



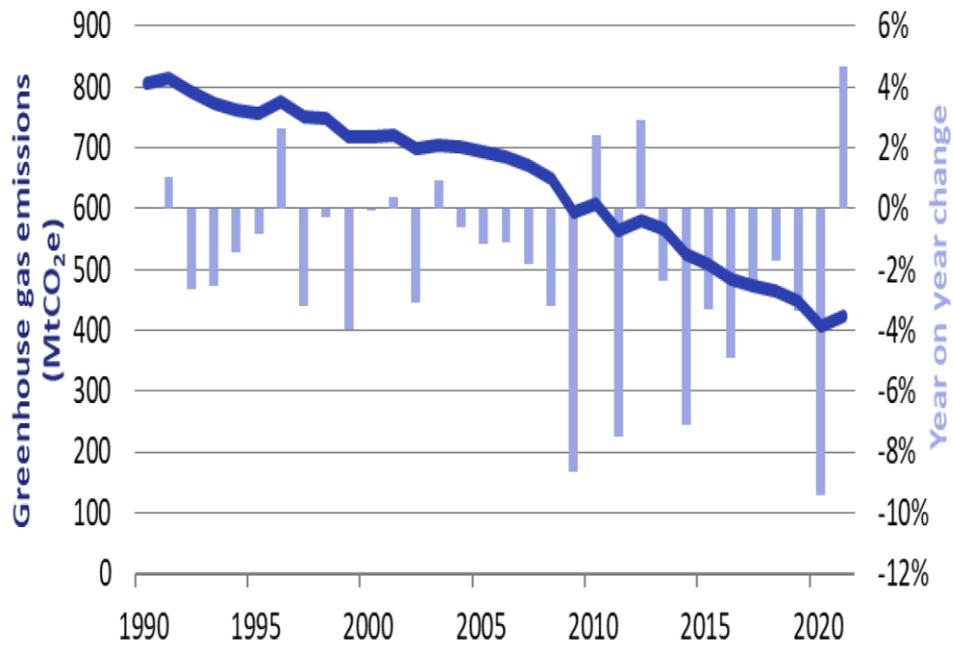
Delivering Value and Decarbonisation

**A Presentation to the Local
Government Association Construction
Conference**

7 March 2023

Around 40% of UK carbon emissions are generated by the built environment

UK territorial greenhouse gas emissions, 1990-2021



Government is committed to a trajectory for reducing UK CO₂ emissions (baseline 1990 emissions) based on Climate Change Committee recommendations

- 68 per cent in 2030
- 78 per cent in 2035
- Net Zero Carbon by 2050

The Climate Change Committee has identified the key shifts required.

- Low carbon residential heating
- Reducing energy consumption by buildings
- Decarbonisation of industry – e.g. hydrogen
- Significant reductions in vehicle emissions

National policy objectives and strategies are in place to drive decarbonisation



Productivity

- **Design:** BIM, Rapid Engineering Modelling, object libraries and configurators
- **Industrialisation:** manufacturing built assets, automation, robotisation
- **Skills:** building digital capability

Improved Operations

- **Supply chain integration:** better logistics, payment and contractual management
- **Asset optimisation:** interconnected systems, data sharing

Culture Change

- **Collaboration:** improved transparency and information flows within supply chains
- **Quality:** management systems and defect prevention
- **Safety:** Golden Thread of building safety information, site environments, occupational and mental health

