



**UK Research  
and Innovation**



**Department  
for Transport**

Building a Green Future – Targeting National Priorities

## **Net Zero Transport for a Resilient Future**

Wednesday 22<sup>nd</sup> February 12.00-13.00

Jim Fleming – Joint Head of Energy and Decarbonisation EPSRC

# Today's Presenters



**Lucy Martin**

Deputy Director Cross-Council Programmes  
EPSRC



**Kirsty Austin**

Deputy Director for Systems and Strategy  
DfT



**Claire Gregory**

Systems Projects Lead  
DfT



**James Tarver**

Senior Portfolio Manager  
EPSRC



# National Priorities

- Transport is the largest contributor to UK domestic greenhouse gas (GHG) emissions, responsible for 27% in 2019. Domestic GHG emissions from transport have been broadly flat for the last 30 years, even as those of other sectors have declined.
- Decarbonising Transport plan
  - Accelerating modal shift to public and active transport
  - Place-based solutions
  - UK as a hub for green transport, technology, and innovation





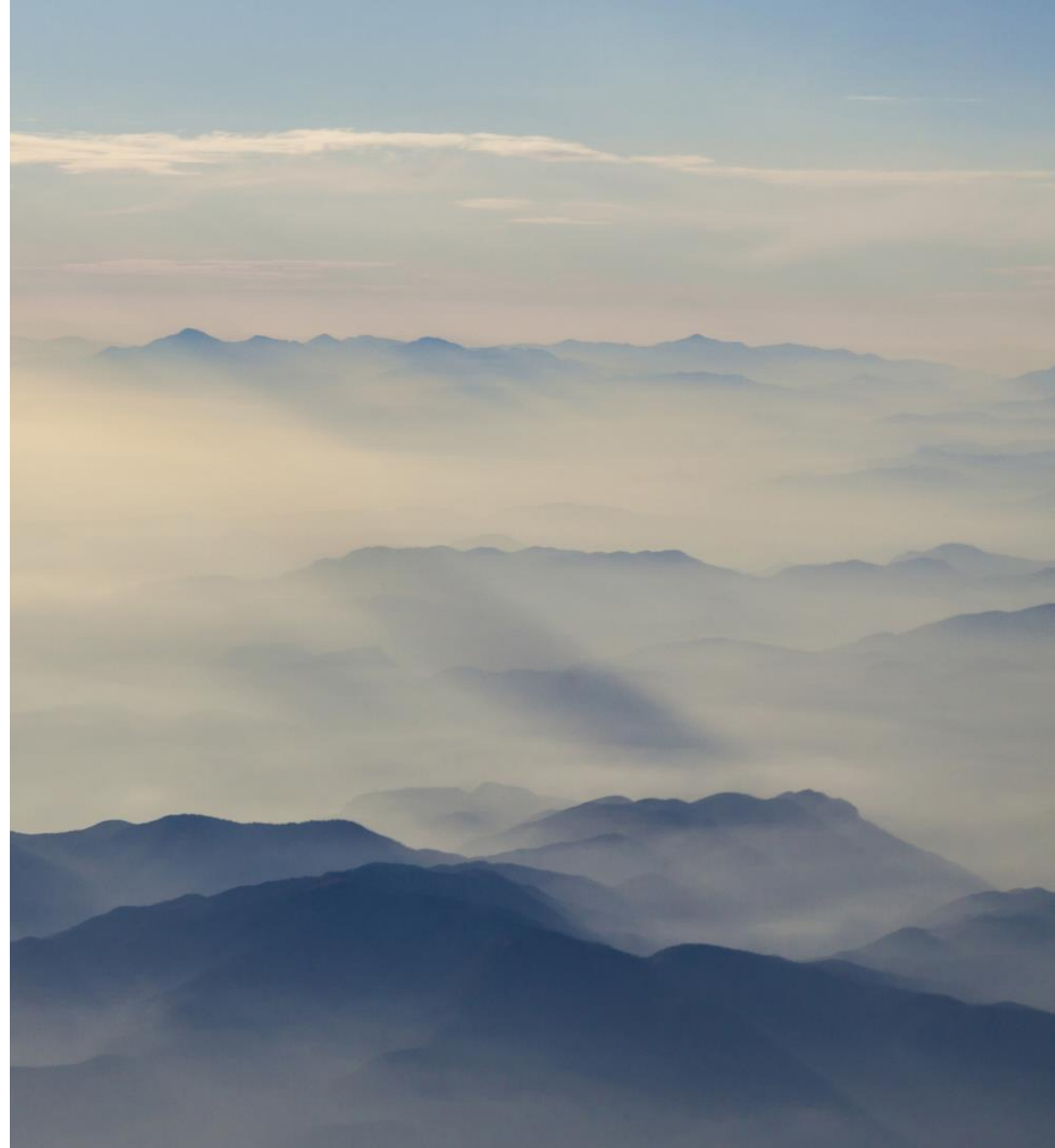
# Building a Green Future

- Building a Green Future is one of UKRI's 5 strategic themes that form the five-year Transforming Tomorrow Together strategy (2022 to 2027).
- Building a Green Future will accelerate the UK's transition to a secure and prosperous green economy by 2050.
- Partnering with UK government departments, business and internationally, we will build on our existing £800 million (per year) portfolio to fast-track development of solutions necessary for meeting our net zero targets, through strategic cross-UKRI investments.
- This will keep the UK at the forefront of the green industrial revolution.
- A total budget of ~£75m



# UKRI funding landscape

- A broad portfolio including Centre for Research into Energy Demand Solutions (CREDS), UK Energy Research Centre (UKERC), Centre for Sustainable Road Freight, and Decarbonised Clean Marine.
- Other relevant funding calls:
  - [Digital twinning for decarbonising transport hub](#)
  - [National clean maritime research hub](#)



# Net Zero Transport for a Resilient Future – The Need

The scale of transformation required through decarbonisation is unprecedented. The transport sector is challenged by **several climate change impacts**, including temperature change, increasing extreme weather events and sea-level rise.

Compared to development of low carbon emission technologies, the adaption of existing infrastructure to increase its ability to absorb and recover the effects of climate change is relatively unexplored.



