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ADEPT
Association of Directors of Environment, Economy, Planning & Transport

ADEPT LIVELABS2
Decarbonising Local Roads

Giles Perkins FCILT, Programme Director
Live Labs 2 - overview
November 2026

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Today

ADEPT LIVELABS2 Decarbonising Local Roads

- Live Labs 2 overview
  - *Collaborative discussion*
- Measuring Carbon
  - *Collaborative discussion*
- View from the Private Sector (Clearview)

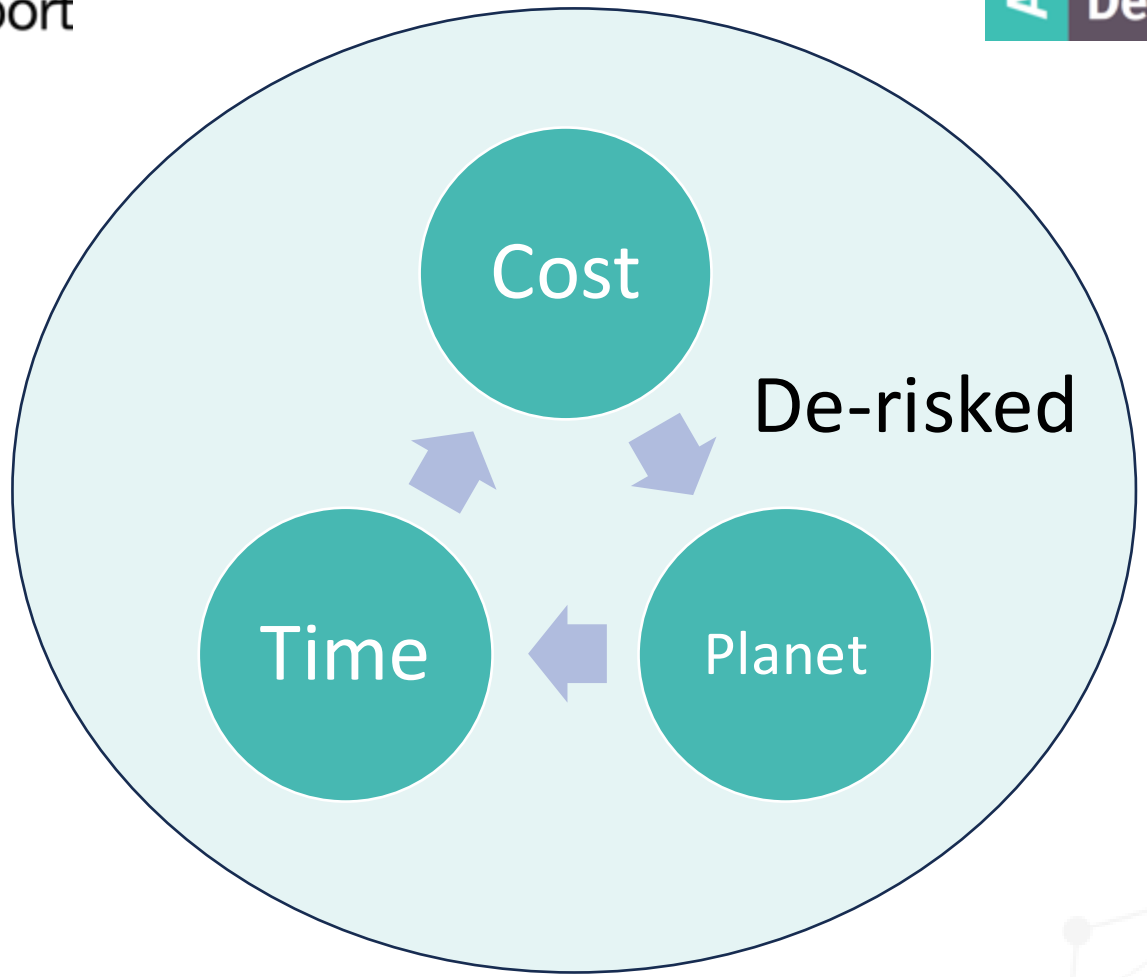
12:30 LUNCH

