

Creating a world
fit for the future



Delivering Net Zero

Leading By Example
Your Road Map for the Climate Emergency

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Creating a world fit for the future

Local Authorities are facing growing pressure to take action from their own constituents and private organisations like ClientEarth.

Ricardo supports organisations to understand what delivering against their climate emergency pledges actually mean.

By working collaboratively, we help local authorities, cities and regions raise their ambition on climate action, set evidence-based targets and develop and deliver Net Zero action plans.

We have outlined a road map to deliver viable, credible carbon reduction strategies along the value chain, which create the environment in which Net Zero can thrive.





Climate change can impact any organisation within the public sector. Leading by example, Ricardo will provide support across the value chain using existing and different business models to implement science based solutions”

Tim Curtis, Managing Director Ricardo Energy & Environment



What is Net Zero?

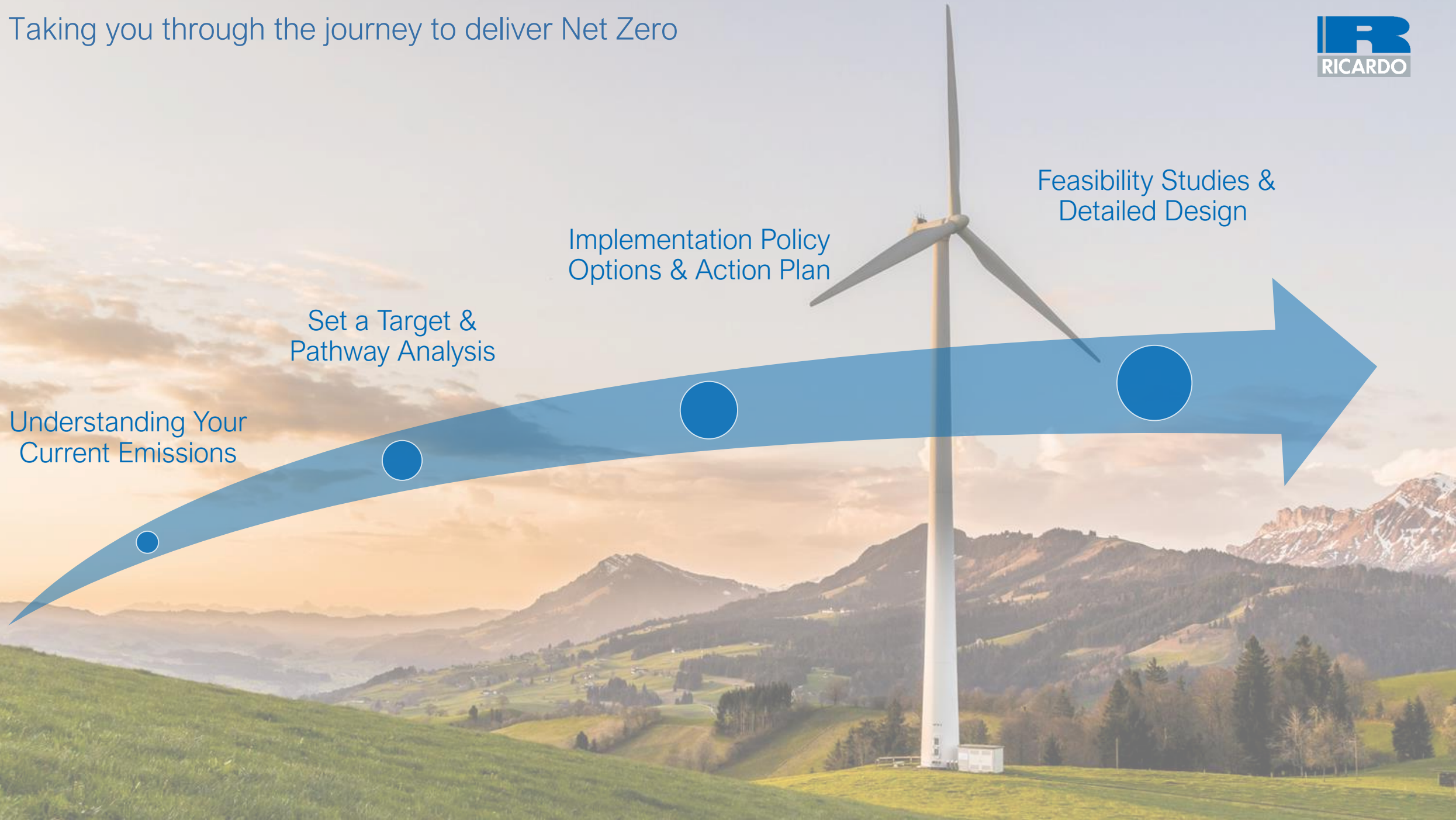


Net Zero is reducing your avoidable emissions as far as possible and then achieving zero-emissions by balancing your unavoidable use of fuels, energy, transport and processes that generate CO₂ with projects that 'offset' the equivalent amount.

Ricardo key working principals are to 'balance greenhouse gas emissions through mitigation measures and removal from atmosphere, within your local authority boundaries, over time'.



Taking you through the journey to deliver Net Zero



How can we help?

Ricardo provides local, regional and city authorities with the data and evidence needed to develop effective, robust and pragmatic policy.

This includes creating Greenhouse Gas (GHG) inventories and advice on GHG reporting, energy and transport activity data, GIS mapping and visualisation of data, and designing MRV (measurement, reporting and verification) systems.

Understanding Your Current Emissions



What tools are available?

Ricardo compiles local authority CO₂ data for BEIS and offer a unique insight and understanding.

We manage the UK National Atmospheric Emissions Inventory (NAEI), so can bring in non-CO₂ gases, such as methane and N₂O.

We provide various levels of support with the CDP disclosure process, including guidance on GHG inventory.



