

Panel Study: Synthesis Report

June 2022

ZERAMBRIDGE ZERO,







About This Report

This report provides a synthesis of recommendations and key points from three discussion sessions held in December 2021 and January 2022.

About the Cambridge Zero Policy Forum

This study and report have been led by the <u>Cambridge Zero Policy Forum</u> (CZPF) – a multidisciplinary community of academics contributing evidence and expertise to public policies for the transition to a sustainable, inclusive, and resilient net zero society. The Forum is Co-Chaired by Prof Emily Shuckburgh (Director of Cambridge Zero), Dr Rob Doubleday (Executive Director of CSaP), and Emily Farnworth (Co-Director of the Centre for Climate Engagement at Hughes Hall). The secretariat to the Policy Forum is provided by Lauren Milden (Policy Adviser, CSaP), Harriet Harthan (Senior Knowledge Broker, the Centre for Climate Engagement at Hughes Hall) and Nick Scott (Knowledge Broker, the Centre for Climate Engagement at Hughes Hall).

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Front cover: Swaffham Prior heat pump, courtesy of Evera Homes LLP

Layout: Jen Hayes

Executive summary

Climate change is a global problem, but climate solutions primarily need to be deployed at a local level. Local stakeholders play a vital role in taking decisive action to meet national and international climate targets. Effective local, regional and national policy and governance frameworks are needed. During the 2021-2022 academic year, the Cambridge Zero Policy Forum (CZPF) convened experts from academia, local government and business to discuss priorities for investing in resilient and sustainable infrastructure in the Cambridgeshire and Peterborough sub-region. The study had a focus on community energy, retrofitting buildings and land use planning. Discussions were guided by a multidisciplinary panel of senior academics from the University of Cambridge with individual expertise in engineering, architecture, public policy, economics, public health and land use.

Recommendations

Following topic-specific discussion sessions with external experts, panel members identified a number of key stakeholder groups that can drive sustainable and resilient local infrastructure. Key groups included policymakers at all levels of government, NGOs, local and national businesses, and academic institutions. The panel made the following recommendations:

- » Universities, NGOs and relevant organisations must collaborate more effectively to map the associated challenges and opportunities of sustainable infrastructure projects, harnessing their technical expertise to develop and test innovative solutions.
- » Better engagement between project developers, local authorities, local businesses and individuals will help to identify and promote co-benefits of sustainable infrastructure projects, building a positive public profile and encouraging a cultural shift to normalise low-carbon infrastructure.
- » A national strategic framework is urgently needed, and should be developed by the UK government, to guide land use and planning decisions with the aim of mitigating climate change and biodiversity loss whilst balancing local and regional priorities and concerns.
- » Fiscal tools can be applied by local and regional authorities to overcome financial barriers to retrofitting and community energy development. These include tax incentives, public-private investment opportunities, and alternative sources of funding such as green bonds and carbon offsetting.
- » Planning authorities should better integrate climate change into their strategy and decision-making to remove implicit barriers to sustainable retrofitting and infrastructure projects.
- » Local authorities can use 'digital twin' approaches to model impacts of different climate policies working in collaboration with universities and relevant organisations with expertise in data management and analysis.
- » Further case studies and more rigorous analyses considering the cost of different methods of carbon abatement should be developed to provide a stronger evidence base in each of these areas.

Introduction

This panel study, an initial pilot in an ongoing series, provided an opportunity for the CZPF to explore the topic of 'Local priorities for investing in resilient and sustainable infrastructure'. This topic draws on recommendations from the Cambridge Zero Policy Forum's 2020 report 'Green Recovery: A Blueprint for a Green Future' as well as local climate policy activity in the Cambridgeshire and Peterborough sub-region, including the Cambridgeshire and Peterborough Independent Commission on Climate (CPICC) report published in October 2021: 'Fairness, nature and communities: addressing climate change in Cambridgeshire and Peterborough 2021'.

Panel members

The panel for this study included a select group of CZPF members with interdisciplinary expertise and interest in local priorities for investing in resilient and sustainable infrastructure, as well as selected external experts with relevant experience in the chosen subtopics.