- Live Lab deep dive
  - *Collaborative discussion*
- Next steps



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£30m innovation fund

7 Live Labs

4 themes

4 nations

Carbon baseline and measurement

Methodologies, products and services

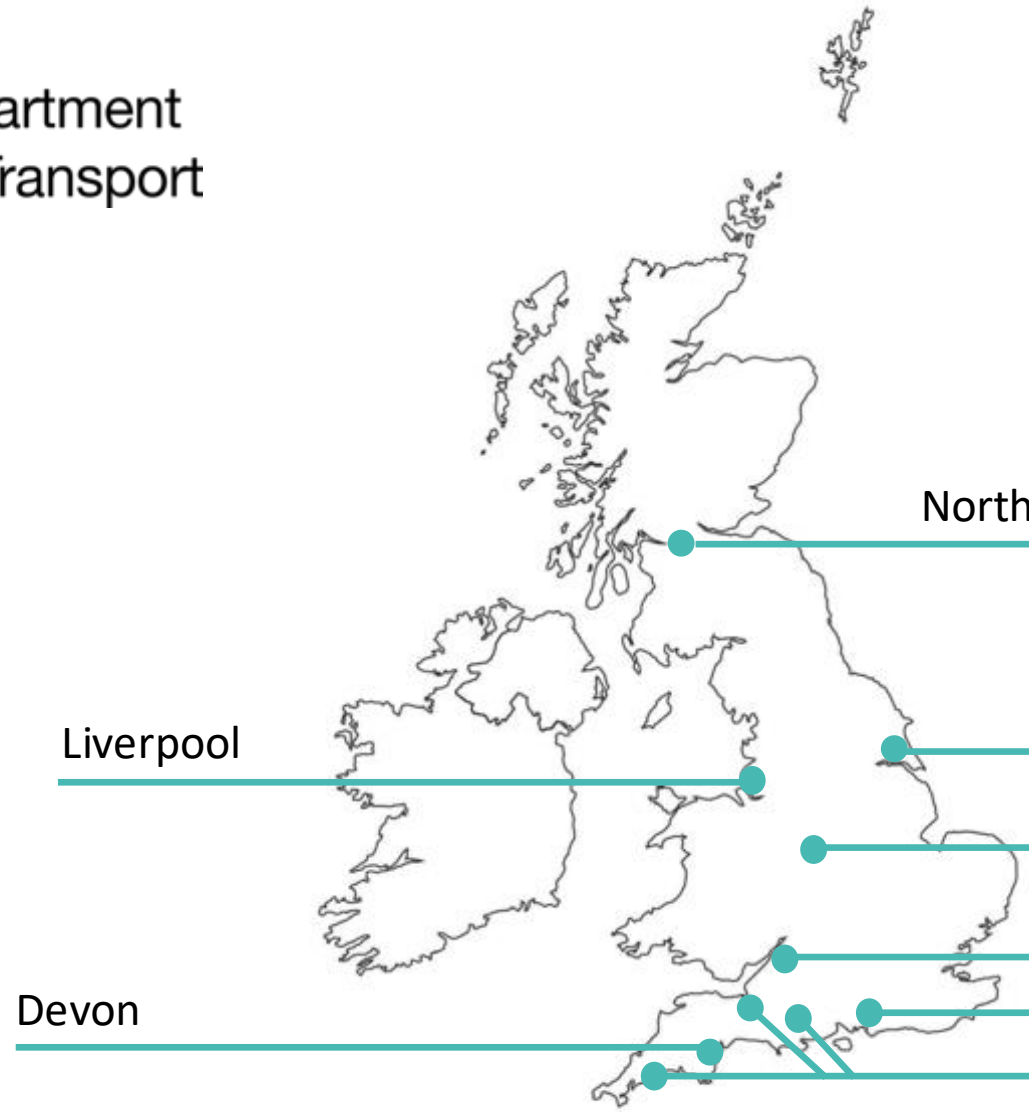
Longitudinal monitoring & evaluation

Year 4, amplify and accelerate

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Live Labs 2 website



*CEDR

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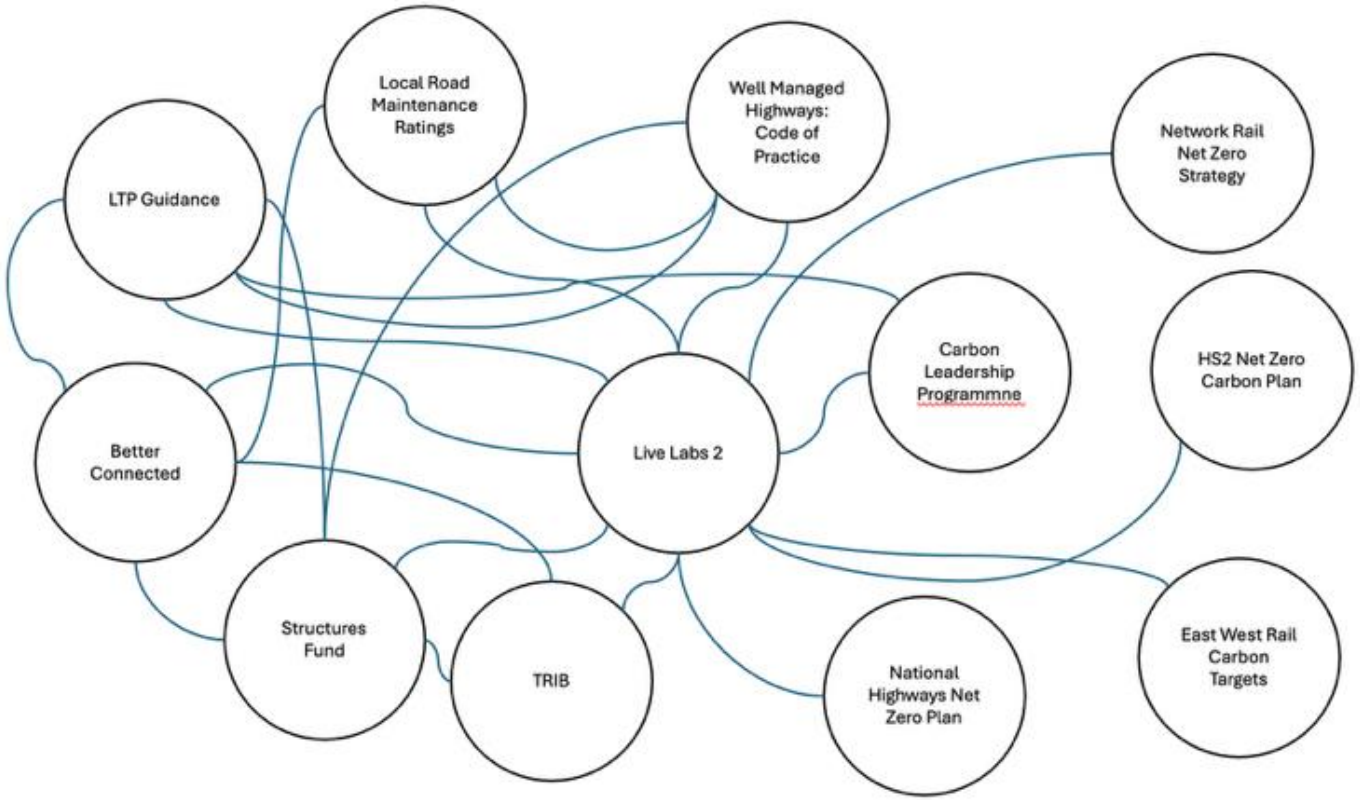
Four thematic areas