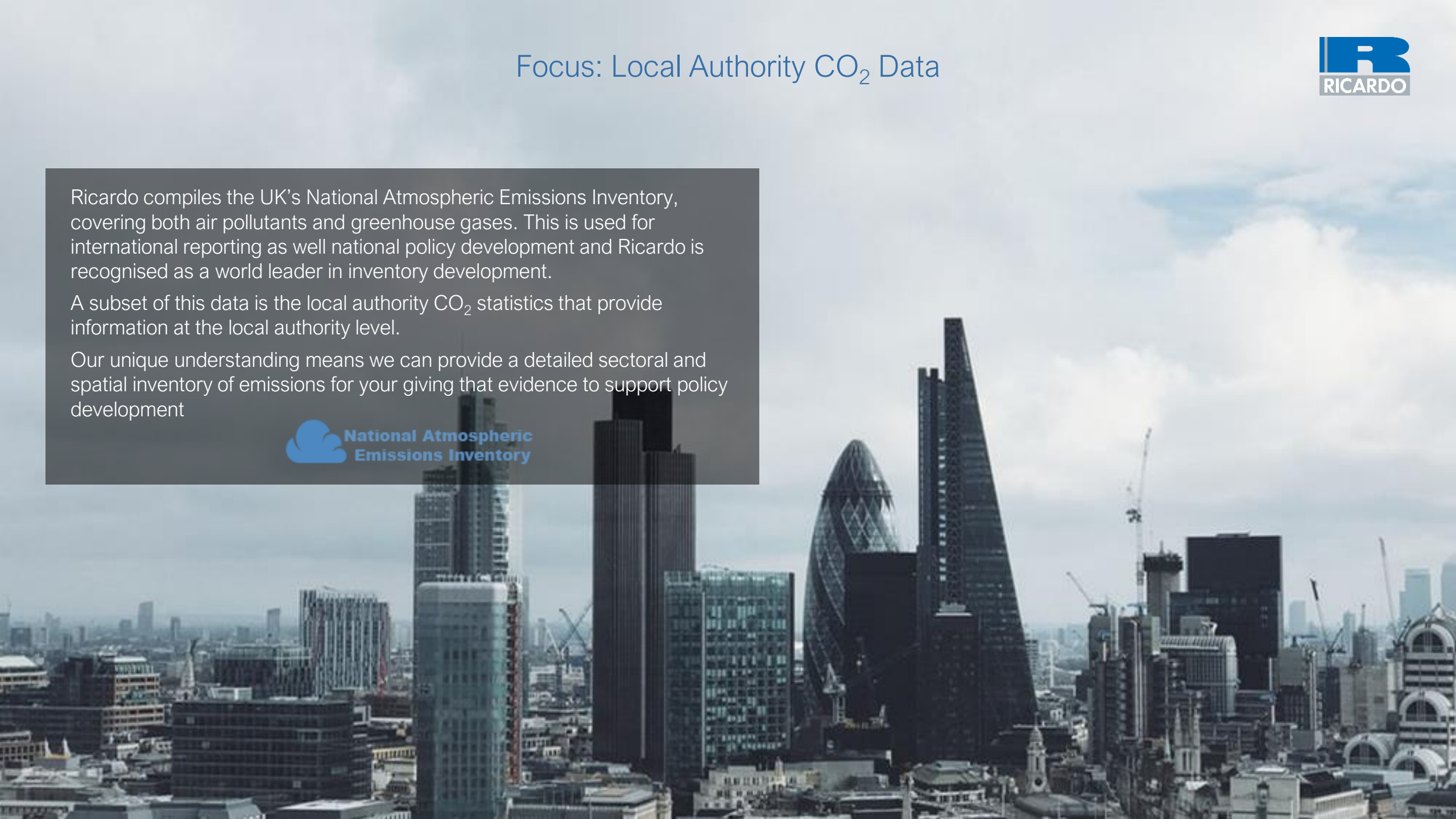
Focus: Local Authority CO₂ Data



Ricardo compiles the UK's National Atmospheric Emissions Inventory, covering both air pollutants and greenhouse gases. This is used for international reporting as well national policy development and Ricardo is recognised as a world leader in inventory development.

A subset of this data is the local authority CO₂ statistics that provide information at the local authority level.

Our unique understanding means we can provide a detailed sectoral and spatial inventory of emissions for your giving that evidence to support policy development



A large, semi-transparent blue arrow pointing from left to right across the middle of the image. A small blue circle is positioned on the arrow's shaft, directly below the section header.

Set a Target & Pathway Analysis

How can we help?

Understanding what different technologies and measures can achieve is key to defining this pathway to Net Zero. Our detailed understanding of a range of solutions across different sectors such as transport, buildings and waste allows us to carry out this analysis.

We also have a number of tools that can help assess these pathways such as our Net Zero Gap Analysis tool, the Urban Roadmaps Scenario tool and our work on the BEIS 2050 calculator.

Case Study: Sheffield City Region



Target Setting for Sheffield City Region

Ricardo carried out analysis for the Sheffield City Region Combined Authority to assess possible emissions pathways for the region. Detailed analysis was made of how each sector can contribute to Net Zero and by when, to produce different scenarios for consideration by the Combined Authority.

Ricardo also calculated investment costs needed to deliver Net Zero in the region and potential GVA impacts. The client used this work to inform a political decision on when to achieve Net Zero emissions by, thereby ensuring that this was a fully evidence-based decision.



