Officer: Emma Fitch
Have any Public Health implications been cleared by Public Health?	Yes Name of Officer: Stuart Keeble

Source Documents	Location
Net Zero – The UK's contribution to stopping global warming, Committee on Climate Change	https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/
Net Zero Cambridgeshire, CUPSE Final report, October 2019	Energy Investment Unit Folders
Reducing air pollution, congestion and CO2 emissions from transport across Cambridgeshire, CUSPE Report, August 2019	Energy Investment Unit Folders