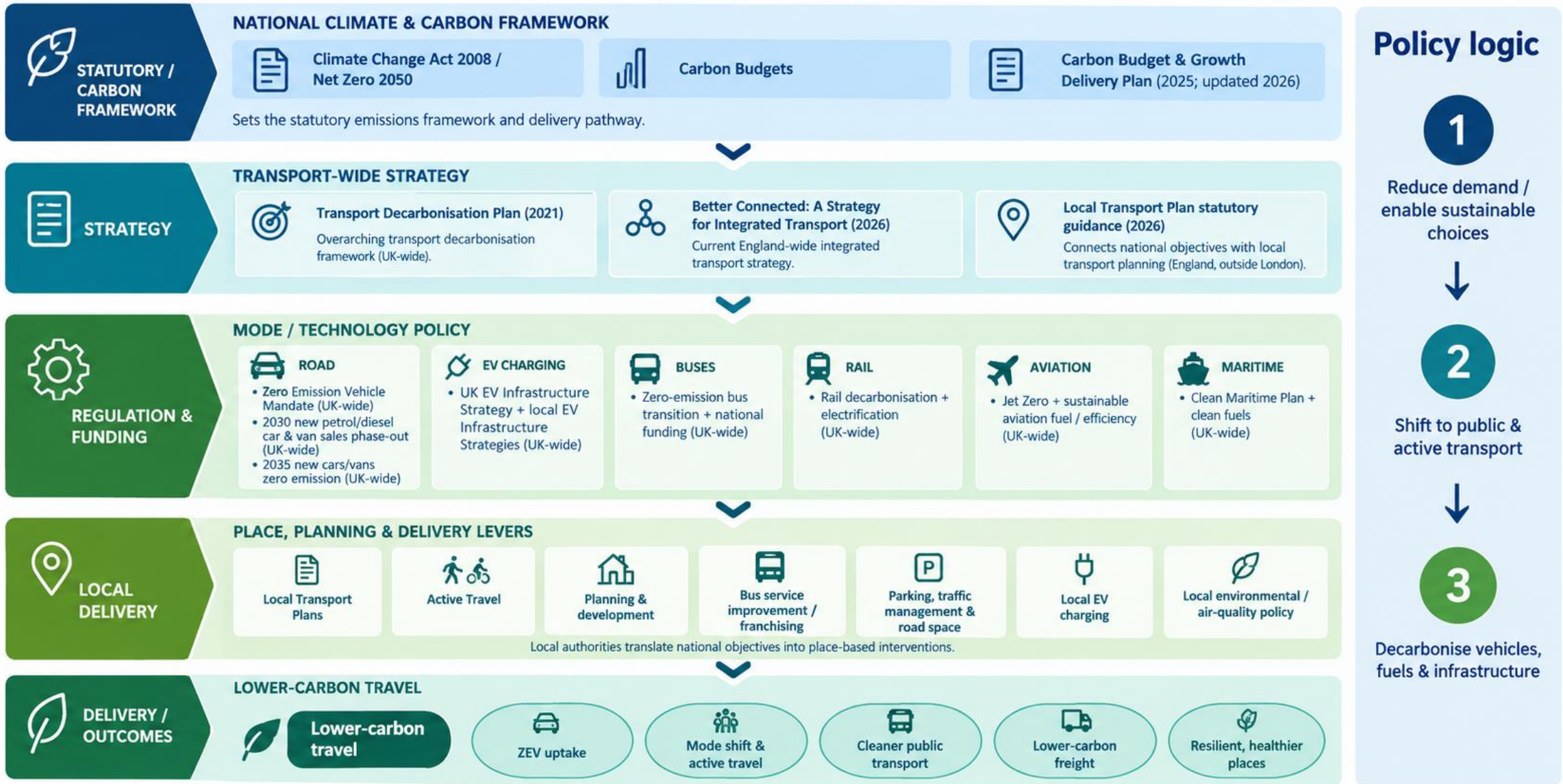
- Centre of Excellence for Decarbonised Roads (CEDR)
- Corridors and Places
- Street Lighting
- Green assets & infrastructure

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Systematic contributions





Policy landscape shown at September 2026; selected principal instruments, not exhaustive.

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"I want to set you a challenge as local leaders: Get involved with Live Labs 2. Not just as an observer, but by getting stuck in… By learning… And by sharing successes, so that local triumphs can benefit the whole nation".

Simon Lightwood, MP, Parliamentary Under-Secretary of State for Local Transport

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Statutory guidance, Local transport plans

> As part of local transport outcome frameworks, LTAs must report on the carbon emissions of their local transport projects. LTAs will need to report on both the user and infrastructure emissions of schemes included in their local transport delivery plans.
>
> LTAs must also use QCG when developing their LTPs. However, LTAs can decide how to apply the different approaches set out in QCG flexibly and subject to their local needs and circumstances.
>
> QCG should be used by LTAs early in the development of their LTPs to consider how transport emission can be reduced as part of their LTP. This will provide the greatest opportunities to reduce the amount and costs of carbon emissions.

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Local highways maintenance transparency report

B9 – Adapting roads to withstand climate pressures

Climate and environmental factors, such as heavy rainfall, prolonged heat, and freeze-thaw cycles, are integral to effective highways asset management, as they influence asset performance, deterioration rates and long-term resilience. Understanding both the impacts of a changing climate and the carbon implications of maintenance activities supports better decision-making, helping authorities to optimise durability, manage risk and deliver best whole life value from their assets.

	None of the above	
9.1.6	Have you measured and benchmarked the greenhouse gas emissions from your highways maintenance service using a recognised industry standard? Or do you have arrangements in place to do this, such as by signing up to the DfT funded ADEPT Carbon Leadership Programme.	**Yes / No**
9.1.7	Have you formally engaged with the DfT funded ADEPT live labs 2 Programme, to understand what lessons your authority can utilise to increase the efficiency of your operations and support decarbonisation efforts?	**Yes / No**

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Strategic & tactical interventions









CEDR (North Lanarkshire & West Midlands)

Centre of Excellence for Decarbonising Roads

1. **Demonstrator Trials**
2. **Knowledge Bank Development**
3. **Industry Engagement**



KNOWLEDGE BANK
A central resource for data, tools and insights

Home | Materials | Case Studies | Carbon Calculator | Search | Community | Sign up | Sign in

Case Studies

Grid | Map

Search by: Name

Search

Showing 19 results

Page Size: 12

Sort by: Date



Line Marking - Transverse

Eco Hibrite | Eco Hibrite AR | Pumabrite | Spectrum ECO Versaline | UltraLine | Weatherhine

As part of Live Labs 2, North Lanarkshire Council trialled 5 different low-carbon alternative against traditional thermoplastic as transverse, equidistant lines. This was replicated across 3 sites – one A road.

North Lanarkshire



ACLA - King St. Carpark

ACLA®

As part of Live Labs 2, North Lanarkshire Council has trialled ACLA, a low-carbon aggregate in the binder course of the King Street Car Park resurfacing works. These works were undertaken in September 2025, through a full carpark closure for 5 days.

North Lanarkshire



West Midlands Pothole Phase 2

Degafill | Elastomac | EZ Street Asphalt® | HRA | Thermal Road Repairs | Ulipatch Bio | Valfix

The trials were conducted on the West Midlands Live Network in Sandwell on the 16th July 2025. We trialled a total of 7 materials (Degafill, Ulipatch Bio, EZ street asphalt, Valfix, HRA45/10, Thermal Road Repairs, Elastomac).

