

YORKSHIRE & HUMBER CLIMATE COMMISSION



YORKSHIRE AND HUMBER

CLIMATE ACTION PLAN

The Yorkshire and Humber Climate Commission is an independent advisory body that was set up to support ambitious climate action across the Yorkshire and Humber region. This Climate Action Plan is the Commission's first output.

The Climate Action Plan was co-created by our 43 Commissioners – all climate leaders from across the public, private and third sectors in Yorkshire and the Humber – with members of our Net Zero and Climate Resilience working groups and with input from our standing panels.

An intensive three-week consultation phase included 11 sessions with stakeholders and members of the public, two evening events, meetings with local authority officers and members, an event with parliamentarians, and an online survey. In total, over 500 people took part.

This action plan is for all of us in Yorkshire and the Humber, so we want you to help us to grow the conversation – and make sure everyone gets involved!

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Statement of Support from Yorkshire Leaders Board

As the largest Commission of its kind in the country, the Yorkshire and Humber Climate Commission is well positioned to unite every corner of our region and give us a louder, clearer, and independent voice to identify and secure the changes needed to respond to our changing climate.

In developing this regional action plan, the Commission has demonstrated its unique value – bringing together politicians, sector leaders, scientific experts and residents to collaboratively create solutions right for our area. It is a positive, comprehensive and constructive set of recommendations that will provide useful strategic foundations that local areas can now build upon.

Climate change is not a remote or distant issue. Many of our communities have already experienced extreme weather in recent years. In time, every corner of Yorkshire and Humber will be directly or indirectly impacted by the changing environment to some degree. The Commission's recommendations on how our region can adapt are therefore an extremely important contribution.

Yorkshire and Humber has already begun a journey to transition towards a net zero economy. Green jobs are already being created and investment secured in low carbon industries. The transition to a carbon neutral economy will be transformative, and sometimes challenging, but it has great potential to create unprecedented economic opportunities and improve the quality of life for all of our residents. By continuing to lead the way, we believe that our

region will be best placed to capitalise on these opportunities.

Whatever commitments are made at COP26 in Glasgow in November 2021, we believe that local leaders know their communities best and will play an essential role if big ambitions are to be fully realised on the ground.

The UK has set historic targets to cut our nation's emissions. Not only does our region support these targets, we have set even more ambitious goals that will ultimately help the country as a whole to achieve its legal commitments and prevent the worst impacts of global warming. We now have a detailed action plan outlining exactly what is required to do that. Going forward, we will work together to build the support from our communities, businesses and national government that will be vital to make all of these actions possible.

Councillor Carl Les
Leader
North Yorkshire County Council

Councillor Sir Stephen Houghton
CBE
Leader
Barnsley Metropolitan Borough Council

Co-chairs
Yorkshire Leaders Board

Foreword Liz Barber



The publication of this action plan is a significant first step for the Yorkshire and Humber Climate Commission and it follows a really refreshing consultation with a wide range of stakeholders right across the region. This consultation has drawn on the diversity of the Commission's membership and we have really benefitted from the range of perspectives that we have within the Commission. I am sure that this diversity will continue to be a real strength as we continue with our work.

We have also held public consultation meetings and we know that a crucial part of our mission is to effectively engage with the public in all sections of the community as we seek to build consensus around the challenge we face to achieve net zero and adapt and mitigate.

Of all the actions set out in the plan, the one that is most important to me is our commitment to achieve a just transition. We know all too well that climate change impacts more on disadvantaged communities and it is critical that we make sure that our efforts to adapt and reach our objectives reduce rather than exacerbate existing inequalities.

I would like to thank all members of the Commission for the work that they have put in to deliver this important milestone and in particular the chairs of our Working Groups who have helped to lead the development of this plan.

I hope you find the plan interesting and useful. It is not intended to be a fixed document but will adapt and change as the Commission develops and gets further engaged in its work. We have already had a lot of feedback as the plan has been put together but we would certainly welcome more.

**Liz Barber
Chair, Yorkshire & Humber Climate Commission
CEO Yorkshire Water**

Principles of the Yorkshire and Humber Climate Action Plan

Build resilience

We must protect our homes and communities, our water, energy, transport and communications infrastructure, our farming and food systems, and our nature and biodiversity from climate impacts.

Do our bit

As a region, our population is larger than some countries! We all have a role to play and there is much to be gained from collaboration across the region.