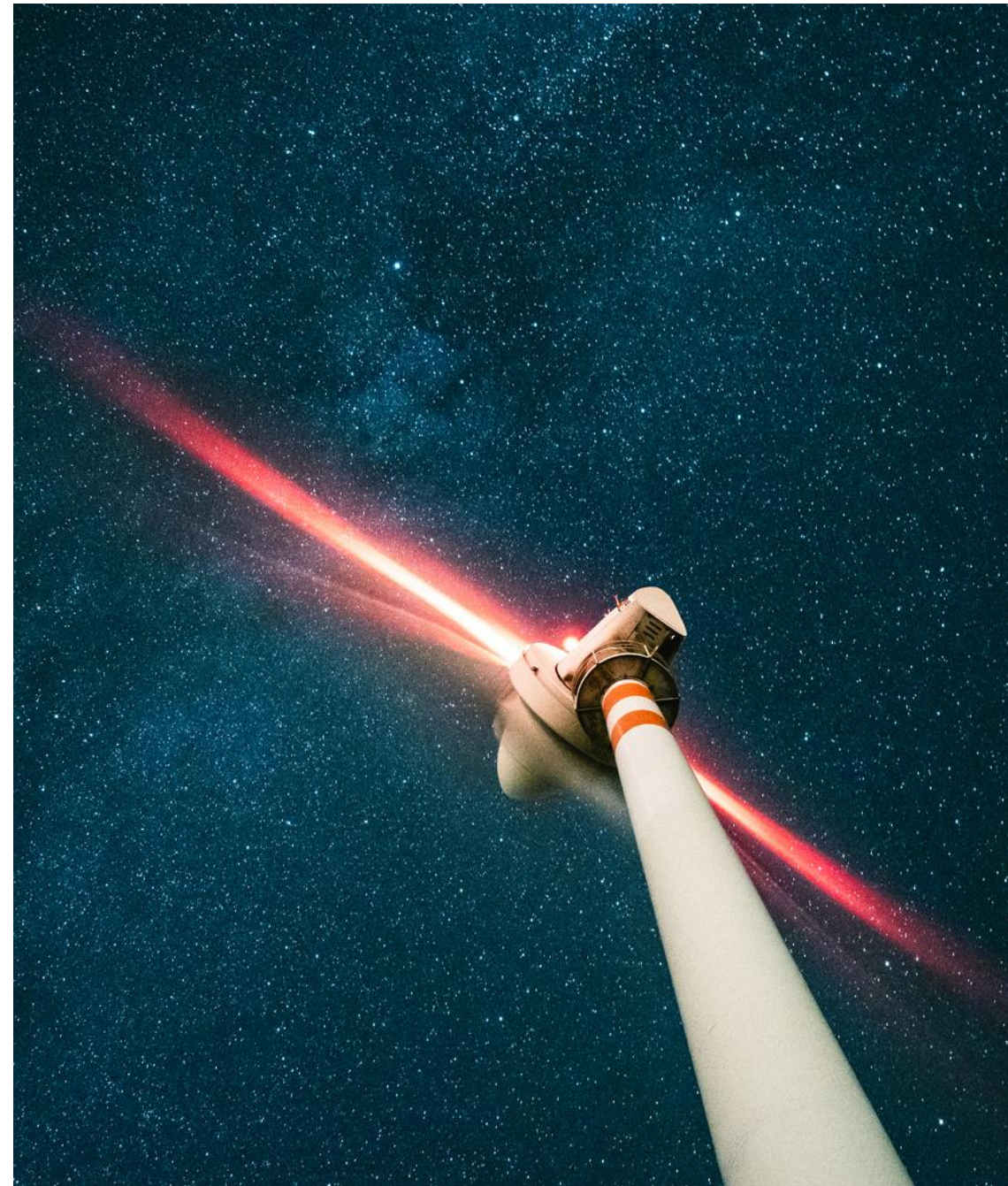


# Vision

To establish a research programme that takes a systems approach to developing and implementing sustainable, low carbon, adaptation solutions for resilient transport infrastructure and streetscapes.

It will enable carbon reduction across the UK's highest emitting sector, delivering solutions for net zero, environmental sustainability and communities across the UK. It will focus on both re-engineering current infrastructures, to reduce their carbon footprint whilst increasing their resilience, and developing solutions for new builds.

This programme is an equal partnership, with equal co-funding between UKRI and DfT along with its arms-length bodies. It will transform the way UKRI and DfT work together to build capacity linking together the investment landscape, and carrying out research.





# The Challenge

The transport sector is challenged by several climate change impacts including an increasing number of extreme weather events. However, all transportation infrastructure is constructed under design standards that consider very specific temperature and precipitation ranges and return intervals for extreme events, such as floods and extreme heat.

Compared to development of low carbon emission technologies, the adaptation of existing infrastructure to increase its ability to absorb and recover the effects of climate change is relatively **unexplored**.

Approaches to achieving net zero emissions and creating resilience in transport systems also offers the opportunity to secure co-benefits such as wider access, enhanced safety, reduced waste, greater levels of recycling, biodiversity and environmental net gain.



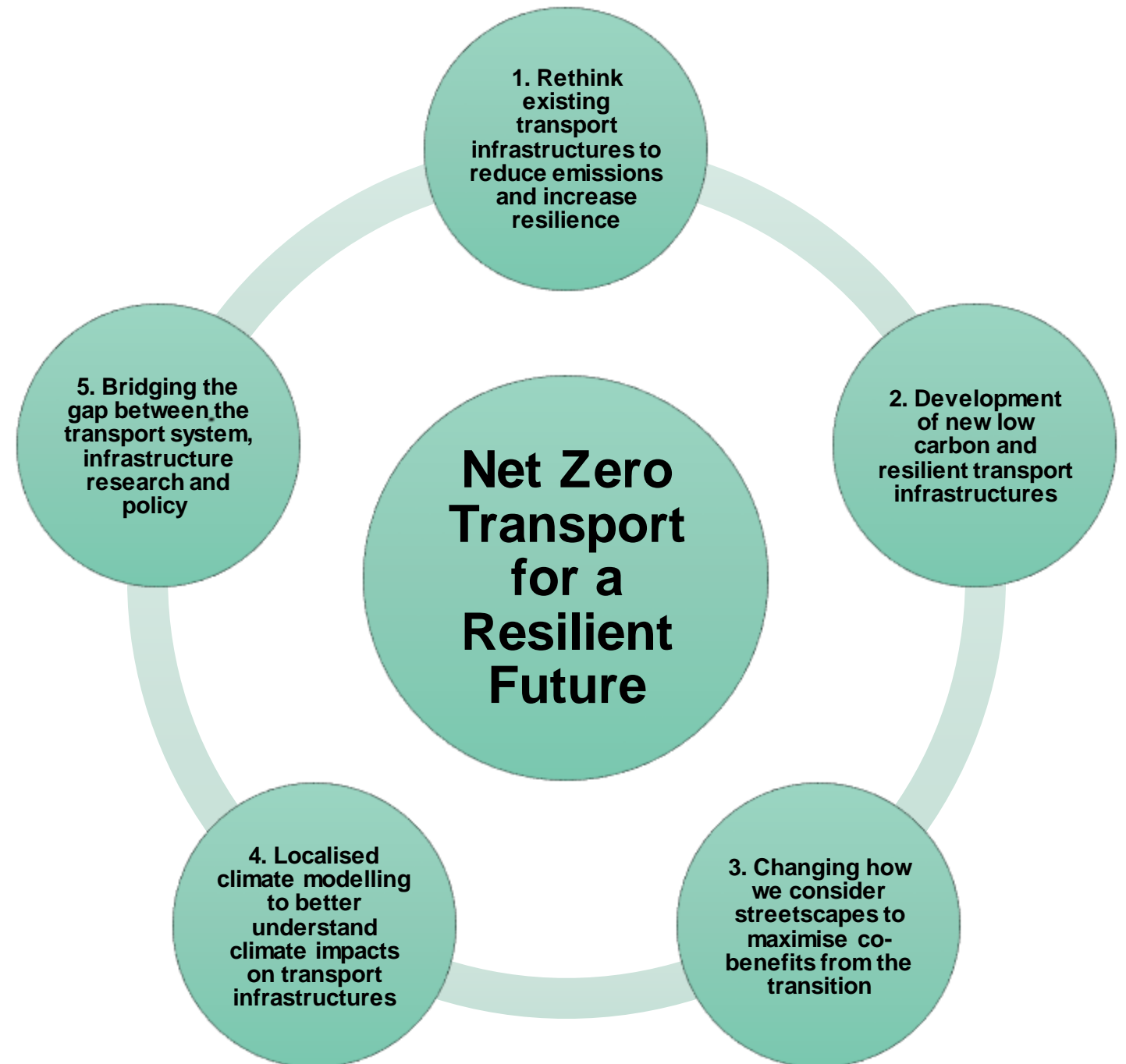


# Scope

The programme will take a systems approach to developing and implementing sustainable, low carbon, adaptation solutions for resilient transport infrastructure.