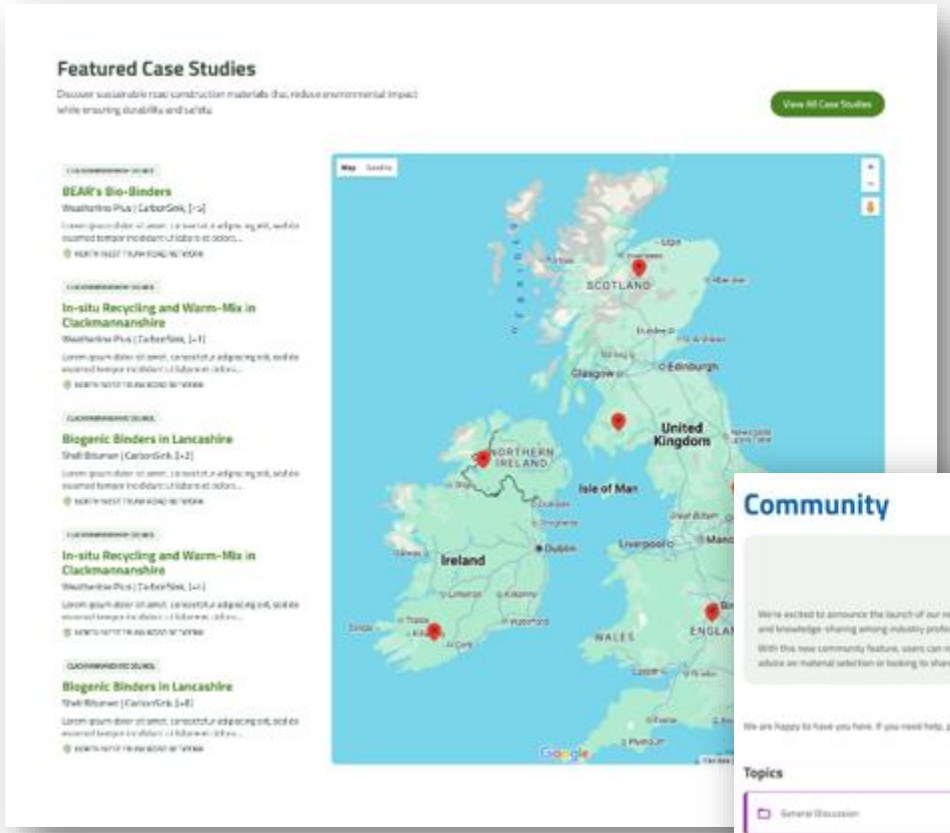
Sandwell

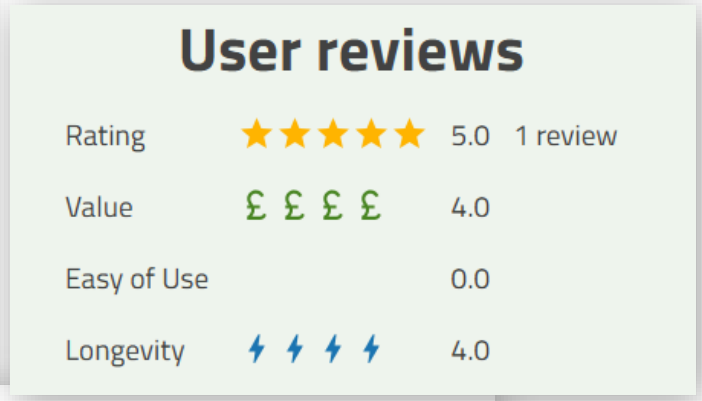
Real-world testing
Practical trials on live roads to generate valuable evidence.

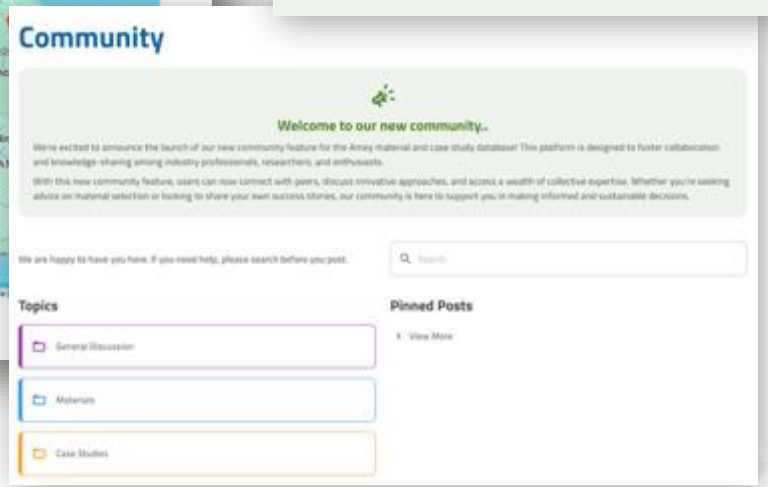
Centralised knowledge
A growing bank of data, tools and case studies for the sector.

Stronger together
Engaging the industry to share, learn and drive change.

CEDR Knowledge Bank







East Riding – decarbonising streetlighting

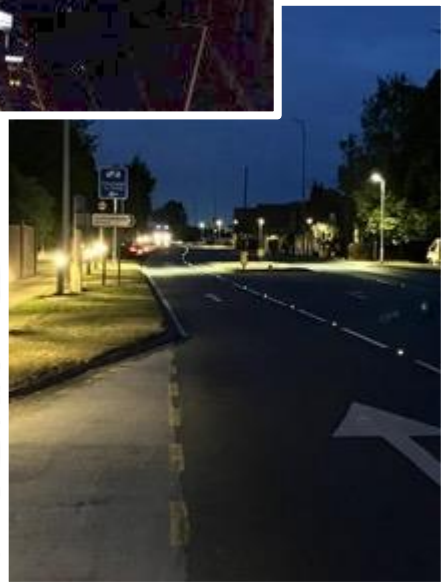
- Over 7.2m streetlights in the UK
- Over £1b cost per year
- Design guidance uses the word “must”
- Social Factors
- Breaking the dependance
- Is lighting really a safety mitigation?
- Where is the data?



East Riding – decarbonising streetlighting

- Holistic visual design to replace streetlighting
- Use of enhance visual materials
- Low maintenance lighting specifically designed for pedestrians
- Creation of world first AI system to monitor driver safety in the dark
- Development of carbon and cost decision support tool





East Riding – Decarbonising Streetlighting

- Saving of **£1.2m** on test sites
- **Carbon saving >130t** over the next ten years
- **Reduction** in driver speeds up to **10%**
- Near misses reduced by **12%**
- Collision rates down by **one third**
- **More expansive business case being submitted**