Act like it's an emergency

We're perilously close to the point at which we will trigger dangerous climate change. This will bring more extreme weather events, sea level rise and loss of low-lying areas and disruptions to food, water and nature. The knock-on impacts to society and the economy will be profound.

Cut emissions rapidly

This involves continuing the rapid expansion of renewable energy, investing in smart energy grids, and upgrading our homes, buildings, businesses and transport systems to reduce their energy demand.

Make it fair

Climate actions should help us tackle inequalities and not exacerbate them or create new ones. This is especially the case when it comes to jobs.

Work with nature

As well as cutting carbon emissions, we need to promote nature-based solutions that help tackle the climate crisis by protecting and restoring the nature that we all depend on.

Invest in our future

We need to invest 1% of our income to tackle climate change. Investing could cut our regional energy bill by £2.4 billion a year and create 33,000 years of new employment.



EXECUTIVE SUMMARY

Why is this a climate and ecological emergency?

The science is absolutely compelling – climate change is a massive issue that will shape our future in multiple ways for many decades to come; whether that be in Yorkshire, across the UK or elsewhere in the world.

Global average surface temperatures are now 1.1°C higher than pre-industrial levels. If we hit 1.5°C we could trigger natural feedback loops that will lead to more and more warming. After this point, we are into the realm of dangerous or runaway climate change.

At the global scale, if we carry on emitting carbon¹ at current rates, we will have locked ourselves into more than 1.5°C of warming by 2030 or soon after. Within the Yorkshire and Humber region, we will have used our share of the global carbon budget consistent with having a good chance² of staying within 1.5°C of warming within six years.

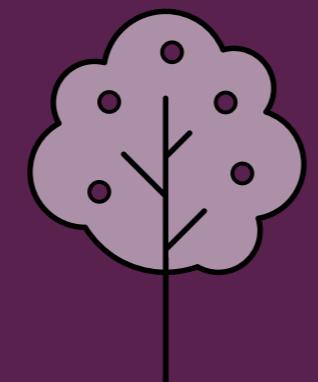
We can only address the climate crisis by also addressing the ecological crisis that is seeing the degradation of nature and biodiversity.

As we seek to cut our carbon emissions and increase our resilience we also have to protect and enhance our natural areas and promote nature-based solutions wherever possible.

This is why we are completely justified in calling this a climate and ecological emergency. We need to accept this and respond with an appropriate level of urgency and ambition.

Developing an effective response is massively challenging, but in responding to climate change we also have the opportunity improve our houses, communities, transport, businesses, infrastructure, food and farming, green spaces, nature and wider society.

Crucially, by responding to climate change we can protect existing jobs and create good quality new jobs.



What should we be aiming for?

As a region, we have a target of reaching net zero³ carbon emissions by 2038, with significant progress being achieved by 2030. The regional target is broadly in line with science-based targets⁴, but we propose that it should be expanded to include aviation and shipping emissions, and that we should introduce five-yearly carbon budgets to better enable us to track progress.

This action plan recommends that we should build on the 44% reduction in our 2000 level of direct emissions⁵ that we have already achieved by including aviation and shipping emissions and committing to a 68% reduction on our 2000 level of emissions by 2025, an 84% reduction by 2030, and a 92% reduction by 2035 on our way to a 100% reduction by 2038.

With clear targets, we then urgently need to shift on to the question of how to develop a framework for change that enables us to build our readiness and resilience to ongoing climate change while also rapidly decarbonising and ensuring that at all points our actions are both fair and more broadly sustainable.

“
We can only address the climate crisis by also addressing the ecological crisis.”



A framework for change

Climate change is a cross-cutting issue that impacts on, and demands a response from all aspects of our society and economy. We can't address the climate and ecological crises if important linked issues are left on the sidelines. We therefore need a framework for change that builds capacities and promotes meaningful action across the region. Our action plan sets this out through a series of 13 recommendations.