It will bring together work in climate change mitigation and adaptation. Combining early-state innovation and down-stream demonstration across transport modes to create, develop and test climate resilience in specific infrastructure examples. We recognise that different places and modes will require different solutions, while at the same time they have much to learn from each other.

It spans academic disciplines, with work required on materials, construction methods, retrofitting and behaviour change, for example. It will help the UK build resilience in our transport system, and develop innovations that have international potential as the world faces the same challenges.



# The government has made bold commitments to tackle climate change

- In 2008 the UK set an ambitious goal of decreasing its greenhouse gas emissions by 80% of 1990 levels by 2050;
- On 27 June 2019 the Government legislated to increase its ambition, committing to net zero emissions by 2050 (i.e. a reduction of 100% compared to 1990 levels).



News story

## UK becomes first major economy to pass net zero emissions law

New target will require the UK to bring all greenhouse gas emissions to net zero by 2050.

From: [Department for Business, Energy & Industrial Strategy](#) and [The Rt Hon Chris Skidmore MP](#)  
Published 27 June 2019



Chris Skidmore signs legislation to commit the UK to a legally binding target of net zero emissions by 2050

### Related content

[Climate change explained](#)

[Green finance strategy](#)

[Carbon Budgets](#)

[Low-carbon export toolkit](#)

[Government responses to the Committee on Climate Change \(CCC\) annual progress reports](#)

The UK today became the first major economy in the world to pass laws to end its contribution to global warming by 2050.



# We've set a road map for how we will meet this ambition through the Transport Decarbonisation Plan

Decarbonising Road Transport



Accelerating modal shift to public and active transport



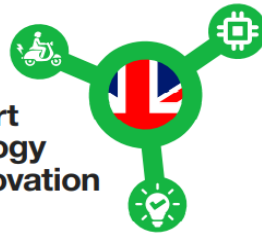
Place-based solutions to emissions reduction



Decarbonising how we get our goods



UK as a hub for green transport technology and innovation



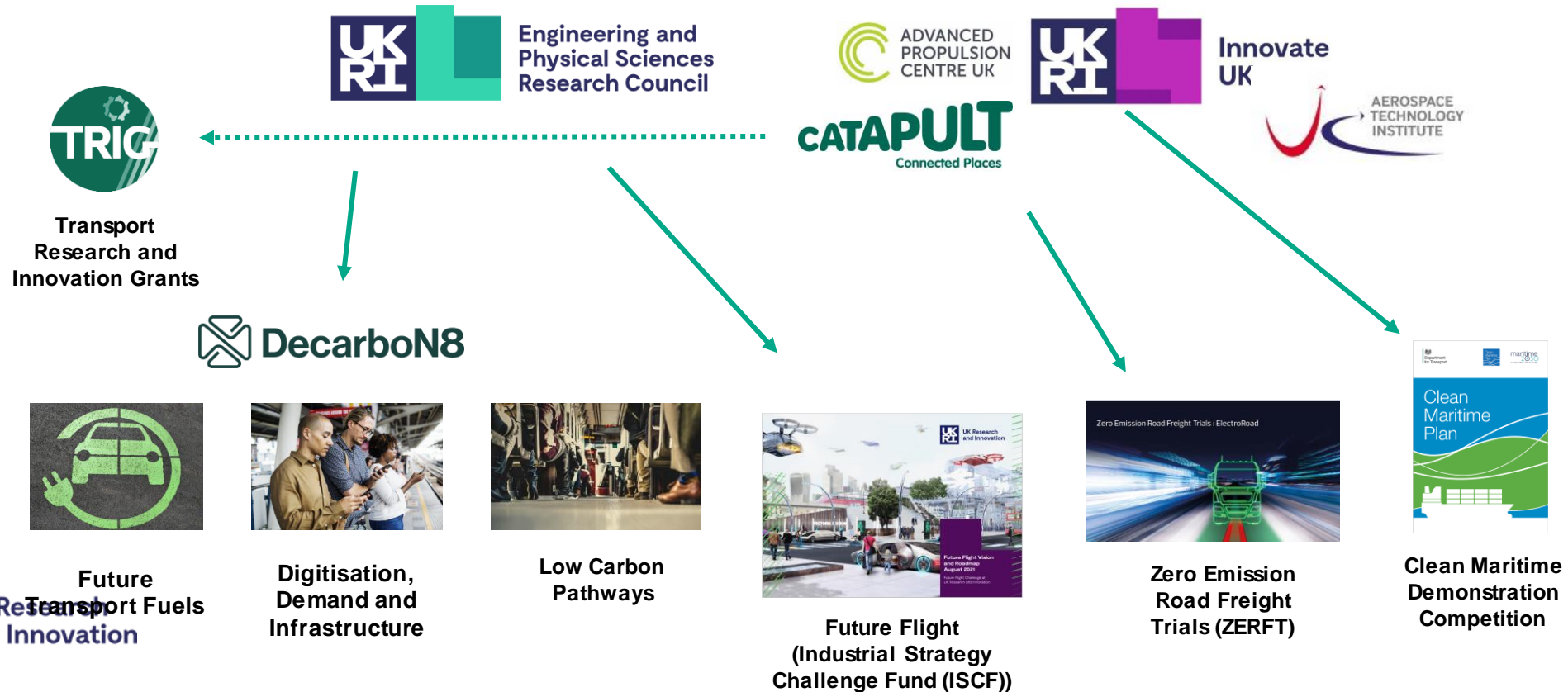
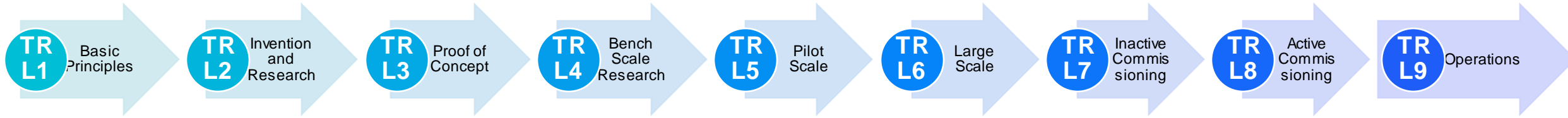
Reducing carbon in a global economy



We also need to maintain focus on ensuring our transport network is resilient to future changes in the climate