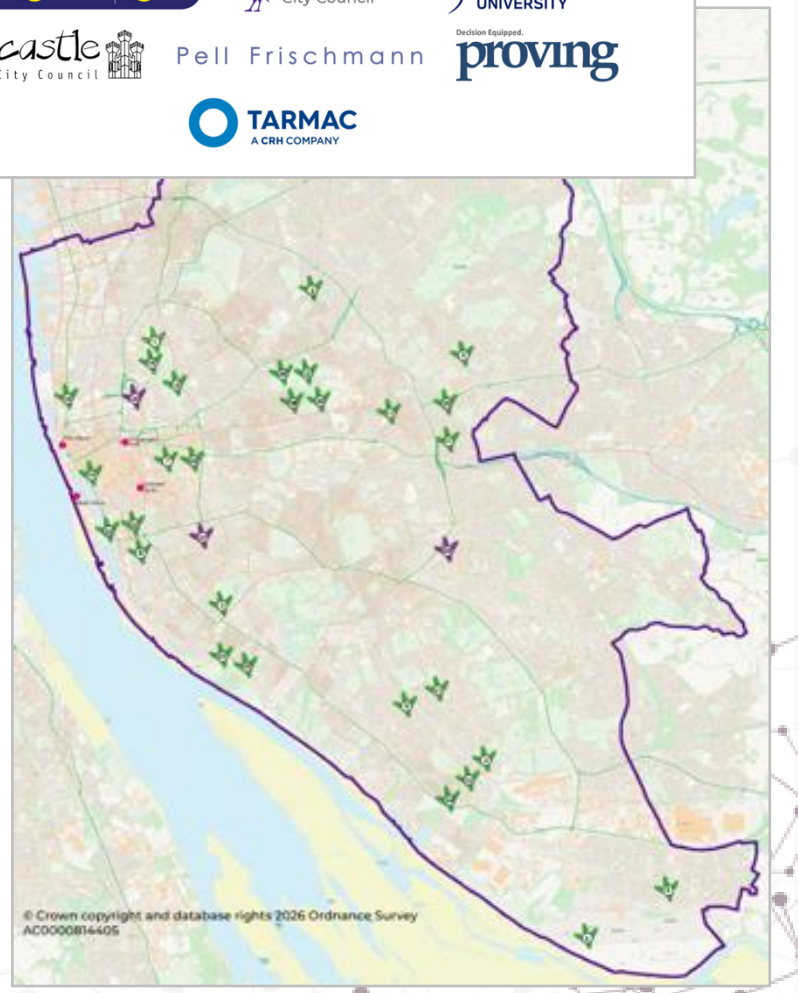




		Articulated HGV		Bus		Car		Motorcycle		Total	
Camera	Monitoring Period	Whole Day	Dark Periods	Whole Day	Dark Periods	Whole Day	Dark Periods	Whole Day	Dark Periods	Whole Day	Dark Periods
MP#1	Sep-24 (Before)	30.4	33.28	32.86	34.07	32.72	34.15	34.24	34.15	32.65	34.14
	Sep-25 (After)	27.76	31.4	31.95	32.49	32.21	32.49	31.65	30.59	32.12	32.47
	Change from Before	-8.86%	-5.65%	-2.77%	-7.75%	-1.56%	-4.86%	-7.56%	-10.42%	-1.62%	-4.89%

Liverpool – Eco-system of things

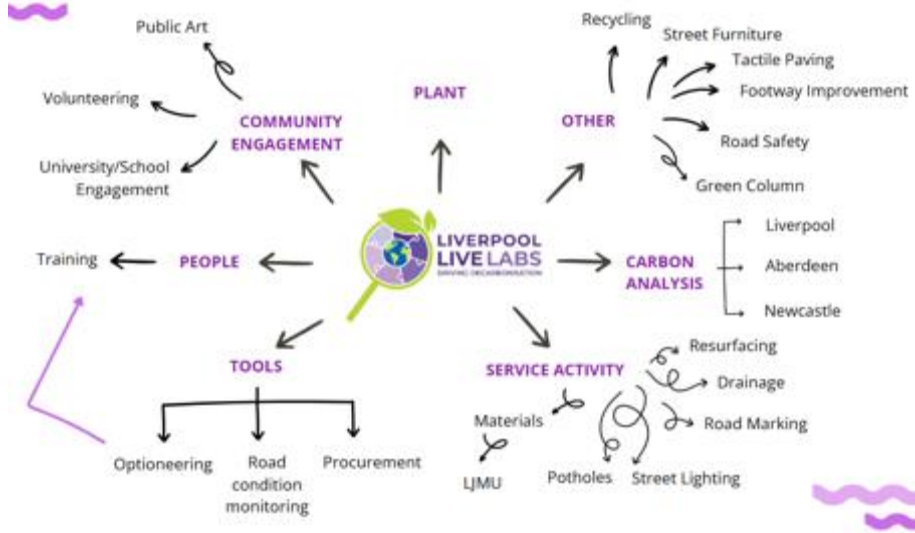
- Highways are the city's **largest physical asset** (£4.9bn replacement value)
- **Historic under-investment with variable conditions/aging infrastructure**
- Commitment to an ambitious **Net Zero 2030 target**, but:
  - No baseline for lifecycle carbon existed
  - Supply chains and procurement processes were fragmented
  - Limited collaboration meant low adoption of decarbonised materials/plant.
- Complex urban neighbourhoods require scheme-by-scheme decision
- No tools/methods for consistent carbon-led optioneering.
- Business-as-usual highways maintenance alone **cannot meet net-zero trajectories**.



Liverpool – eco-system of things

1. **Carbon-led Decision Making**
   - Deployment of **Carbon Hierarchy Lens (CHL)** for lifecycle optioneering.
   - Scheme-by-scheme carbon scenario modelling.
2. **Governance, Procurement & Process Transformation**
   - Development of **new legal frameworks**, mixed-economy contract structures, and design manual changes.
   - New workflows to embed early-stage carbon considerations.
3. **Infrastructure Interventions (26 innovations)**
   - Low-Carbon Materials, Processes & Technologies including:
   - Paving, line markings, columns, materials, drainage
4. **Community Engagement**
   - Public Art/Volunteering/Schools engagement
5. **Joint demonstrator approach**
   - Aberdeen & Newcastle

Whole-system model



Liverpool – eco-system of things

- Innovation = (**time** + **effort** + **planning**) and **collaboration** is non-negotiable!
- Low-carbon material doesn't mean high costs - **smart choices** can save **carbon** and **budget**
- **Whole-system approach unlocks real impact** — isolated innovation can only move the needle so far.
- Small carbon wins do add up — **even "minor" tweaks can deliver savings**
- **Scalability is strong** — templates, toolkits, calculators, and demonstrators help the sector move faster, together
- Some materials aren't fully mature yet — **independent testing** and **governance** remain essential
- Coordination across multiple partners takes time – but ultimately delivered **rich insights** and **strong outputs**
- Not all interventions bring carbon-savings immediately — some **depend on scale/ longevity.**



South Gloucestershire / West Sussex – Greenprint

Traditional verge maintenance practices increase emissions, degrade biodiversity, and waste potentially valuable biomass resources. At the same time, local highway operations are underutilized as a lever to support net zero, circular economy, and environmental outcomes



Objectives

- ✓ Achieve net zero
- ✓ Ensure an integrated 'ecosystem approach', knowledge sharing and scalability
- ✓ Deliver financial savings
- ✓ Collaborate across the sector
- ✓ Ensure customer satisfaction
- ✓ Increase biodiversity