Case Study: Bristol City Council

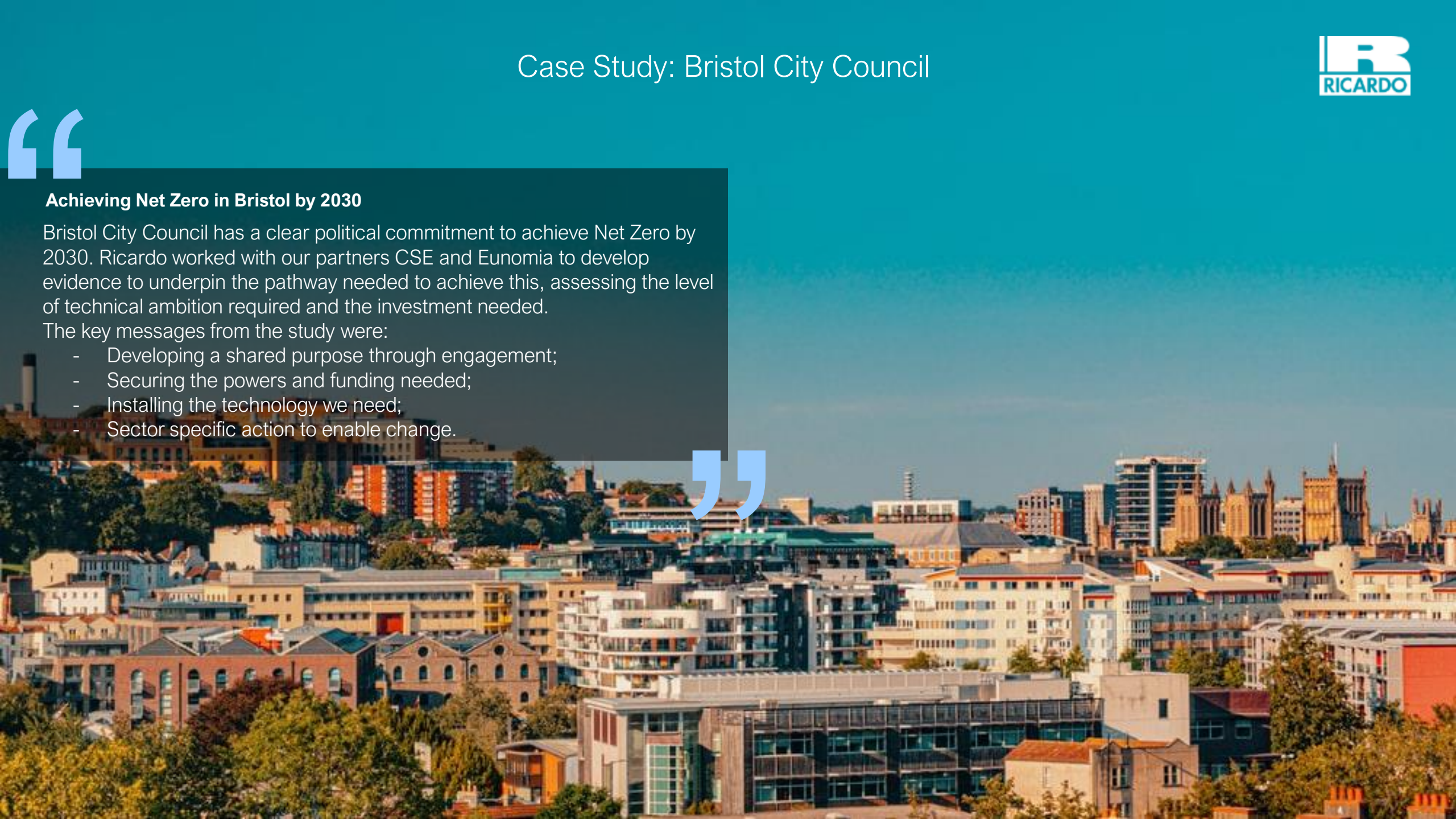


Achieving Net Zero in Bristol by 2030

Bristol City Council has a clear political commitment to achieve Net Zero by 2030. Ricardo worked with our partners CSE and Eunomia to develop evidence to underpin the pathway needed to achieve this, assessing the level of technical ambition required and the investment needed.

The key messages from the study were:

- Developing a shared purpose through engagement;
- Securing the powers and funding needed;
- Installing the technology we need;
- Sector specific action to enable change.

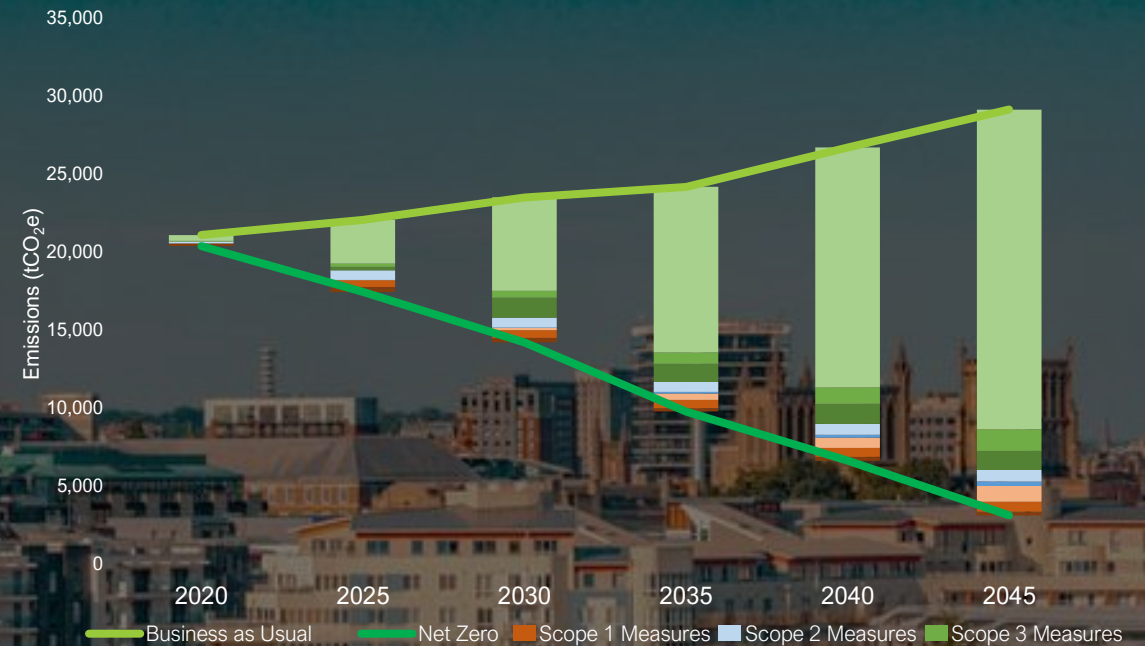


Focus: Net Zero Gap Analysis Tool

Ricardo's Net Zero Gap Analysis tool provides a greater understanding for local authorities of the impact policies and mitigation measures have in delivering Net Zero. The tool allows organisations to test different carbon mitigation scenarios to simulate future emissions pathways.