The panel members included:

- » Dr Claire Barlow, Emeritus Faculty, Department of Engineering, University of Cambridge
- » Dr Ronita Bardhan, Assistant Professor of Sustainability in the Built Environment, Department of Architecture, University of Cambridge
- » Professor Carol Brayne, Director, Cambridge Public Health
- » Professor Ruchi Choudhary, Professor of Architectural Engineering, Department of Engineering, University of Cambridge
- » Dr Kayla Friedman, Programme Director, Cambridge Institute for Sustainability Leadership
- » Owen Garling, Knowledge Transfer Facilitator, Bennett Institute for Public Policy
- » Professor Peter Guthrie, Director of Research in Sustainable Development, Department of Engineering, University of Cambridge
- » Professor Markus Kraft, Professor of Chemical Engineering, CARES Director, Department of Chemical Engineering and Biotechnology, University of Cambridge
- » Professor David Newbery, Emeritus Professor of Economics, Faculty of Economics, University of Cambridge
- » Dame Fiona Reynolds, Commissioner, Food, Farming and Countryside Commission
- » Dr Jennifer Schooling, Director of the Centre for Smart Infrastructure, Department of Engineering, University of Cambridge
- » Professor Emily Shuckburgh, Director, Cambridge Zero, University of Cambridge

Discussion sessions

The panel convened three discussion sessions with external experts on the following subtopics:

- 1. Renewable energy infrastructure, with a focus on community energy projects
- 2. Retrofitting existing buildings
- 3. Strategic land use planning

Discussion session 1: Renewable energy infrastructure, with a focus on community energy projects

External Experts:



- » Emma Fletcher, Chair, Swaffham Prior Community Land Trust & MD, Evera Homes
- » Sheryl French, Assistant Director, Climate Change and Energy Services, Cambridgeshire County Council
- » Frank Gordon, Director of Policy, the Association of Renewable Energy and Clean Technology

Summary

Participants in the first discussion looked at renewable energy infrastructure, with a specific focus on community energy projects. Two of the external experts in this session were involved in the Swaffham Prior Heat Network project, a community energy initiative being developed in a village near Cambridge, UK. Energy projects owned or controlled by the communities they serve have many benefits including increasing renewable energy generation, boosting local economies, and improving resilience. Using the Swaffham Prior Heat Network as a case study, participants in this session explored key barriers and opportunities associated with local renewable energy infrastructure and community energy projects.

Technical considerations

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One key technical aspect of renewable electricity projects is grid capacity and management. Grids must handle increased demand from the electrification of transport and heat, which could impact community energy timelines if the network requires upgrading. Another important technical issue is understanding future demand in the relevant area, which requires data collection and analysis. There have been few technical barriers to the actual installation of the Swaffham Prior Heat Network, but this may not be the case everywhere, for example when older buildings can make installation more difficult.

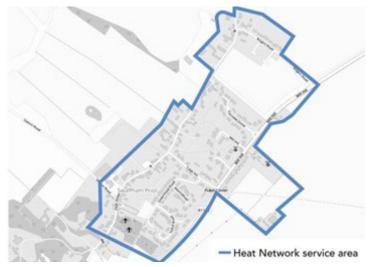
Community energy projects also offer technological opportunities. In addition to giving communities access to renewable energy and low-carbon technology, they may also give residents the opportunity to use smart grid technology. Smart grids can increase energy efficiency, which reduces emissions and decreases costs to the consumer.²

Community Energy England. 2021. <u>Definitions, Benefits and Potential of Community Energy</u>.

US Department of Energy. 2010. <u>Understanding the Benefits of the Smart Grid</u>.

Case study: Swaffham Prior Heat Network

Swaffham Prior is a village in East Cambridgeshire that is not connected to the gas network. Over 70% of residents use oil to heat their homes. Cambridgeshire County Council pioneered a community energy project to combat dependence on oil and gas in order to reduce carbon emissions, fuel poverty, and the cost of energy. This heat network will use ground source and air source heat pumps powered by a nearby solar farm. The project could save over 47,000 tonnes of carbon emissions over its lifetime, and aims to serve as an example for other villages that are reliant on oil for heating.³



Map of the Swaffham Prior Heat Network

The large number of stakeholders involved in developing the Swaffham Prior Heat Network highlights the importance of engaging across a range of actors in the local community when developing such projects. The Swaffham Prior Community Land Trust developed the initial proposal to replace the local fossil fuel heating systems and commissioned an early-stage study from the NGO Bioregional into potential low-carbon heating options. After deciding on air and ground-source heat pumps, the Trust partnered with Cambridgeshire County Council whose land was essential to heat generation. The Council has since linked up with private sector partners Bouygues Energy Solutions and Avieco, and many individuals have volunteered time to this project.