# Working in partnership to accelerate innovation

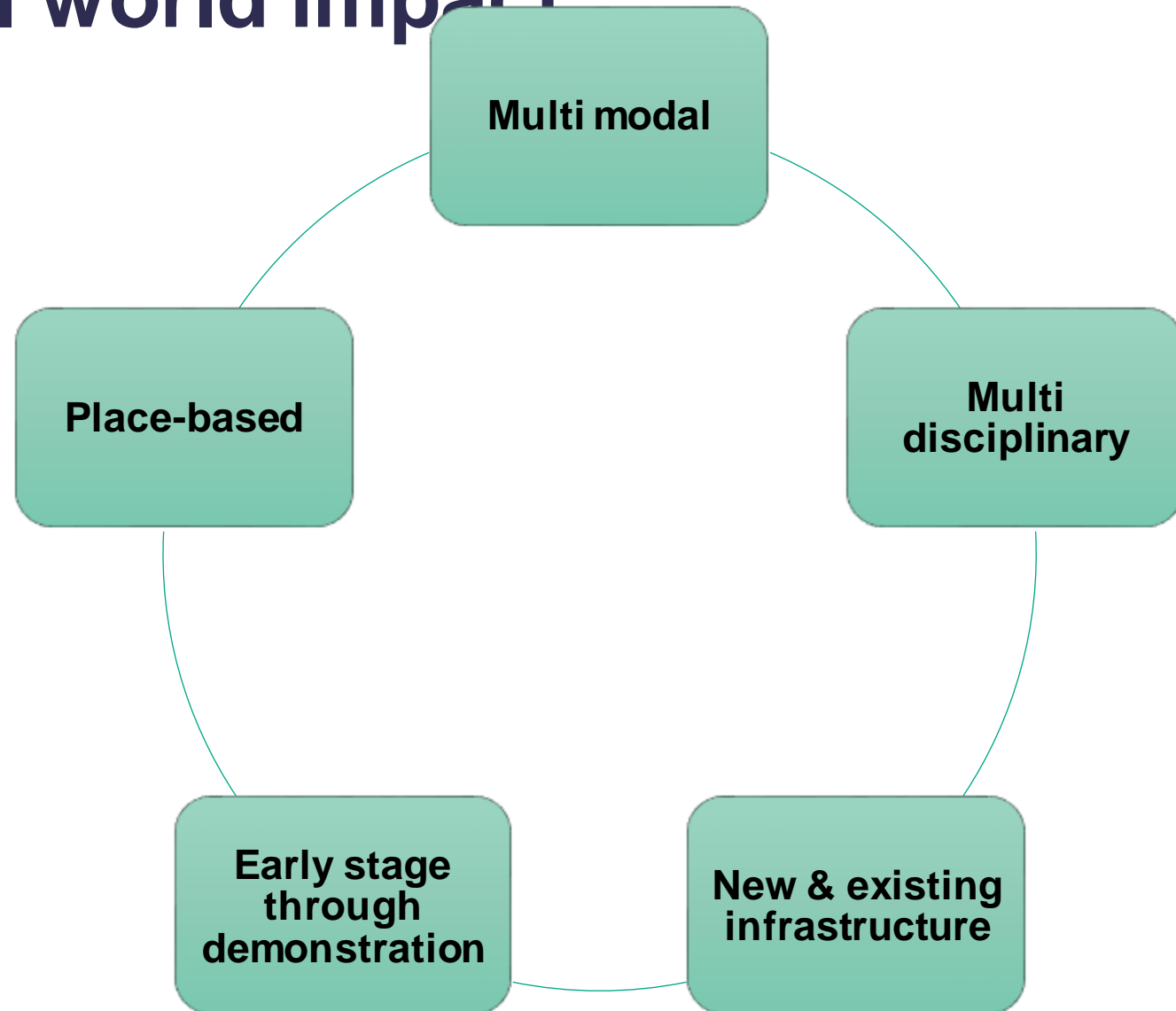
Net Zero Transport for a Resilient Future Hub





# The Hub will drive real world impact

- Research insights for DfT:
  - Build solutions for existing and new infrastructure
  - Design of streetscapes
  - Bridging the gap between the transport system, infrastructure, research, and policy
- The Hub is an opportunity to:
  - Contribute to place-based agenda
  - Build skills base
  - Attract investment into UK industries



# Delivery

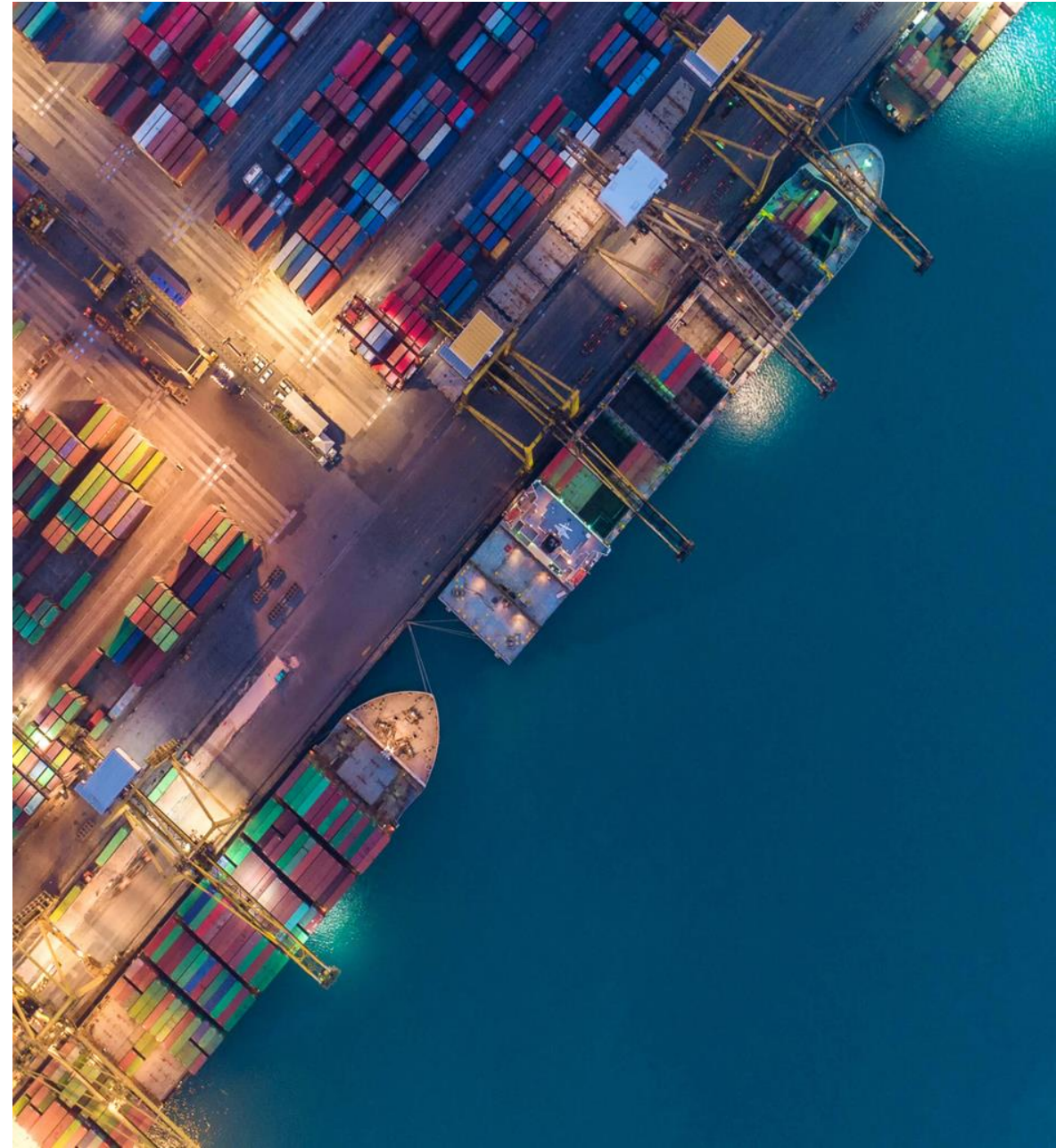
**A single £10m research hub:** UKRI and the Department for Transport (DfT), and its arms-length bodies including National Highways, Network Rail and High Speed 2. With £12.5m matched funding by the end of the hub.