This can be applied to a local authority's own estate or across a city-wide area and provides analysis of:

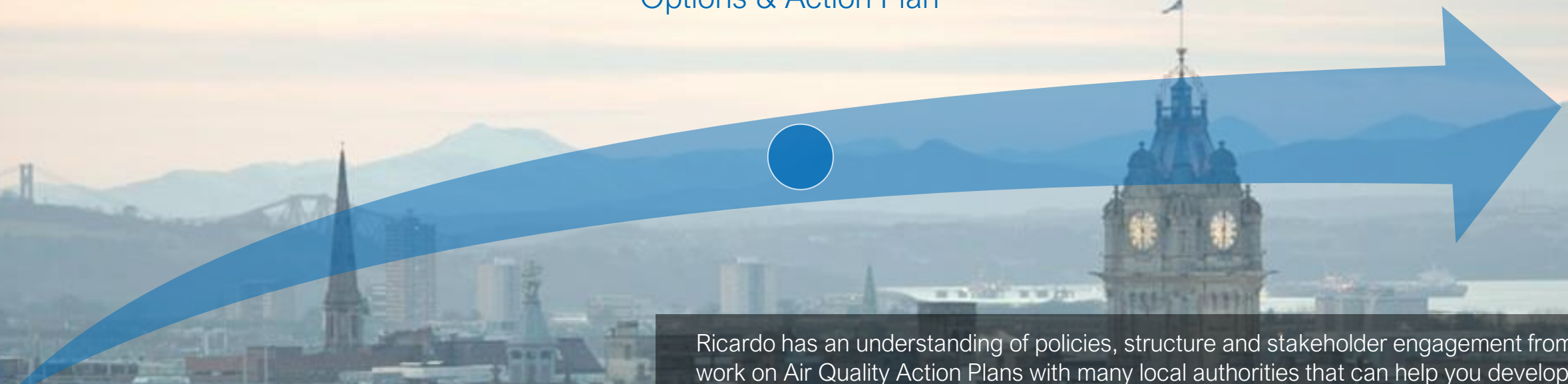
- Projected emissions under Business as Usual;
- Costed scenarios with NPV, MACC curves and ROI;
- Multiple alternative scenarios, resulting in a Net Zero trajectory;
- Residual emissions, which should be the focus for future measures such as offsetting;
- Calculated total carbon emissions to 2050 for comparison against a carbon cap (comparison against a Science Based target approach);
- Carbon mitigation measure and their impact;
- Annual or five yearly milestones.



How can Ricardo help you turn your vision into a reality?

Developing your path shows you what a Net Zero future might look like, but how do you get there? This requires developing the plans and policies that will help this vision become a reality.

Implementation Policy Options & Action Plan



Ricardo has an understanding of policies, structure and stakeholder engagement from our work on Air Quality Action Plans with many local authorities that can help you develop and assess these plans. This is complemented by our work on national policy to help understand what added value local action can bring.

We can also bring experience from our wider international carbon work, where we have developed action plan guidelines for the C40 cities initiative and worked with cities around the world to implement these.

Case Study: Suffolk County Council Climate Emergency Plan



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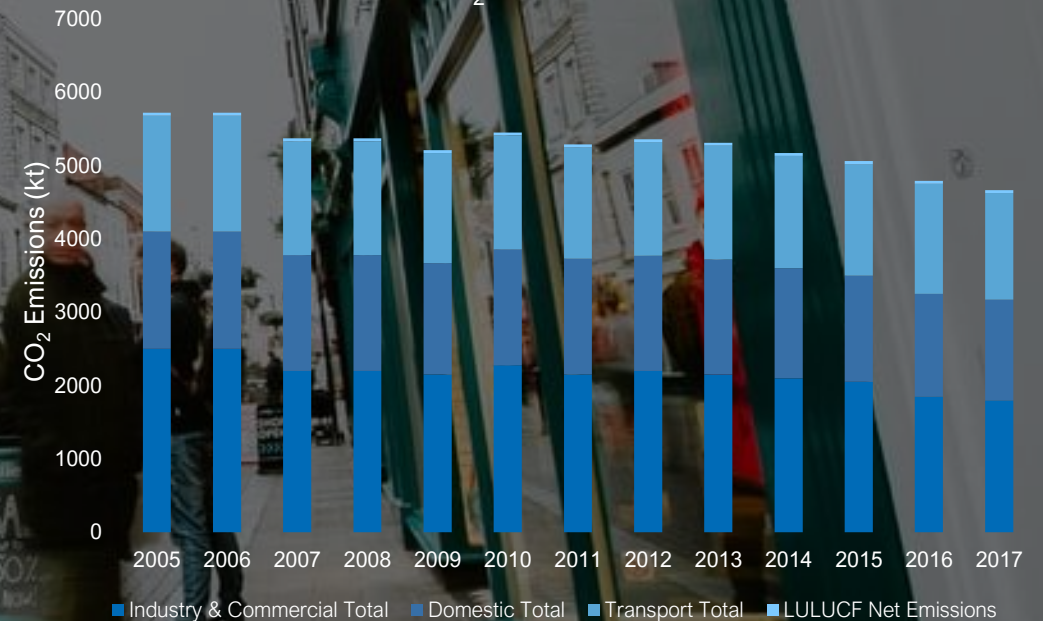
Local authorities in Suffolk have declared a climate emergency with the aspiration to make the County carbon neutral by 2030 – but what does this mean and how could this be achieved?

Ricardo carried out work to understand current GHG emissions levels, to consider what carbon neutrality by 2030 means for each sector and to develop sectoral pathways.

This work is feeding into the development of a climate emergency action plan for Suffolk, setting out how different stakeholders can contribute to the carbon neutrality target.