Governance and politics

Understanding and engaging with government is important for community energy projects. Projects must comply with relevant regulations and laws, and can also benefit from government support or funding. Obtaining planning permission is a vital early step in developing community energy projects. Working with listed buildings can be particularly complicated.

External experts noted the importance of investigating, and even being creative with, relevant legislation and understanding the remit of different local and regional authorities when developing infrastructure in public areas. The Swaffham Prior Heat Network project, for example, was able to utilise part of the Local Government Act 1974 and relevant case law⁴ that allows county councils to generate, supply and sell heat to communities in their area.

³ Chartered Institute of Building Services Engineers (CIBSE) Journal. 2022. <u>Digging for Britain: Swaffham Prior's Heat Network</u>.

Calor Gas Ltd v Norfolk County Council. 2019.

Local politics is integral to ensuring the success of community energy projects. Swaffham Prior benefited from the county's cross-party support for climate action, which meant that the project's support and funding remained in place during changes in local political leadership. This may not, however, be the case in all areas – changes in leadership could put important funding sources or support initiatives in jeopardy in areas without bipartisan support.

Communities want climate action, the challenge now is achieving this at the scale and pace that needs to happen, and properly organising finances.

~ Sheryl French, Assistant Director, Climate Change and Energy Services at Cambridgeshire County Council

Finance

Energy projects can be an important source of revenue for communities but come at a cost that may be prohibitive or burdensome for certain communities. Connecting to the grid is a significant upfront cost for energy projects which could discourage first movers and weaken a project's business case. Project developers should therefore consider extending timelines to account for the longer-term payback of such projects. After connecting to the grid, system charges can be expensive for energy projects. Additional costs include legal fees and prices associated with planning and installation.

The UK government offers some funding for community energy projects through its Rural Community Energy Fund and the UK Investment Bank has started to fund large-scale projects, but much of the required funding is likely to come from local authorities. Working through these government budgets and funding opportunities can take years, and it can be challenging to maintain community support and enthusiasm while waiting for funding to be delivered.

Once enough up-front funding has been secured, community energy initiatives then need to generate sufficient income as they operate. Forecasting income from these projects can be difficult without certainty on how much of the community will be involved. Fluctuations in the price of fossil fuels and other energy sources add further uncertainty to projected demand and income.

Community engagement

Enthusiasm and engagement within local communities is crucial to the success of community energy projects. The Swaffham Prior Heat Network has required significant voluntary action from members of the community to promote and develop the project. Community energy projects may also have to grapple with resistance from individuals who are reluctant to support the proposed changes. Similarly, the media can play a positive or negative role in community energy projects. The Swaffham Prior Heat Network has received mostly positive press, though some outlets have published articles criticising the project.

⁵ UK Government: Department of Business, Environment and Industrial Strategy (BEIS) and Department for Environment and Rural Affairs (DEFRA). 2019. <u>Rural Community Energy Fund</u>.

⁶ See e.g. Lottie Limb. 2021. CambridgeshireLive. <u>Swaffham Prior: How one Cambridgeshire Village is Revolutionising its Heating System.</u>

⁷ See e.g. Ross Clark. 2021. The Daily Mail. <u>Village Heat Pump Scheme that has cost £250,000 per house</u>.

In addition to differences within communities, differences between communities can influence community energy project development. Locals involved in the Swaffham Prior project had previous experience and expertise that helped them navigate the complexities involved in establishing their project. Communities that lack members with relevant skillsets or with limited resources may struggle more with implementing community energy projects.



Key recommendations

- » Universities, NGOs and other relevant organisations should collaborate to map the challenges and opportunities with community energy projects as highlighted by the Swaffham Prior Heat Network case study.
- » Community energy project developers should engage with local businesses and individuals to identify and promote the co-benefits of such projects, building a positive public profile and minimising negative media coverage.
- » To account for limited funding opportunities at the national level, community energy project developers and local authorities should explore alternative funding sources such as green bonds and carbon offsetting.

Full discussion session summary

A full summary note from Discussion session 1: Renewable energy infrastructure, with a focus on community energy projects can be found here.

Relevant case studies and further reading

- Community Energy England's State of the Sector 2021 Report.
- A list of regional community energy resources.