Duration **43 months** fixed start date - September 1<sup>st</sup> 2023

The hub's core focus will be the delivery of a series of research work-packages, led by academics from across the hub's institutional consortium.

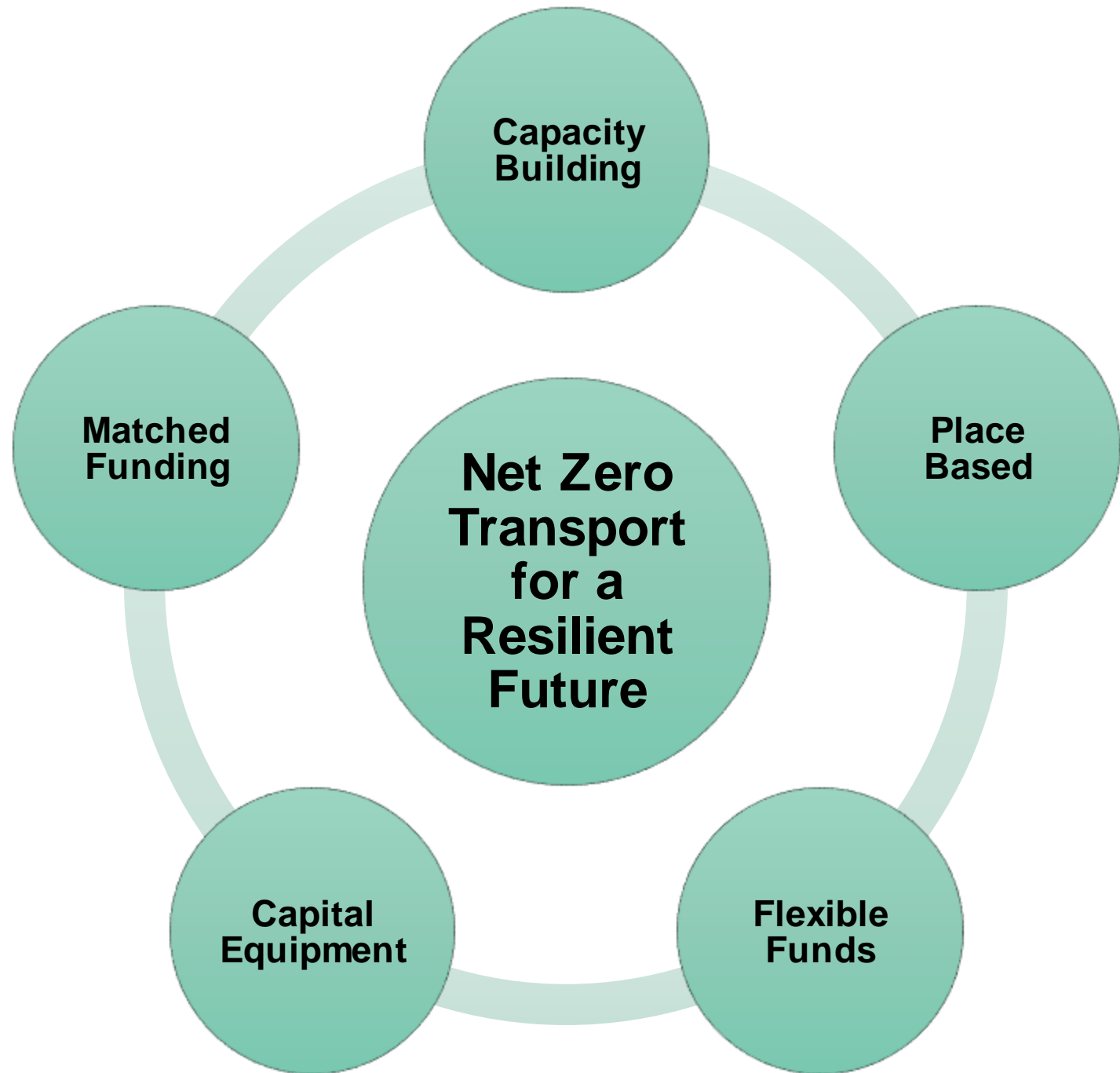
The hub is expected to create demonstrable leadership on an international scale focusing on net zero adaptation to climate change in the transport system.

Given the current impacts of climate change on the UK's infrastructure we would expect that there would be some near-term, as well as mid to long term deliverables from the hub's activities.