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Suffolk CO₂ Emissions 2005-2017



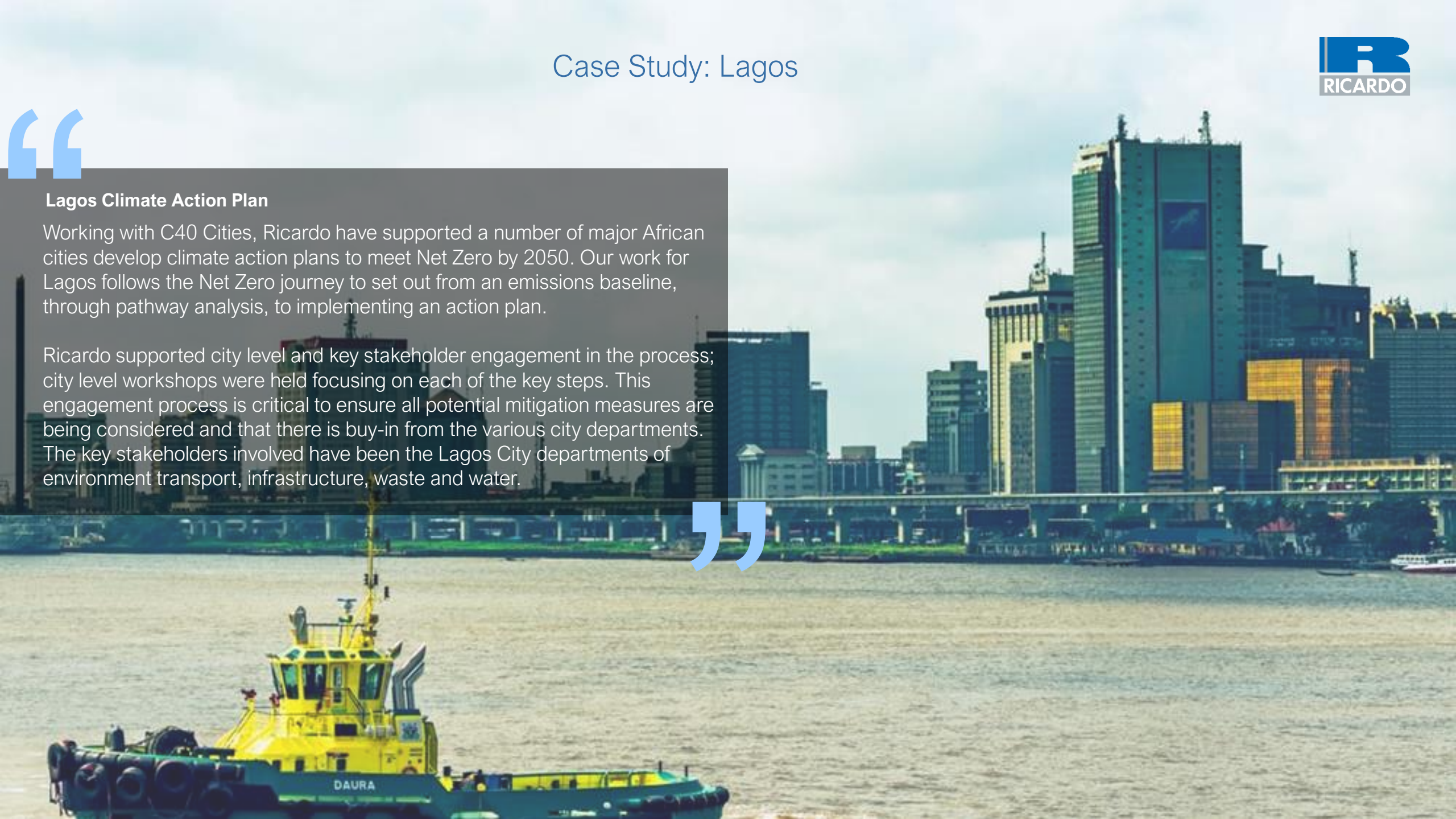
Case Study: Lagos



Lagos Climate Action Plan

Working with C40 Cities, Ricardo have supported a number of major African cities develop climate action plans to meet Net Zero by 2050. Our work for Lagos follows the Net Zero journey to set out from an emissions baseline, through pathway analysis, to implementing an action plan.

Ricardo supported city level and key stakeholder engagement in the process; city level workshops were held focusing on each of the key steps. This engagement process is critical to ensure all potential mitigation measures are being considered and that there is buy-in from the various city departments. The key stakeholders involved have been the Lagos City departments of environment transport, infrastructure, waste and water.



Focus: Carbon Sequestration Tool

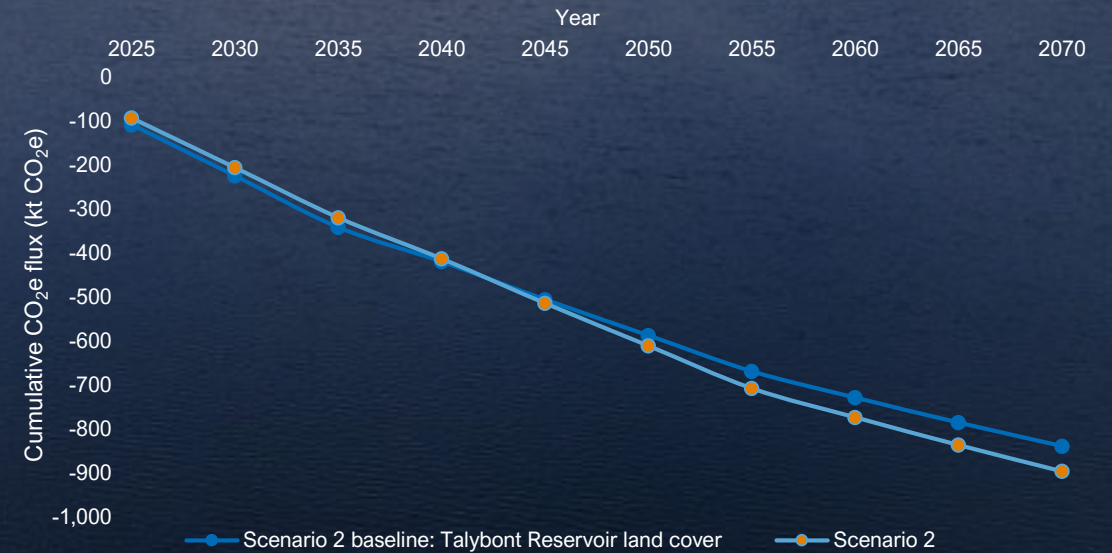


Ricardo have developed the Land Cover Carbon Sequestration and Flux Model (LCCSFM) to help local authorities better understand carbon stocks and annual fluxes for land, to meet policy and climate change commitments.