A cross-cutting framework for change should:

- Acknowledge that the climate and ecological emergency is real and accept we need to respond with urgency and ambition.
- Develop a positive vision that shows how ambitious action on climate and nature can make Yorkshire and Humber a happier, healthier, fairer and more prosperous place.
- Move from targets and planning to action by focusing on the real-world delivery of ambitious, accelerated change.
- Commit to a just transition that ensures climate actions actively reduce existing inequalities and empower and enable all people from across the region.
- Foster shared responsibility by recognising that we can achieve so much more when we all act together, but whilst also acknowledging the need for our larger institutions to lead the way.
- Act in a joined up way by putting climate and nature at the heart of all major strategic, policy, planning and investment decisions.
- Advance education and engagement by integrating climate and nature into the curriculum in schools, colleges and universities, and by promoting climate outreach and carbon literacy.
- Improve skills and create jobs by creating good quality new jobs in the green economy, supporting existing employers and employees to adapt, and by developing climate related training.
- Accelerate investment by building a climate and nature financing platform that helps to develop new projects and programmes and to connect them to new forms of finance and investment.
- Foster collaboration and innovation by sharing/pooling resources and by stimulating innovation so that best practice can develop and spread across the region.
- Protect and restore the natural and ecological systems that we depend upon by supporting the sustainable management of key natural assets and the adoption of nature-based solutions.
- Rethink how we measure progress by developing a sustainable progress index for the region and by developing a regional climate observatory to support and track our progress.
- Connect with national government to make sure we have support and clear, stable national policies to enable ambitious regional action.

Building climate readiness and resilience

We are already feeling the impacts of climate change with more regularity and with increased severity – and even if we rapidly reduce our carbon emissions, more climate impacts are still “locked in” (because of the length of time carbon dioxide persists in the atmosphere). So, we need to invest in our readiness and resilience by protecting our homes and communities, our water, energy, transport and communications infrastructure, our farming and food systems, our nature and biodiversity. All of these aspects of resilience are central to our future health and wellbeing. Our climate action plan identifies the following 15 key priorities.

To address climate risks and enhance our readiness and resilience, we need to:

- Develop better climate risk communications.
- Promote inclusive climate decision making and the co-creation of solutions.
- Encourage the wider adoption of area-wide and site-specific climate adaptation plans.
- Promote resilience actions that offer health, wellbeing and community benefits.
- Promote resilience in land use by restoring and enhancing the region's many key natural assets.
- Prepare the food and farming sector for current and future changes.
- Promote nature-based solutions and the development of blue-green resilient infrastructure.
- Promote climate resilience in business and industry.
- Develop a regional network for climate readiness and resilience training.
- Align all infrastructure sectors to deliver a regional systems approach.
- Invest in digital infrastructure.
- Build climate readiness through improved emergency and recovery planning.
- Develop a whole of society approach to emergency response.
- Promote the provision and uptake of affordable, comprehensive flood insurance.
- Strengthen plans for the long-term management of change and loss caused by sea level rise.

Reaching Net Zero

We need to cut our carbon emissions rapidly to have a chance of meeting our 2038 net zero target. Doing this involves continuing the rapid expansion of renewable energy sources, investing in smart energy grids, and upgrading our homes, buildings, businesses and transport systems to reduce their energy demand. We also need to address our wider carbon footprint by switching to a resource efficient, circular economy and by rethinking consumption in key areas such as food, fashion and flying. Our action plan makes 22 recommendations on net zero.

To achieve our net zero targets we need to:

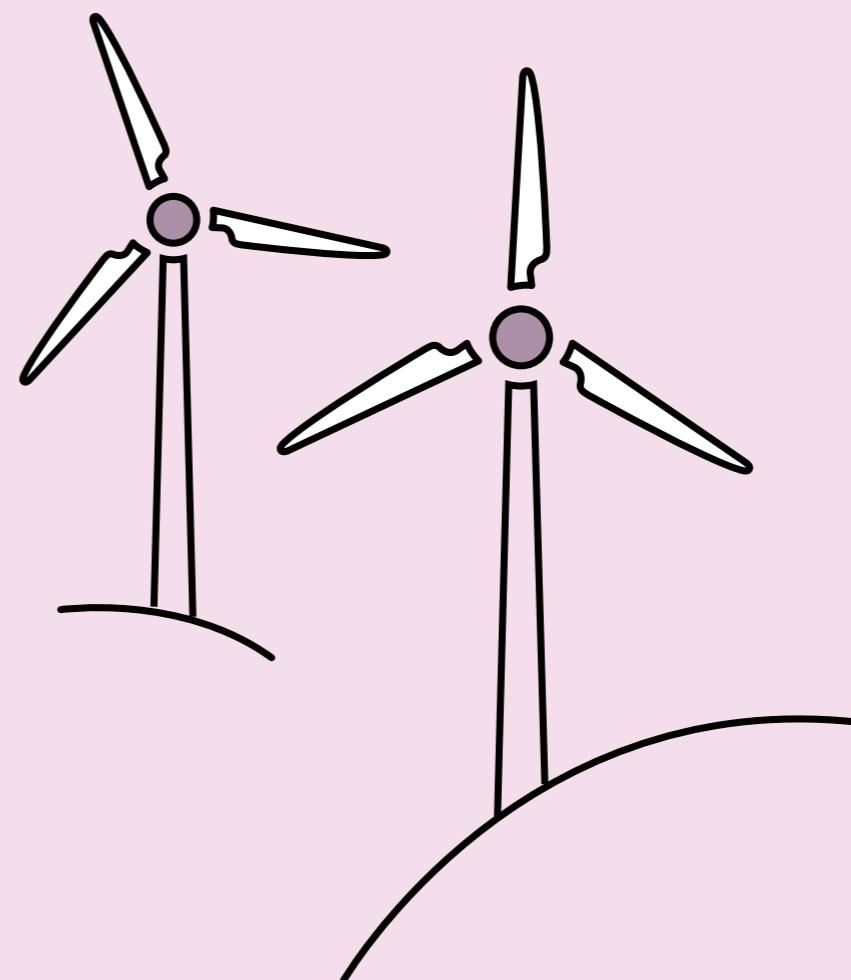
- Build on our current targets by incorporating aviation and shipping and adopting 5-yearly carbon budgets.
- Put the primary emphasis on reducing energy demand.
- Introduce smart and flexible energy networks.
- Support the greatly accelerated decarbonisation of energy supply.
- Promote significant expansions in community energy and distributed renewables.
- Deliver ambitious retrofit for housing.
- Deliver ambitious retrofit and active energy management for public and commercial buildings.
- Explore ways to better address climate objectives in heritage buildings and conservation areas.
- Minimise the impact and maximise the contribution of new developments.
- Promote public transport.
- Enable active travel.
- Minimise the need for private car ownership.
- Support low emission vehicles.
- Minimise the impacts of aviation.
- Focus on greening the region's economy.
- Support net zero transitions in existing businesses.
- Support net zero agriculture and food production.
- Support net zero infrastructure.
- Promote changes in planning.
- Promote net zero in land use.
- Promote resource efficiency/waste management and the circular economy.
- Promote sustainable production, consumption and lifestyles.

What will the Yorkshire and Humber Climate Commission do to help?

The Yorkshire and Humber Climate Commission was established to build our capacity for ambitious, inclusive action on climate and nature. It has already brought people and organisations from across the region together. This action plan is the result of a huge amount of collaboration, consultation and co-production over the last few months.

To play its part in the delivery of this action plan, over the next two and half years the Commission will continue to foster collaboration and to mobilise resources to enable it to support, guide and track ambitious actions on climate and nature in a fair and sustainable way.

Specific actions that the Commission will seek to take forward are in the final section of this report. They include establishing a Climate Leaders' Pledge, a Climate Leadership Programme, a Citizens' Forum and a Climate Finance Platform, and developing a just transition plan and a nature-based solutions strategy.



Footnotes for Executive Summary

¹ For simplicity, we use the term "carbon" to refer to emissions of carbon dioxide and other greenhouse gases.

² Defined as a 66% chance of limiting average global surface temperature warming to 1.5°C – see Intergovernmental Panel on Climate Change (2018) Global Warming of 1.5°C, Special Report from the IPCC.

³ Achieving net zero means not emitting more carbon dioxide and other greenhouse gases (GHGs) into the atmosphere than can be removed, mainly through photosynthesis but potentially also through carbon capture utilisation and storage (CCUS).

⁴ Set by dividing the global carbon budget consistent with having a 66% chance of limiting average global surface level temperature increase to 1.5°C on a per capita basis.

⁵ Scope 1 and 2 direct emissions.

YORKSHIRE AND HUMBER CLIMATE COMMISSION

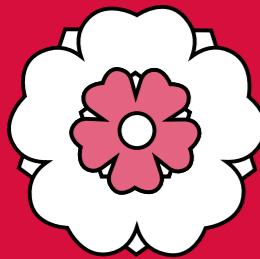
The Yorkshire and Humber Climate Commission is an independent advisory body that has brought together a wide range of public, private and third sector actors to support, guide and track the delivery of an ambitious climate action plan across the Yorkshire and Humber region.