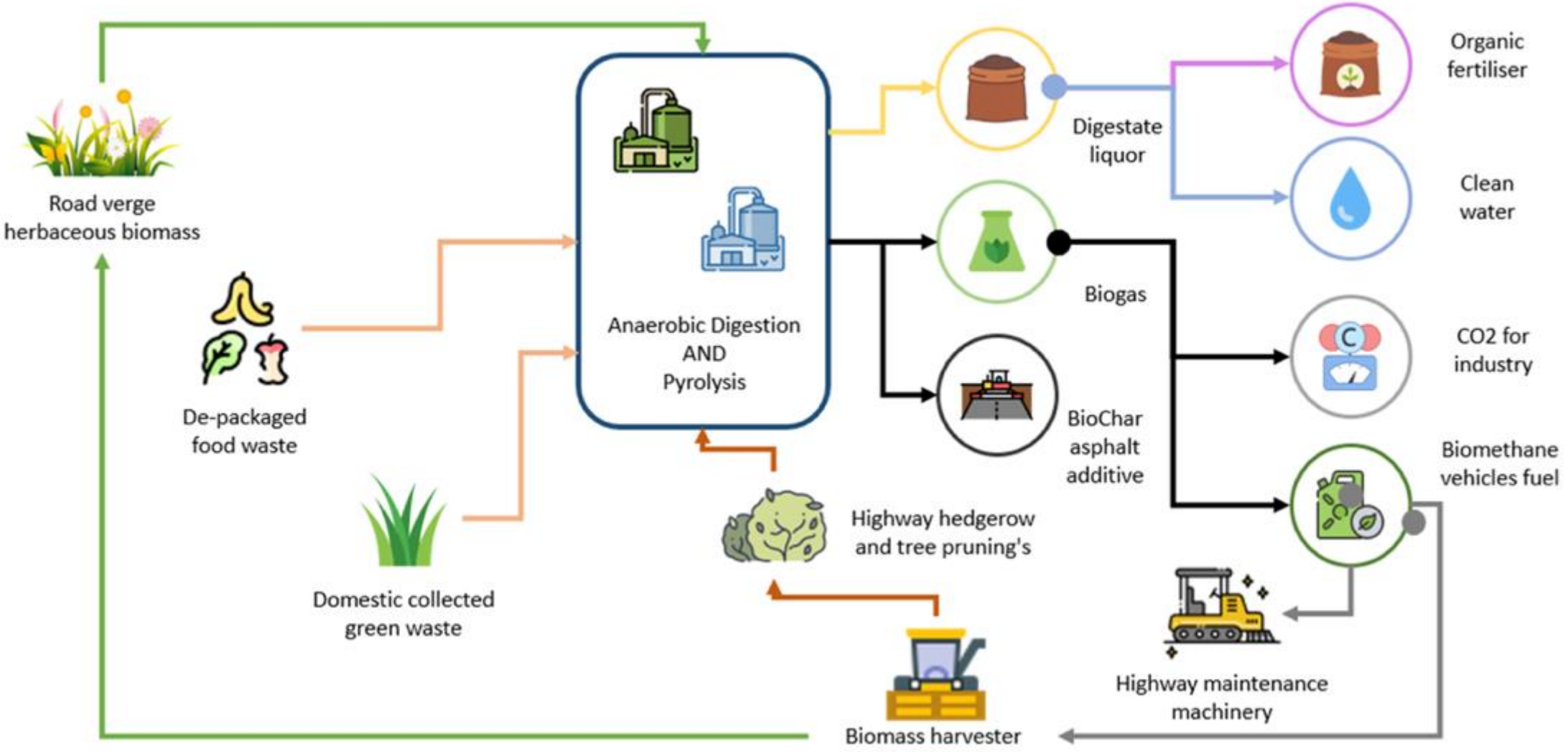


Challenges

- × Lack of systems thinking
- × Hidden Emissions
- × Contractual barriers
- × Not valuing the green estate

South Gloucestershire / West Sussex

Greenprint.



South Gloucestershire / West Sussex – Greenprint

What worked

- ✓ AD is the most feasible short-term route and delivers immediate carbon savings.
- ✓ Cut-and-collect is one of the strongest levers for improving verge biodiversity.
- ✓ Public response was strongly positive, with no material increase in complaints.
- ✓ SGC confirmed continuation of cut-and-collect for the 2026 season.