The tool utilises land cover areas derived from Open Source GIS data and selected carbon stock and flux coefficients from scientific literature, and allows simulation of:

- Carbon stocks per land cover type;
- Annual carbon flux per land cover type;
- Investigation of management and 'what-if' scenarios on carbon budgets.


Ricardo have applied this to two UK water companies' land holdings and is applicable to a range of local authority uses and different land cover scales.



How can Ricardo help you put measures in place?

The final step of the process having established your pathway to Net Zero and the policy action plan to achieve this, is to do the detailed feasibility and design of the key low carbon infrastructure in which you need to invest.

Feasibility Studies & Detailed Design



We can work with you using our technical and engineering expertise across a range of sectors can to carry out the design studies.

Key areas of expertise include:

- EV and related charging and grid infrastructure;
- Renewable energy systems and energy storage;
- Heat Networks and CHP;
- Low Carbon Waste management solution.

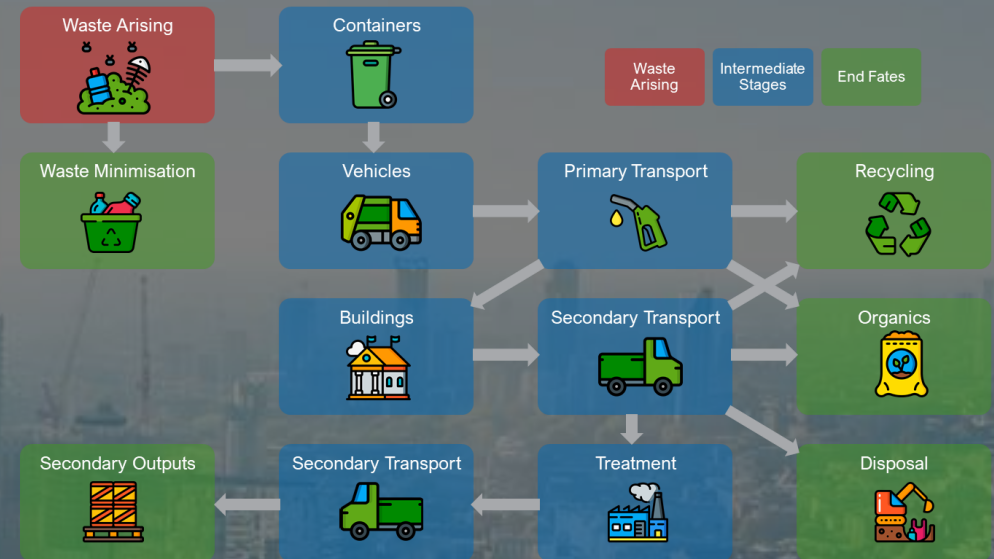
Focus: Waste Carbon Tool

Ricardo's Waste Carbon Tool models the direct and indirect emissions and carbon impacts associated with local authorities waste collection; recycling, transport, processing, treatment and disposal operations.

It drills down through the results hierarchy to show the biggest contributor to carbon emissions – 'carbon hotspots' - and identifies possible interventions and service changes. These can be compared as multiple scenarios to measure the potential influence of each scenario.

This allows local authorities to concentrate resources on interventions that represent the maximum environmental benefit (e.g. carbon impact per tonne or residual waste production) rather than a focus on collecting the heaviest components of the waste stream.

It provides a more level playing field between rural and urban demographics and allows a transition from absolute targets to individual material stream targets linked to the best environmental option for a particular material.



The background of the slide is a photograph of a traditional stone town street. On the left, a church tower with a clock face and a weather vane is visible. The street is lined with multi-story stone buildings featuring gabled roofs and numerous chimneys. In the foreground, there are colorful flower boxes. The Ricardo logo is in the top right corner.

Case Study: South Gloucestershire Council

Waste Carbon Tool

We commissioned Ricardo to develop a carbon model to assess our whole waste management service. Ricardo successfully delivered a robust, reliable and easy to use model that our officers are now using to analyse current performance and investigate mitigation options.

The Ricardo team were flexible and responsive to our needs, demonstrating an expert knowledge of carbon and how to produce an intuitive model designed to be used by our team.

Philip Norcott, Recycling Manager

Decarbonising Domestic Housing Stock

As a registered social landlord, Brighton and Hove Council have a portfolio of domestic properties that are heated by natural gas, however the forthcoming Future Homes Standard means no new gas heating systems from 2025, requiring the Council to seek zero carbon alternatives.

Ricardo delivered technical analysis of alternative heating systems for a new build estate, including the economic and carbon impact assessment of GSHP, district heating, solar PV and thermal storage, and worked with facilities management and architects to validate the proposed solution.

Ricardo's expertise ensured that the Council had:

- Independent advice when making complex decisions;
- Certainty that the optimal solution had been identified;
- A planned and costed solution;
- Buy-in from internal and external stakeholders;
- A Net Zero carbon heating solution.



Local Energy Systems Supply Options

Ricardo worked with Essex County Council to identify a solution to allow local supply of generation from a new solar development on the Council property.

Ricardo's renewable energy team delivered an assessment of current and forthcoming legislation on local electricity supply, viability of different local supply business models, supply chain engagement to price solutions and a detailed implementation plan.

This ensured the Council benefitted from:

- An understanding how to supply electricity locally and keep consumer spending local;
- A route to market with experienced partners;
- Opportunities to tackle local fuel poverty;
- Delivering projects to support Net Zero objectives.