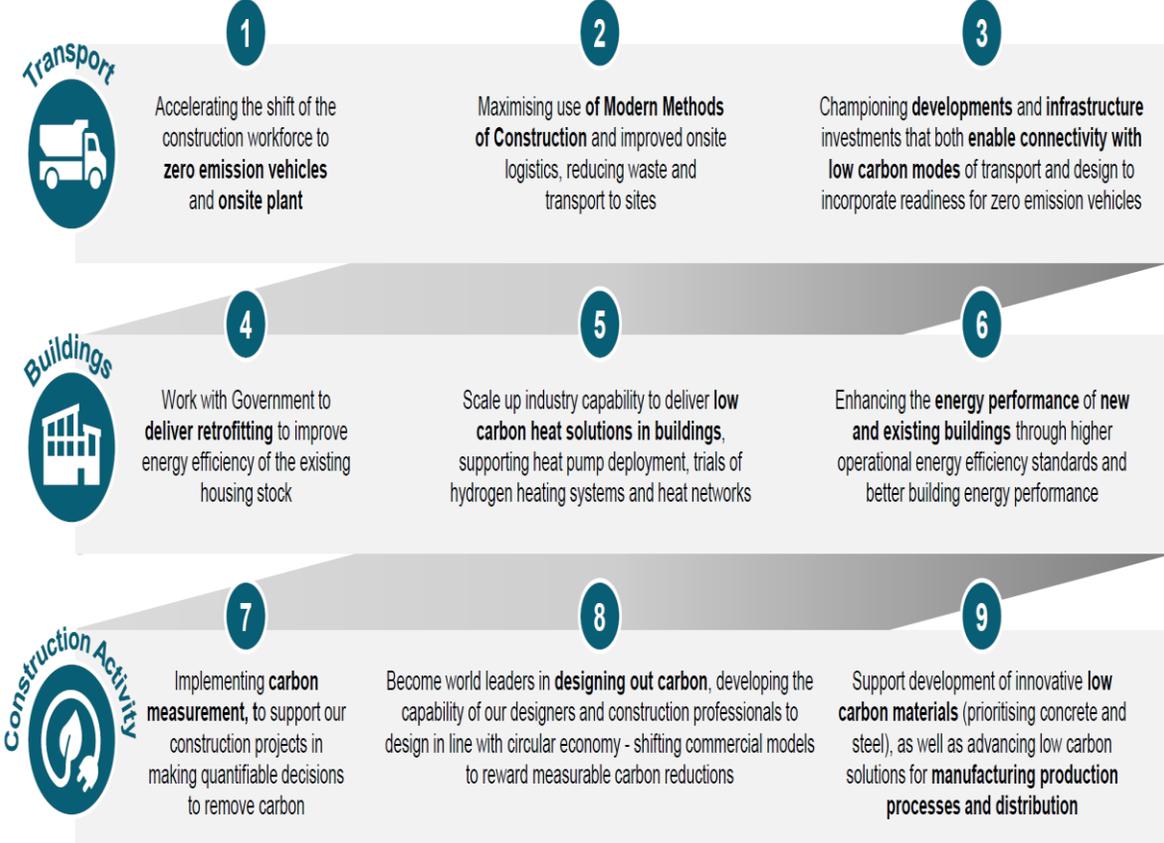
Government is working with the industry to deliver decarbonisation

The **Transforming Infrastructure Performance Roadmap to 2030** and **Construction Playbook** set the ambition of decarbonising construction and require Whole Life Carbon Assessments for Government projects.

- The **CO₂nstruct Zero** Change Programme includes transport as one of 3 strategic themes – for vehicles and plant, and reducing the need for transport movements.
- The Construction Leadership Council is currently consulting on a **Roadmap for Zero Diesel** sites.
- HS2, National Highways and other **government clients** are piloting Zero Diesel sites and clean plant.



The priorities



Support for innovation capacity building and collaborative R&D is a critical success factor

£170m
Government funding

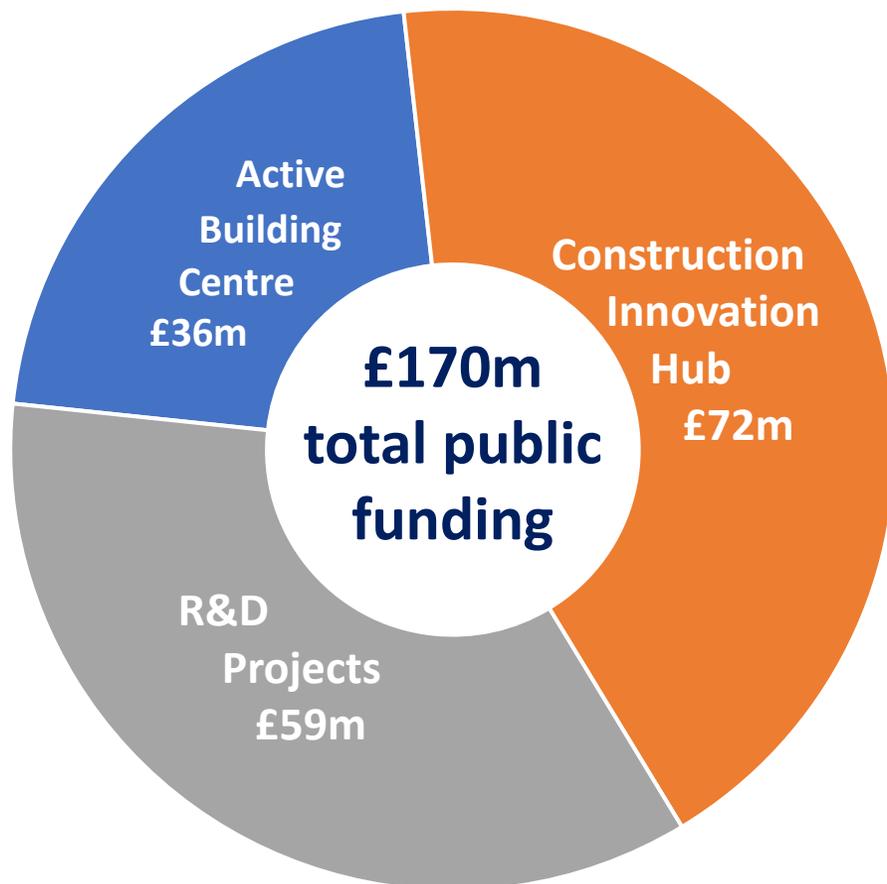
£250m
Industry funding

4 years
of funding

Build
capacity to
innovate

Transforming Construction Challenge 2018-22

Inputs



Actions

Productivity

15%

Eliminate the gap between construction and the rest of the economy

Lower costs

33%

Reduction in the initial costs of construction and the whole life cost of built asset