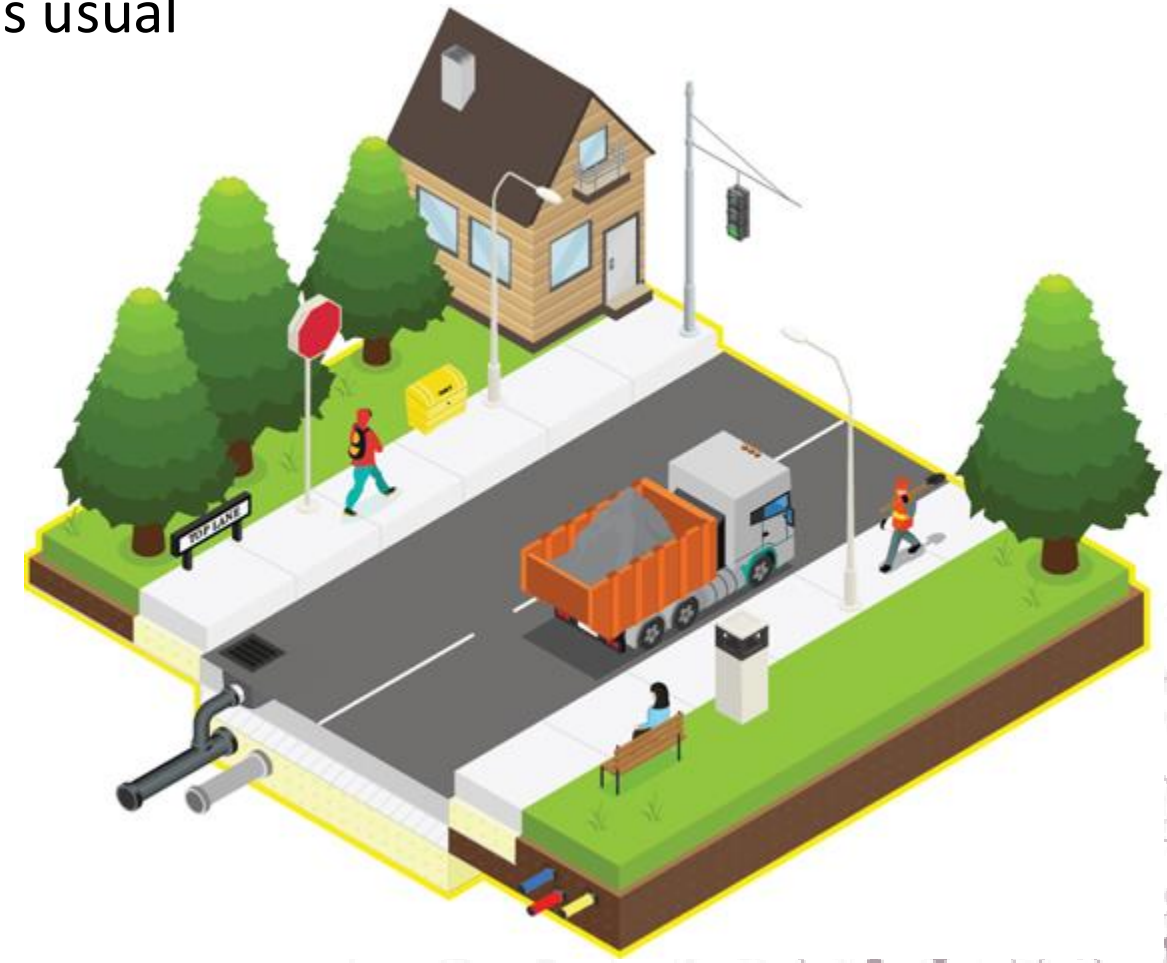
What challenged delivery

- ✗ Cut-and-collect currently costs about 2.6× BAU, driven by labour and machinery issues.
- ✗ Frequent mower breakdowns and logistics complexity reduced productivity.
- ✗ Regulatory approvals slowed AD pathways and constrained feedstock options.
- ✗ Biochar markets and revenue mechanisms are still immature therefore require high capital investment

Wessex – whole service approach

The whole service & changing business as usual

- The materials we use
- The products we use
- The plant we use
- How we deliver services
- When and where we deliver them



Wessex – whole service approach

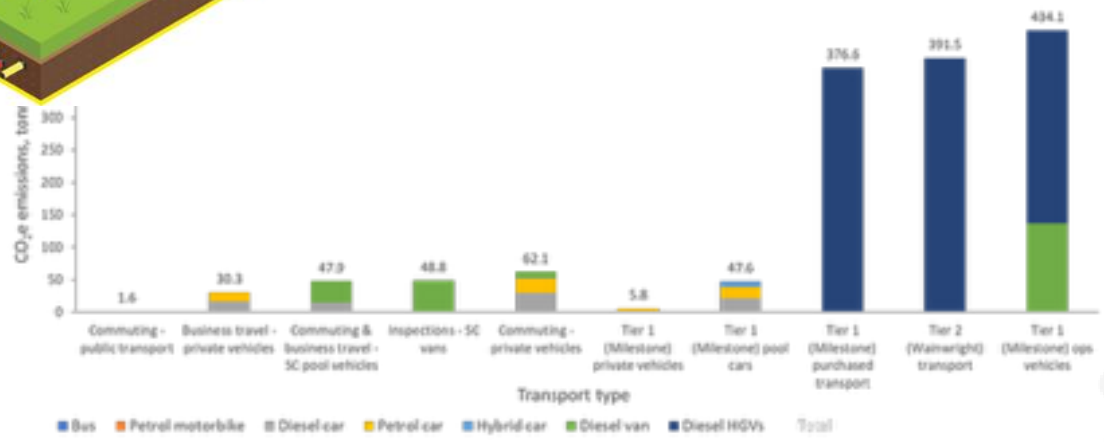


Wessex – Whole service approach





- **19% Carbon Saving across the project**
- **26% Carbon Saving across the project for full-service life**





Devon – A382 carbon negative road

- Improve safety and capacity
- Deliver major road improvements
- Provide active travel routes
- Improve route resilience
- Reduce carbon footprint beyond zero without off-site offsetting
- Deliver new junctions, link road, on and offline improvements over 2 sites



Devon – A382 carbon negative road



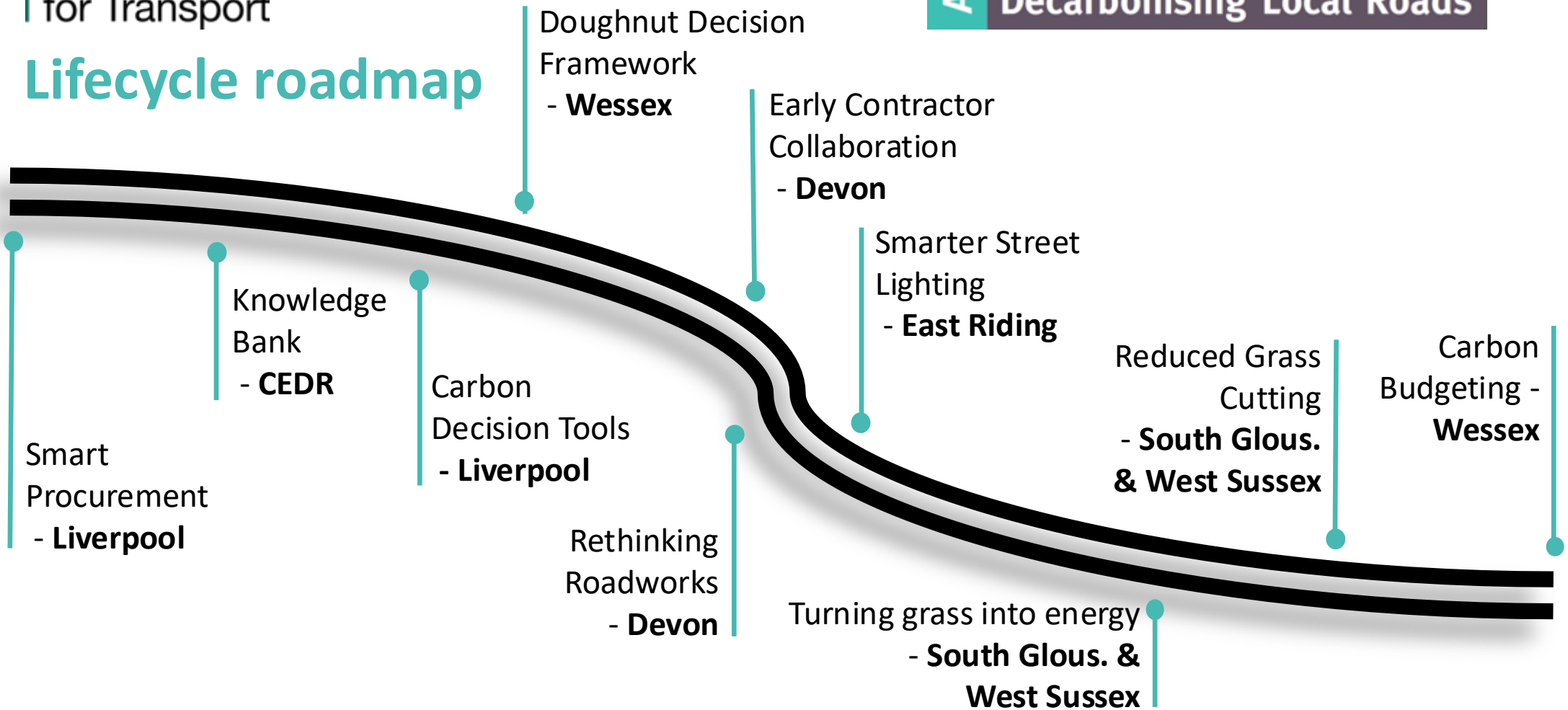


- ECI relationship with contractor
- Carbon reduction during design
- Detailed carbon baseline
- No single solution
- Nature-based solutions considered