Case Study: Herefordshire Council

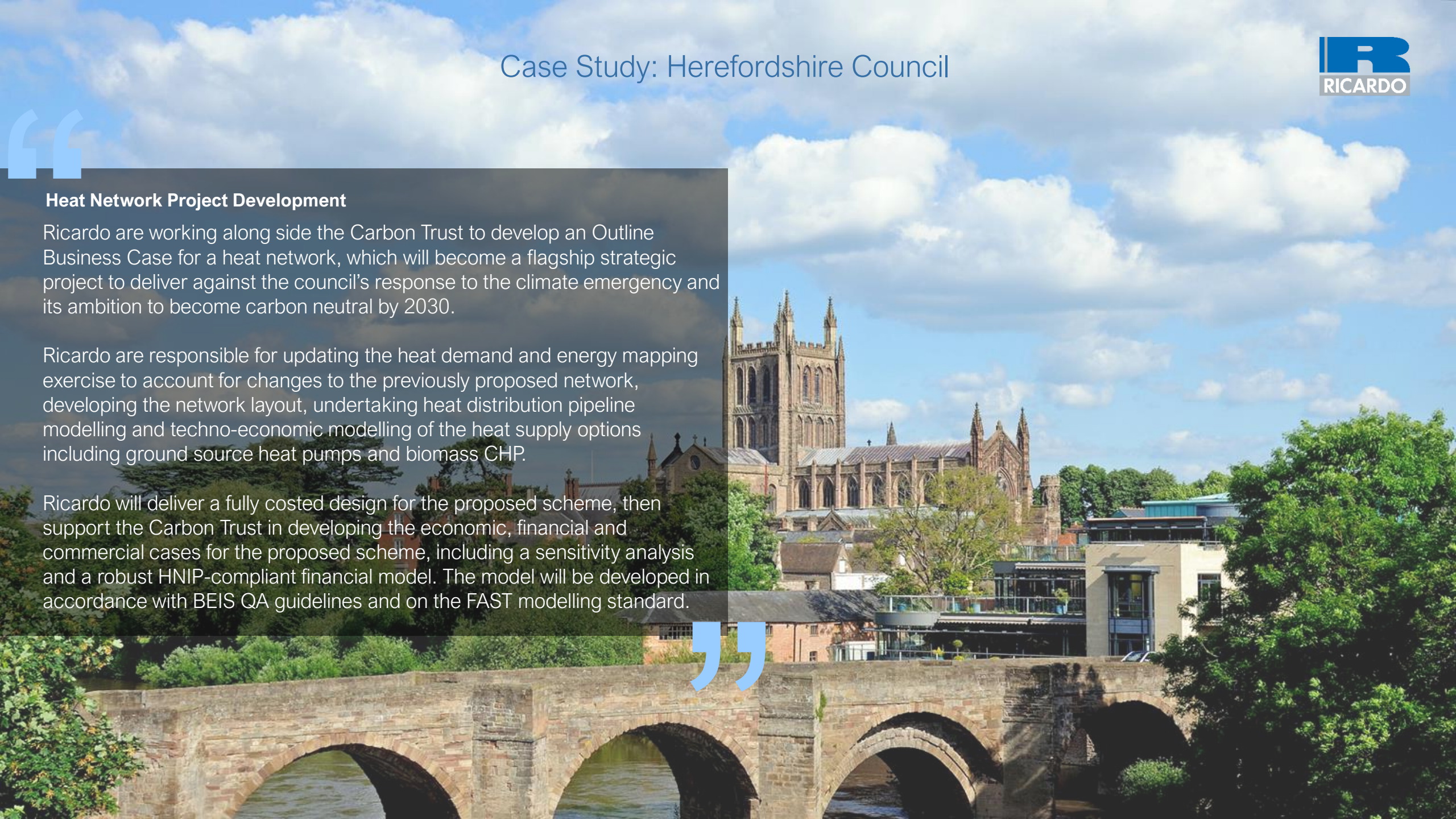


Heat Network Project Development

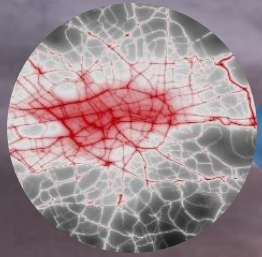
Ricardo are working along side the Carbon Trust to develop an Outline Business Case for a heat network, which will become a flagship strategic project to deliver against the council's response to the climate emergency and its ambition to become carbon neutral by 2030.

Ricardo are responsible for updating the heat demand and energy mapping exercise to account for changes to the previously proposed network, developing the network layout, undertaking heat distribution pipeline modelling and techno-economic modelling of the heat supply options including ground source heat pumps and biomass CHP.

Ricardo will deliver a fully costed design for the proposed scheme, then support the Carbon Trust in developing the economic, financial and commercial cases for the proposed scheme, including a sensitivity analysis and a robust HNIP-compliant financial model. The model will be developed in accordance with BEIS QA guidelines and on the FAST modelling standard.



Ricardo's Cross Sector and Integrated Approach Maximises the Co-Benefits of your Net Zero Journey