Discussion session 2: Retrofitting existing buildings

External Experts:



- » Dr Tim Forman, Senior Teaching Associate and Senior Research Associate, Cambridge Institute for Sustainability Leadership (CISL)
- » Dr Alice Moncaster, Senior Lecturer in Sustainable Built Environment, Open University; Visiting Fellow, University of Cambridge
- » Dr Hannah Swinburne, Principal Climate Change Officer, Peterborough City Council

Summary

This discussion focused on retrofitting existing buildings in the Cambridgeshire and Peterborough sub-region. Three external experts, listed above, discussed some of the local barriers and enablers to retrofitting buildings for climate mitigation and adaptation in Cambridgeshire. The external experts were selected based on their technical expertise working in the built environment. Dr Tim Forman spoke about CISL's new retrofitted office building in central Cambridge, Dr Hannah Swinburne from Peterborough City Council gave a local government policy perspective, and Dr Alice Moncaster provided invaluable case studies and research on retrofitting and an overview of the risks of not calculating whole life carbon.

The need for retrofits

Residential buildings generate 21% of Cambridgeshire and Peterborough's carbon emissions. There was full agreement about the need to reduce the carbon emissions of buildings and adapt the housing stock to the changing climate. When compared with the low carbon transition of other sectors, for example the energy sector, participants felt that progress on retrofitting has been slow. In addition to reducing emissions, retrofitting can also bring social and health benefits, and can be especially helpful for people in vulnerable groups. Page 12.

Experts know that demolishing buildings rather than retrofitting causes higher whole-life carbon emissions, nevertheless there is often a presumption in favour of demolition.

~ Dr Alice Moncaster, Senior Lecturer in Sustainable Built Environment at Open University

¹ James Weber et al. 2019. Net Zero Cambridgeshire: What actions must Cambridgeshire County Council take to reach net zero carbon emissions by 2050?.

IERC. 2021. Creating Shared Value for All: The multiple benefits of a residential retrofit revolution in Ireland.

Funding retrofits

The cost of retrofitting is a key barrier to progress, and the scale of retrofitting required by owner-occupiers of residential buildings is huge – over 25% of houses are owner-occupied in Peterborough, and this proportion is higher across Cambridgeshire. In the rental sector, there are few incentives for landlords to enhance EPC ratings. Current eco-taxes and charges on electricity can act as a financial disincentive for property owners to switch from gas to heat pumps, and the lower VAT rate on energy payments is another disincentive to make the switch.

The inconsistent and short-term nature of financial support available to homeowners for retrofitting measures is another key barrier. Schemes often have complex application processes and short turnaround times, although some positive examples were highlighted including a local boiler upgrade scheme to fund 30,000 heat pumps from April 2022.

Organisations such as <u>Energiesprong</u> have piloted innovative methods of funding retrofits through future energy cost savings, but they often need legislative and regulatory support to be effective. In general, participants identified a lack of effective investment structures for retrofitting, including public private partnerships.



Case study - <u>Cambridge Institute for Sustainability Leadership's</u> <u>Entopia Building</u>

The Cambridge Institute for Sustainability Leadership (CISL) is finishing an ambitious retrofit of a 1930s building in central Cambridge that will serve as their new office and home of 'The Canopy', an accelerator for start-ups and small businesses focused on sustainability. The retrofit project is projected to save 80% whole life carbon emissions when compared to a traditional refurbishment and have a 75% lower heating demand than an average office building. CISL has donated old furniture to local communities, set out to use 50% bio-based materials in the retrofit, and has ensured that 35% of the paint used will be recycled.⁴

The building will be retrofitted to meet numerous sustainability standards including BREEAM, the EnerPHit standard, and the Well (Gold) certification. The University of Cambridge's Estates Division is leading the work with support from numerous corporate partners including engineers, architects, interior designers and project managers. Many of the contractors involved in this project have received training on low-carbon installation, which they could use for similar work in the future. The project has cost £12.8 million, and has been funded by the University of Cambridge, as well as grants from the Envision Group and the European Regional Development Fund.



Picture of the Entopia Building, Cambridge Institute for Sustainability Leadership

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Cambridgeshire County Council. 2013. Cambridgeshire Subregion Strategic Housing Market Assessment.

CISL. 2022. Entopia Building.

Ensuring the necessary skills for retrofits

There was general agreement during the discussion session that there is a skills shortage for retrofitting. This was also highlighted as a key challenge which undermined the <u>UK's Green Homes Grant</u> scheme which ran from September 2020 - March 2021.