# Hub Expectations



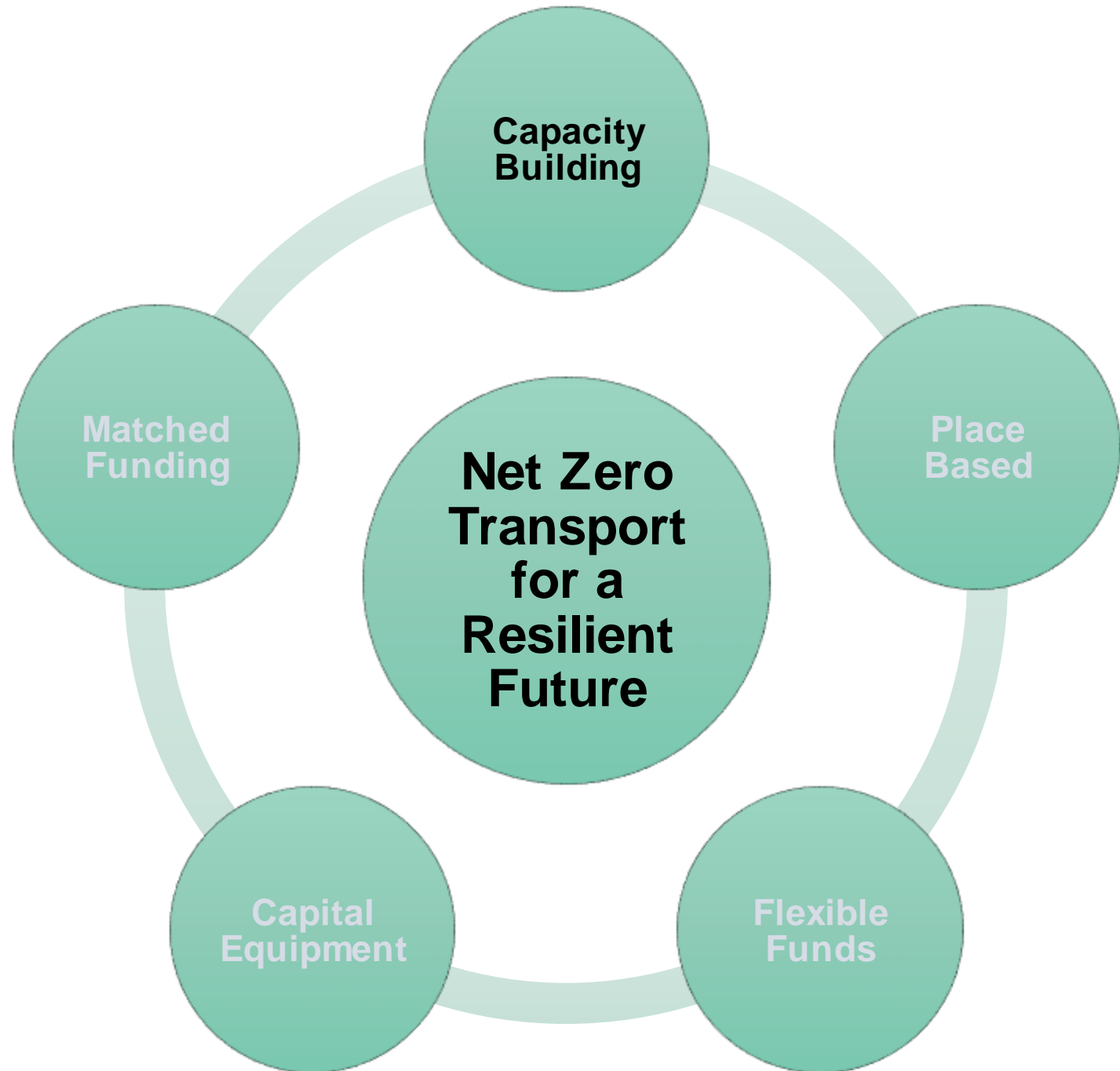
# Hub Expectations

## Capacity building and skills

There will be an expectation on the hub to deliver skills outputs, support capacity and capability growth with the transport systems UK research community. The hub should expect to **actively support career development** across all career stages in the transport sector.

## Knowledge exchange and engagement

A critical feature of the hub will be its ability to convene the main actors in the transport research and innovation landscape. The hub is expected to **engage proactively** with other major complementary investments looking at decarbonising transport, linked adaptation, sustainable choices and energy research and development landscape.



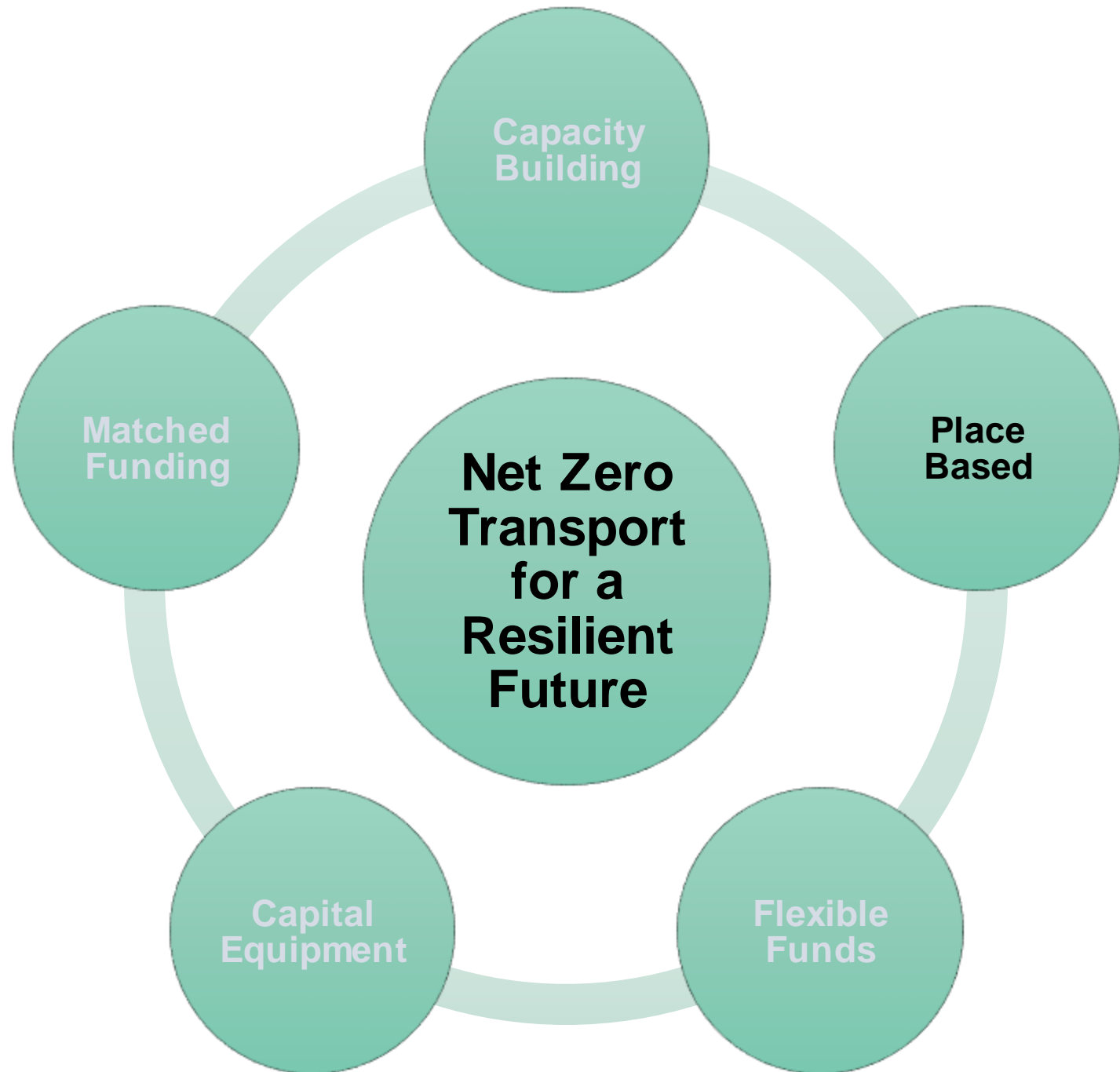


# Hub Expectations

## Contribution to place-based agenda

Transport, climate adaptation, carbon mitigation, infrastructure, and green behaviour choices impact across all UK regions, from the local to national government levels. The appropriate solution to many problems will **vary due to geographic location** and historical constraint.

While it will be impossible for the hub to address all of these issues, the hub should **engage** with local-authority and civic stakeholders in **meaningful collaboration**, delivering benefits to specific local situations rather than a generic one-size fits all approach to the wider UK. While the hub is expected to be **multi-institutional**, there is no prerequisite for them to be located in the same area of the UK as their local authority or civic stakeholder collaborators.