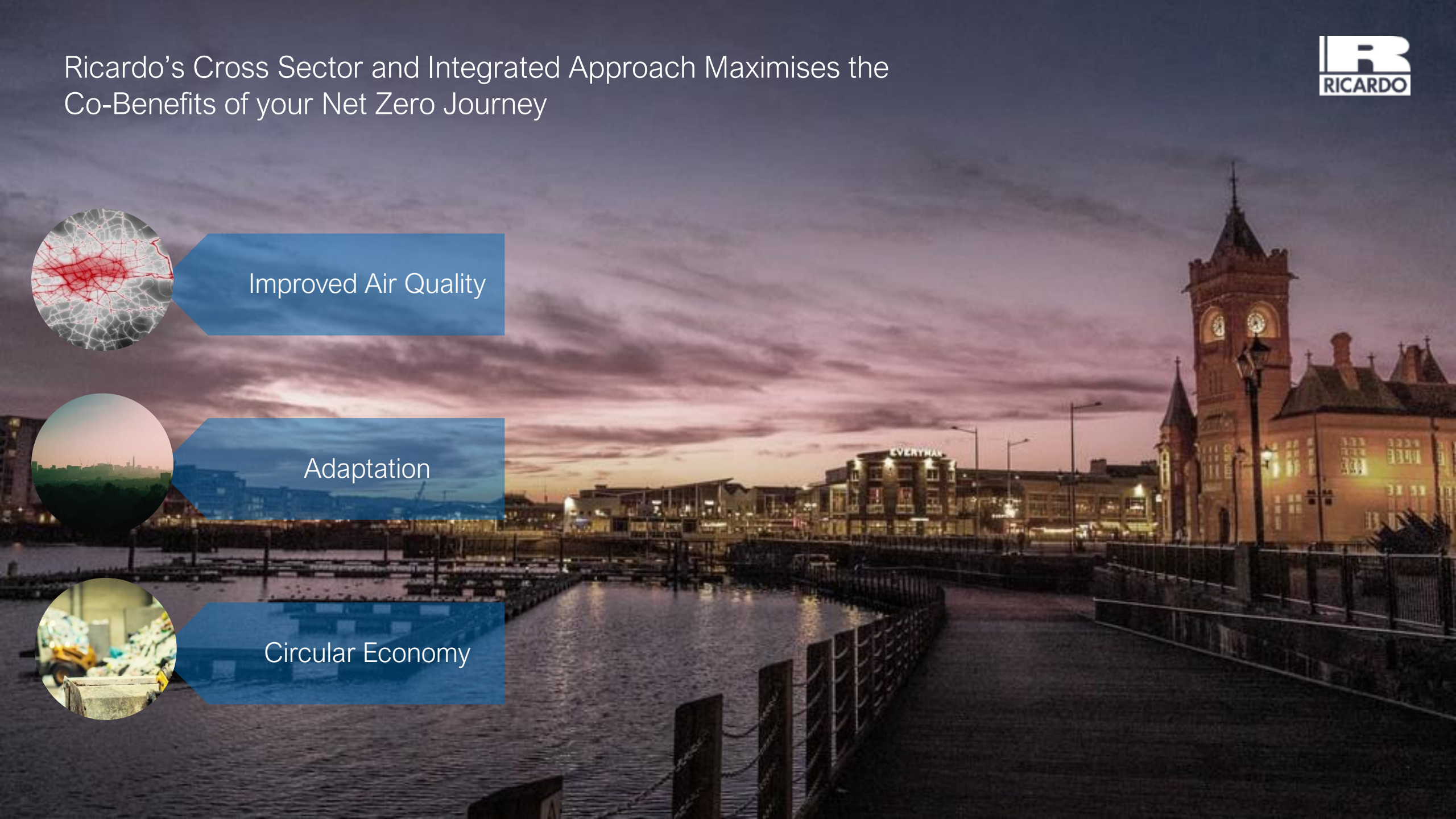
Improved Air Quality

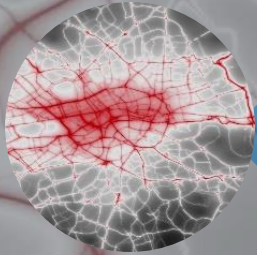


Adaptation



Circular Economy





Improved Air Quality

Air pollution and carbon emissions are two sides of the same coin – the consequences of combustion of fossil fuels. Our journey to Net Zero will have significant benefits for air quality, but there may be trade offs as well, such as biomass heating sources.

By integrating our world leading expertise on local air quality management with your Net Zero plans we can help you maximise this co-benefit on each step of your journey:

- Including NOx and PM emissions in your baseline inventory;
- Assessing the impact on air pollutants as well of GHG emissions from mitigation actions;
- Modelling tools such as our RapidAir[®] system converting these emissions into detailed maps of pollutant concentrations;
- Integrating the work of air quality action plans and Low Emission Strategies into your carbon action planning process.

A graphic consisting of a circular image of a city skyline at sunset on the left, and a blue arrow pointing right towards the word 'Adaptation' in white text.

Adaptation

Our journey to Net Zero will allow local authorities significant adaptation co-benefits. For example, planting of trees to sequester CO₂ can be alongside river banks to mitigate climate change aggravated floods. We encourage integrated mitigation and adaptation planning from the very beginning of your journey to deliver Net Zero.

Ricardo have world leading experts on adaptation which can integrate adaptation into your Net Zero plans, helping you maximise these co-benefits.

We provide support in:

- Comprehensive vulnerability assessment and appraisal of adaptation options;
- Costing adaptation options and supporting access to adaptation finance, including scoping, feasibility analysis, programme design, institutional assessment, facilitating funder convergence and coordination, and programme review;
- Supporting the implementation of adaptation components;
- Urban resilience - advising on urban environmental governance, peer-to-peer learning from city networks and smart cities;
- Monitoring, evaluation and learning - Developing indicators, programme monitoring and evaluation, and knowledge management;
- Sectoral expertise on climate mainstreaming - especially water, agriculture, ecosystems, energy, waste and disaster risk reduction.




Circular Economy

In designing out waste and pollution, local authorities will have a significant co-benefit from a circular economy in their journey to Net Zero. This includes the reduction of GHG emissions across value chains, preserving the embodied energy of products and materials (for example through biomass heating) and increasing carbon sequestration through the regeneration of natural systems.

Ricardo's experts can tailor a plan early on your journey to de-risk your authority in the long term by avoided resource use and reduced carbon emissions, helping you to benefit through positive publicity.

Our services include:

- Mapping and measuring how resources flow through your authority;
- Providing technical procurement support;
- Life cycle assessment (LCA);
- Communicating to stakeholders the positive message of being a circular economy pioneer.

A large wind turbine stands prominently in the foreground, its three blades extending towards the sky. The background features a vast, hazy mountain range under a warm, golden sunset sky with scattered clouds. The overall scene is serene and emphasizes renewable energy in a natural setting.

To discuss how we can help you, please contact one of our consultants:

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