Lower emissions

50%

Reduction in greenhouse gas emissions in the built environment

Faster delivery

50%

Reduction in the overall time from inception to completion, for newbuild and refurbished assets

Great examples of embedding decarbonisation and social value in construction projects and programmes exist - Istanbul Sustainable Urban Management Plan

4 cross-cutting sub-themes informed the development of the SUMP

Safety

GESI

Resilience

Innovation



Theme 1: Transition to Low carbon

- Low emission zones
- Decarbonised public transport
- Improved provision for cyclists and pedestrians



Theme 2: Seamless Transfer and Integration

- Transport system control centre
- Improved information for passengers



Theme 3: Reducing Congestion

- Congestion charging
- Improved parking enforcement
- Construction logistics centres

The Forge: The world's first platform-based office building

Land Securities developed a product platform to improve cost and build time on a **£70m** large office development, The Forge, in London.

- 10% capital cost reduction, 30% less material cost and waste, 15% shorter programme
- 50% fewer workers needed on site – safer conditions and **13.5% increase in productivity**
- 20% reduction in supply chain emissions, Net Zero building.

A Platform-based approach to schools and hospitals

- Uses a **product platform of standardised components**, which are precision engineered and manufactured. Every component is tagged and traceable.
- **75% quicker to deliver** than traditional onsite construction.
- A **70% saving in whole life carbon emissions**, through reduced waste, and improved heat and energy performance.
- **90% of the building can be reused or recycled.**
- Will be used on a **£27m school project** in 2023.



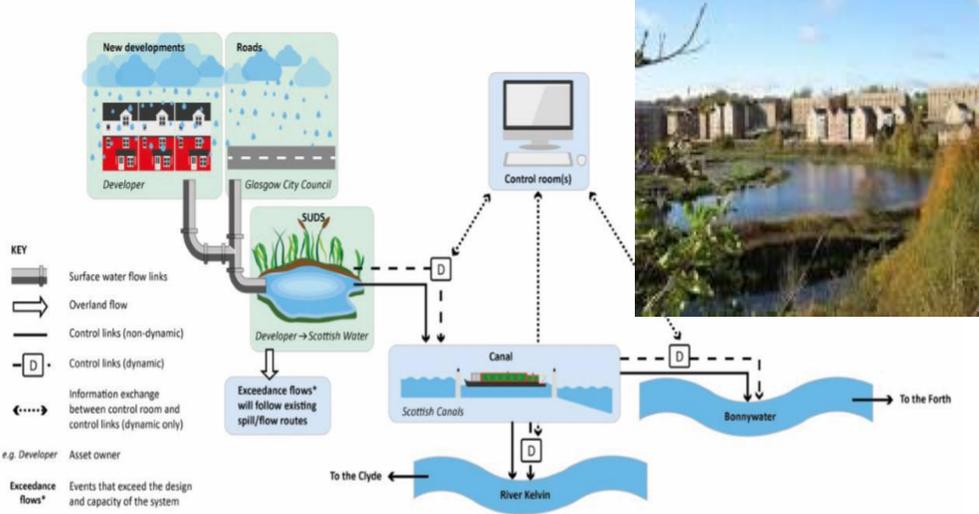
Foreshill Community Healthcare Centre

- Designed to achieve outstanding environmental performance from the outset, based on a whole life carbon approach.
- Manufactured offsite and assembled onsite, taking advantage of a known performance platform, cost £3m.
- Reduced duration of onsite activity by 13 weeks.
- Certified as achieving the Passivhaus standard in 2021. Consumes less than 20% of the energy of a typical NHS clinic, saving an estimated 411 tonnes of CO₂ pa.



Glasgow Smart Canal – Climate Resilience

- Repurposes 18th Century canals using modern data analytics and autonomous systems, co-ordinated by a single control system
- Uses weather forecasts to project levels of runoff into the canal, and has full historic data to inform the hydrological model
- 22 outstations monitor water levels and flow, and automatically adjust the water level in the canal, through feeders and sluices
- Cost £17m (est saving £75m), saved 35K tonnes CO₂,
- Enabled regeneration of 110 hectares now safe from flood risk



Summary: What steps are needed to decarbonise construction?

- A whole-life approach to asset management is an essential success criterion. Significant reductions in carbon emissions can be achieved within existing project budgets, or with limited additional capital expenditure – with benefits realised through savings when in operation.
- Carbon is an effectively lens to drive improvements in productivity and efficiency at all stages of the asset lifecycle, from design through delivery to operation. R&D focused on one delivers benefits in relation to the other.
- A clear policy framework is required to deliver decarbonisation – but this is insufficient unless it influences operations – planning, procurement, contract terms, the delivery model and asset management.