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Lifecycle roadmap



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Key benefits

Cost – capital & revenue

Time – to deploy and maintain

Planet – carbon and other impacts



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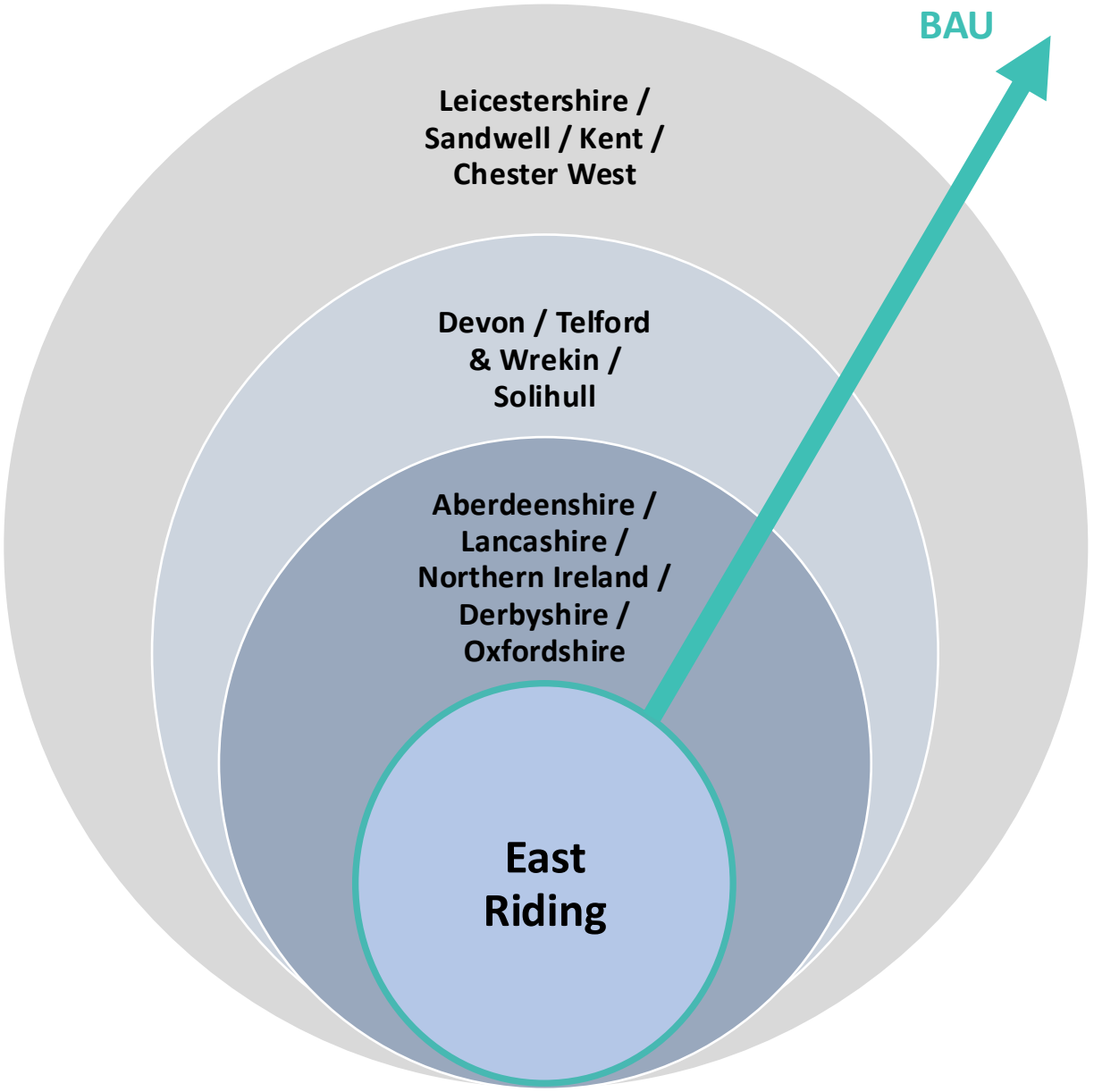
Benefits illustration - East Riding

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- **For the LL scheme, 134 tCO2e** saved within this Live Lab, **£1.2 million saved (70% / 30% split between capex and opex over 10 years)**
- **3 weeks of future statutory inspection time avoided** for the Live Labs scheme.
- Reduced nighttime accidents and improved pedestrian crossing compliance.
- Wider nature-based benefits from the removal of street lighting.
- Now being extended to circa 2500 further street-light columns
- Further design for other LHAs

- **Over ten years**, if scaled to the applicable local roads in their area, **241 tCO2e** saved with **£5 million** saved (again a 70/30% split between capex / opex)
- **17 weeks of statutory inspection time** saved in total.

- **All UK applicable roads over 10 years - circa 2m tCO2e at £49 / t (civil penalties price)**



Safety led approach to decarbonising streetlighting

East Riding

An evidence-based approach to the re-invention of street lighting renewals focusing on user safety, community benefits and significant cost and carbon savings through alternative solutions to traditional standards.

- Move to BAU
- Pipeline
- Prime mover adopters
- Partner authority >> BAU
- Live Lab lead

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Can you afford not to do this?

- Strategic ‘oven ready’ innovations
- Portfolio of ‘tactical’ innovations
- Proven business cases
- Procurement roadmap
- Knowledge bank
- Vast evidence base
- Synergies and requirements elsewhere



= efficiencies and savings

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What are your challenges and barriers?

- Institutional
- Technical
- Practical
- Resources
- Skills
- Data
- …others?

We are here to help you overcome them…

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Year 4 – contextualise, amplify, adopt

- Regional workshops
- Tailored workshops
- Monthly triage service
- Bespoke events
- Collaborative working
- Conferences
- LLM query engine

A new sectoral BAU

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Live Labs 2 website

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