The construction industry suffers from a lack of stable policy and is quickly impacted when the economy suffers. The vast majority of construction workers are employed by SMEs, which often have insufficient (if any) training budgets and many employees on temporary contracts.

There is a lack of guidance on retrofitting for both homeowners and professionals and a potential role for professional organisations in the building sector to take action. However, relevant training is increasingly available including via the <u>Retrofit Academy</u> and the <u>Supply Chain Sustainability School</u>.

Policy instability and the importance of regional solutions

The short-term nature of policies and funding is a key challenge for local businesses. Regional solutions, including regional funding for retrofitting and regional regulations to ensure quality, are important.

Even when a local authority broadly supports climate action, planning officers often still reject applications that would reduce emissions or improve climate resilience. Planning authorities may therefore benefit from education and training on retrofitting, and in some cases planning frameworks could be reconsidered.

Declaring a 'climate emergency' can help to sway planning decisions in favour of retrofitting, as CISL found when requesting to install low carbon windows in their Entopia building. ⁵

The potential to obtain economies of scale in retrofitting properties at a neighbourhood level could incentivise SME suppliers to upskill in order to deliver retrofits for many properties. Local authorities could act as enablers to create strong regional markets for retrofitting. Underlining all of these potential policy changes is a need for a cultural shift to normalise retrofitting.

Retrofitting vs new buildings and the potential for a whole life carbon metric

There was significant discussion around the problematic tendency to demolish and rebuild instead of retrofitting buildings. There was strong support for, and interest in, <u>measurement of whole life</u> <u>carbon</u> and the <u>regulation of embodied as well as operational carbon</u>, which could help to address the issue of demolishing and rebuilding properties where retrofitting is possible.



Key recommendations

- » To overcome financial barriers to retrofitting buildings at scale, local government and regional authorities should consider implementing fiscal tools such as tax incentives, and provision of longer-term financial support for homeowners, as well as public-private investment opportunities.
- » Local and regional authorities should support SMEs in the buildings sector, providing training for retrofitting solutions, and encouraging a cultural shift to normalise retrofitting. National government should support the deployment of such programmes across the country.
- » Public bodies at all levels should explore the potential to regulate measurement of embodied carbon to help address the 'demolish and rebuild' issue.

Full discussion session summary

A full summary note from Discussion session 2: Retrofitting existing buildings can be found here.

Relevant case studies and further reading

- Case study example: <u>Rampton Drift, Northstowe, South Cambridgeshire District</u> used national funding to organise a low-cost retrofit of 1950-70s residential buildings; included cavity wall insulation, external wall insulation, solar thermal panels and boiler replacements.
- LETI's Climate Emergency Retrofit Guide
- Retrofitting skills training available at:
 - Retrofit Academy
 - Supply Chain Sustainability School

Discussion session 3: Strategic land use planning

External Experts:



- » Stephen Kelly, Joint Director of Planning and Economic Development, Chief Planner for Cambridge City Council and South Cambridgeshire District Council
- » Alex Plant, Director of Strategy & Regulation, Anglian Water
- » Dame Fiona Reynolds, Chair, National Audit Office, trustee of the Grosvenor Estate, the Green Alliance and the Food, Farming & Countryside Commission

According to the Food, Farming and Countryside Commission (FFCC), "A land use framework is an approach to managing land use decisions that mediates competing pressures and encourages multifunctionality, enabling land to provide multiple benefits for public value. A framework would consist of a set of agreed principles and practices that are embedded across local, regional and national organisations, guiding decision-making."

Participants in this session agreed that the lack of a strategic land use framework, particularly at the national level, was a problem. They discussed how a national framework could provide a steer for decisions to be taken at sub-national levels. Participants also discussed challenges, such as the need for incentives to bring stakeholders to the table, and opportunities, such as digital twins.

The national angle

Participants felt that a national set of guiding principles would be beneficial in providing a statutory basis, incentives and guidance for land use decisions, many of which are made at the sub-national level. The lack of a national plan is also reflected in the short-term nature of government funding for related regional projects, such as the lack of funding for sustainable infrastructure for growth.

Though there is sometimes resistance when the national government intervenes in local policy, holding regional and local government accountable may be necessary in order to meet net zero targets and other overarching goals. Developments such as the UK's departure from the EU's Common Agricultural Policy and the passing of the Environment Act 2021 may help to instigate conversations on green infrastructure.