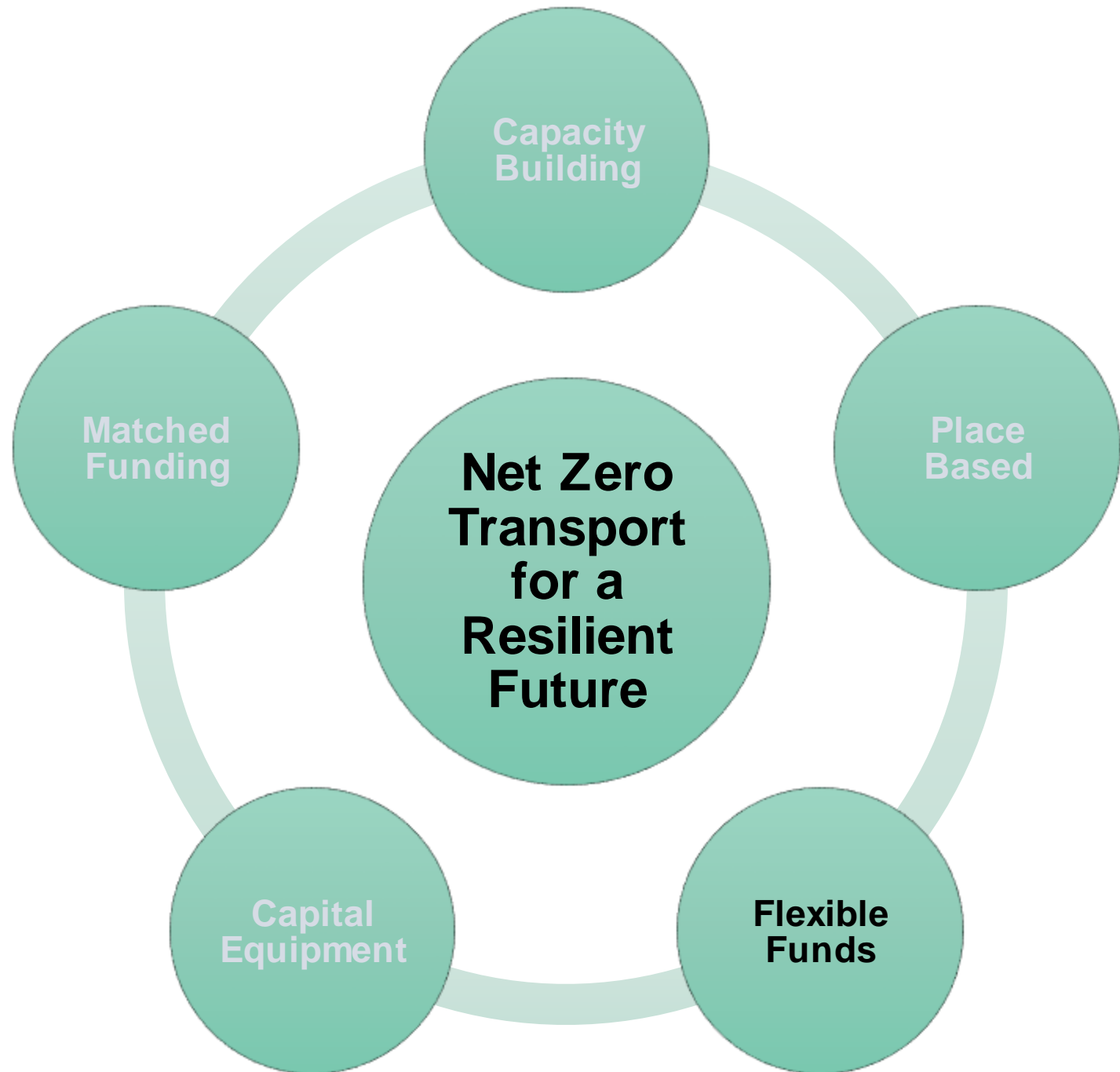
# Hub Expectations

## Flexible funds

The hub will be expected to provide a flexible funding mechanism (**up to £2m**), intended to support agile research on emerging topics and to encourage the involvement of the wider community, beyond the core academic members.

Applicants will need to think carefully about how the flexible fund budget will be commissioned via a **robust peer reviewed process** where, the allocation of funds must be fair and transparent.

In partnership with the academic and business community, the hub should conduct a **landscape mapping of research into net zero resilient transport infrastructures** in the first 6 months of the hub. This should be able to be used to identify the optimum research areas to focus on using flexible funding.



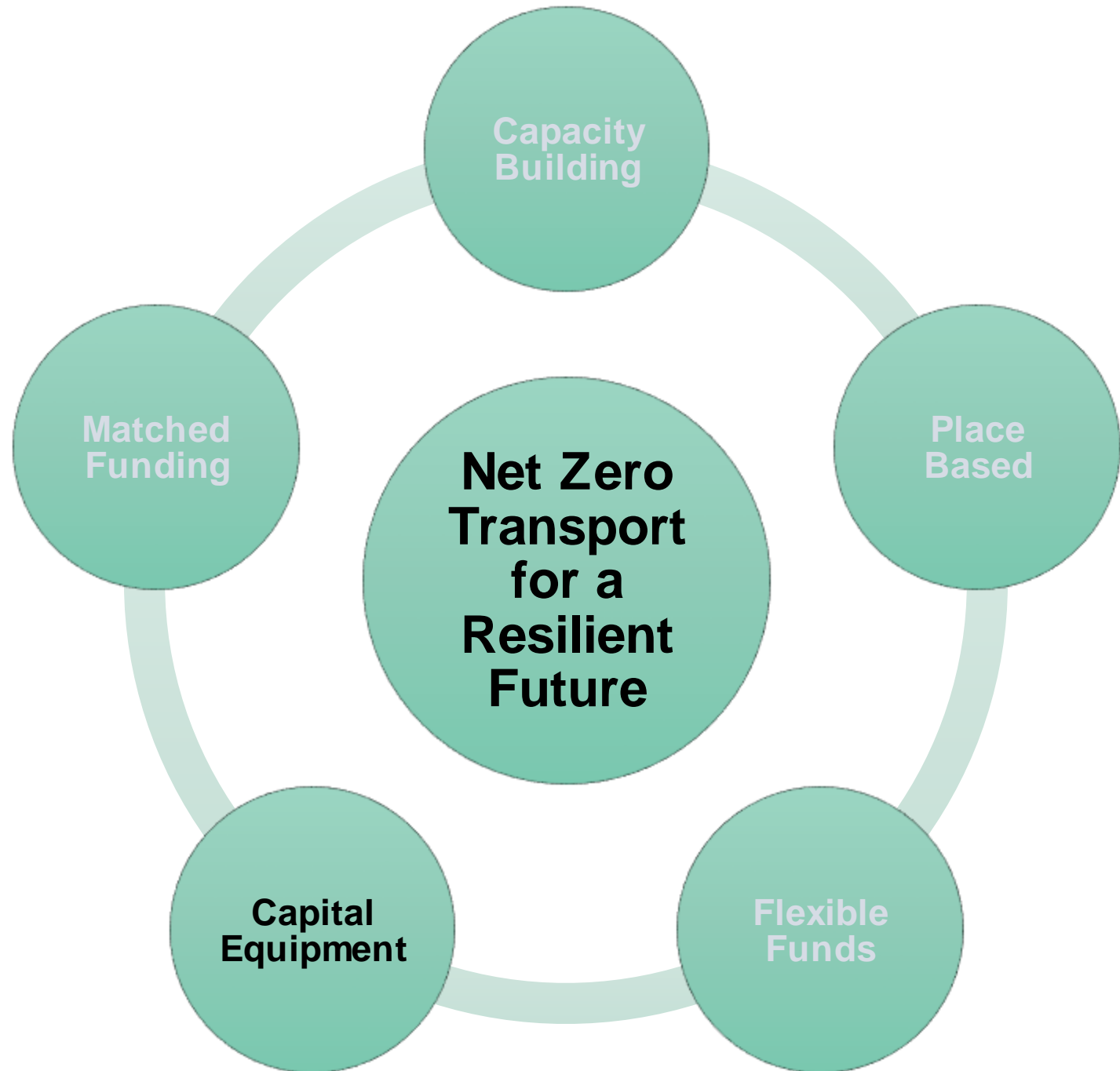
# Hub Expectations

## Capital infrastructure

Eligible equipment can be included in hub proposals **in addition** to the £10 million grant funding available, with the intention of supporting access for the transport research community to equipment needed to address the pressing research related to this challenge.

The equipment could be a single item, or a series of items, that combine to form a single asset.

Requested equipment can be between £10,000 to £400,000 in value at **50% FEC for a single item**, with matched funding, providing there is a sufficient case made for each item and the scale of investment requested.



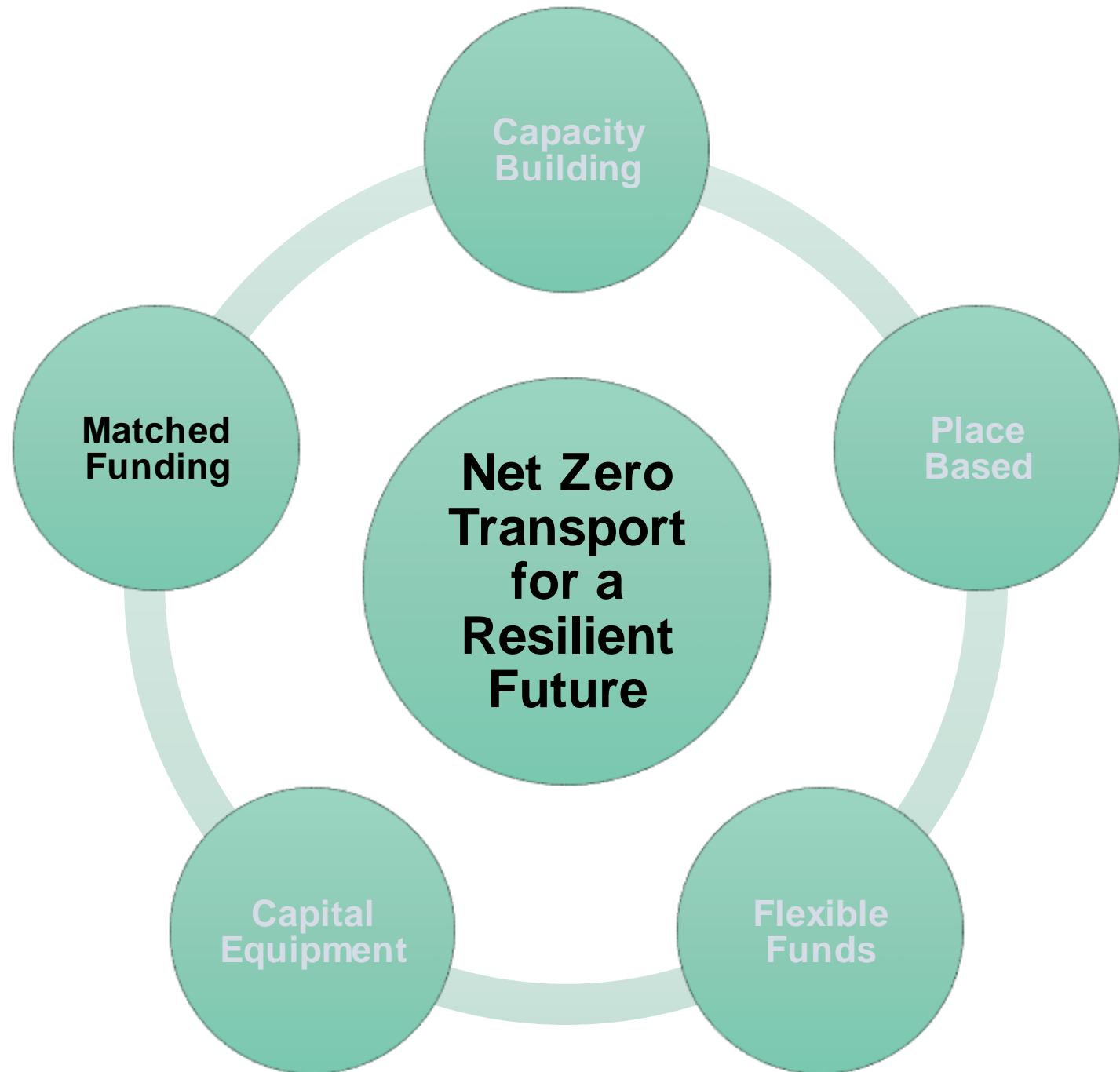


# Hub Expectations

## Matched contributions

To ensure that research outcomes from the hub can be fully exploited by industry and policy at all spatial levels, UKRI expect to see clear evidence of **genuine, substantive partnerships**, with co-creation and co-delivery of projects and activities, in addition to financial contributions.

Given the commercial interest and needs for this critical area, UKRI expects the hub to evidence at least **£12.5 million of matched funding** (from the private sector, and regional and civic bodies) over the lifetime of the grant. **At application stage**, UKRI expects the hub to evidence **at least 20p** of matched funding (from the private sector, and regional and civic bodies) to every £1 of UKRI and DfT investment. The panel will be asked to assess evidence of stakeholder interest and contributions.



# Partnerships

**We have already received substantial interest from civic bodies and companies asking how to link up to academic teams.**

**If you are such a organisation and are interested in linking up with academic groups please share your contact details with me at [james.Tarver@epsrc.ukri.org](mailto:james.Tarver@epsrc.ukri.org).**

**If you are an academic team and are interested in receiving such a list please email me and I will send the above list of the civic bodies/companies so that you can reach out directly to them.**



# Net Zero Transport for a Resilient Future research hub

- **Funding scale & duration** - One hub will be funded by UKRI and DfT, up to £12.5m (£10m at 80% fEC). Funding is available for up to 43 months. The hub will have a fixed start date of the 01 of September 2023 and an end date of 31 March 2027
- **Matched funding expectations** - evidence at least £2m of matched funding at application stage and rising to at least £10m of matched funding, over the lifetime of the grant.
- **Contribution to place-based agenda** - The hub must engage in a multi-regional manner with local authority/civic stakeholders in meaningful collaboration
- **Capital equipment** - Capital equipment between £10k - £400k at 50% fEC for a single item is available, providing there is a sufficient case made for the item

Timeline	Date
Call Opening date	02 February 2023
Webinar	22 February 12:00 – 13:00
Mandatory EOI closes	20 March 2023
Call Closing date	25 April 2023 16:00
Fixed Hub Start Date	01 September 2023

**The hub is expected to create demonstrable leadership on an international scale focusing on net zero adaptation to climate change in the transport system.**

This hub will:

- Provide a focus for the UK transport systems research community, working in close partnership with businesses, government, and administrations throughout the UK to tackle research challenges linked to decarbonisation and adaptation of the sector.
- Collaborate with stakeholders and users to address critical issues where further research and innovation is required.
- Build capacity linking together the investment landscape, carry out research, undertake knowledge exchange, develop key skills, while offering policy solutions and commercialisation for economic growth.