The FFCC believes a national land use framework would need to operate both at a national level and at a 'larger than local' level. It is running two county-level pilots on land use frameworks in Devon and Cambridgeshire, which offer two distinct case studies.

There is, at present, nothing at the national level that manages the tensions and finds the synergies between key land use issues.

~ Dame Fiona Reynolds, Commissioner at the Food, Farming and Countryside Commission

The regional angle

Deciding on boundaries is an important part of creating a land use planning framework. Existing boundaries include political boundaries, but can also be dictated by urban, natural, and agricultural systems.

Although regional spatial strategies were scrapped in 2020, there are still a handful of regional initiatives such as the <u>London Plan</u> and the <u>OxCam Arc</u>.

The OxCam Spatial Framework brought the economy, environment, population growth and infrastructure together. The OxCam Arc also demonstrated the importance of having funding for delivery for bringing in stakeholders and maintaining their involvement. However, despite the commitment to net zero from the national government, the short-termism of funding at the regional level was an obstacle.

Even within one region, strategic planning priorities will vary by location. Greater Cambridge, for example, prioritises tackling climate change, biodiversity, wellbeing, and place, but these are not the key priorities in every part of East Anglia. Furthermore, communication between stakeholders from different sectors is not always straightforward.

Data and digital twins

Digital twins are virtual models of real places or assets that can be used to test planned changes or events before deploying them in the physical world. A digital model can be used to experiment with land use variables and identify next steps. Modelling is often conducted by consultancies, which can be expensive and time consuming. Universities may play a role in making this process smoother and helping authorities manage data. In some places, the volume of data that needs to be analysed has overwhelmed local authority capacities.

Land Use Framework



Visualisation of a Strategic Land Use Framework from the Food, Farming and Countryside Commission

Case Study - Future Fens: Integrated Adaptation

The Cambridgeshire and Peterborough sub-region is low-lying and dry, facing risks of both flooding and water scarcity. The situation is particularly serious in the Fens – an area which has over half of the UK's most fertile land, grows about one fifth of the UK's crops and one third of its vegetables.² The Fens also host diverse plant and animal life, and store significant amounts of carbon.

The <u>Future Fens: Integrated Adaptation Project</u> is a collaboration between local, regional and national stakeholders that aims to deliver two new reservoir systems, one on the Cambridgeshire and Norfolk border and the other in South Lincolnshire. Key organisations involved include: Anglian Water, the Environment Agency, Water Resources East, and the Cambridge and Peterborough Combined Authority. Through the Future Fens Project, they hope to protect and enhance biodiversity, ensure food security, develop new water resources, avoid flood and drought risk, reduce carbon emissions, and enable investment in the region. The project estimates its activities could generate £4 billion, which would be particularly important to the economically-deprived Fens. The project also aims to serve as an example for how regions across the world can manage water systems, avoiding risks and unlocking co-benefits.



Key recommendations

- » With the support of organisations such as the Food, Farming & Countryside Commission, the UK Government should implement a national strategic framework to guide land use and planning decisions with the aim of mitigating climate change and biodiversity loss whilst balancing local priorities and concerns.
- » Local authorities should model impacts of different land use policies through 'digital twins', recognising that use of these technologies requires effective data management.
- » The University of Cambridge and similar institutions should play a convening role in land use planning in the local area by bringing different stakeholders together and testing theories. Expertise in data management and interpretation could be particularly valuable.

Full discussion session summary

A full summary note from Discussion session 3: Strategic land use planning can be found here.

Relevant case studies and further reading

- <u>Smart Cambridge</u> a digital platform to support transport infrastructure investments taking place in Cambridgeshire.
- <u>An article</u> from the House of Lords Library explaining land use planning and the UK Government's position.

Conclusion

This Cambridge Zero Policy Forum panel study explored three important subtopics relevant to local priorities for investing in sustainable and resilient infrastructure. By gathering perspectives from individuals with both practical experience and technical expertise, it aims to provide an overview of this issue to support further discussions and highlight potential areas for research or engagement. Though each discussion session dealt with distinct aspects of local climate action, there were some common themes that ran through each session. These included the importance of both public and private funding structures for deploying local climate solutions, the complexities of tailoring solutions to the right level of government, and the benefits of effective community engagement for local climate action.