Aims

The Commission has four inter-related aims:

- to foster climate resilience and adaptation to climate risks and impacts
- to support rapid progress towards net zero carbon emissions
- to encourage a just and inclusive transition that helps reduce inequalities and that leaves no-one and nowhere behind
- to promote climate actions that also protect and restore nature and biodiversity.

The Commission is committed to working towards its goals by enabling engagement, supporting constructive debate, strengthening the evidence base, promoting best practice, pooling and sharing resources, helping to build capacities for financing and delivery and regularly reviewing progress against targets and the action plan.

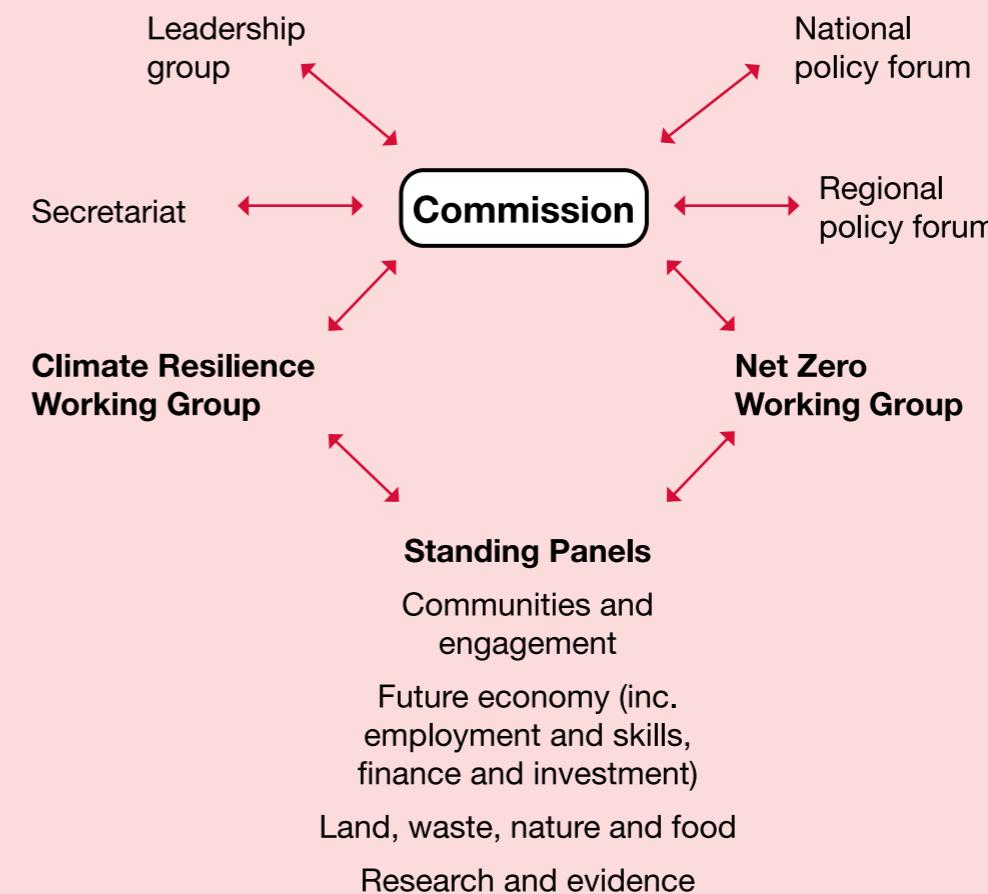


Our Membership

The Commission is made up of our Chair (Liz Barber, CEO of Yorkshire Water) and Vice Chairs (South Yorkshire - Dan Jarvis MP, Mayor of Sheffield City Region; North Yorkshire – Cllr Richard Cooper, Leader Harrogate Borough Council; West Yorkshire – Cllr Jack Hemingway, Deputy Leader Wakefield Council; Humber - Cllr Chris Matthews, Infrastructure and Climate lead for East Riding of Yorkshire Council), and Director (Prof Andy Gouldson, University of Leeds).

It also includes Commissioners who are senior leaders drawn from key organisations and groups across the region. For the full list, see Appendix 3, Commissioners' Organisations.

Structure



Aims of the Action Plan

This action plan is intended to be a positive, constructive and actionable document that will inform and guide climate actions across the region in the years to come, including by making the case for regional collaboration on this massively challenging issue.

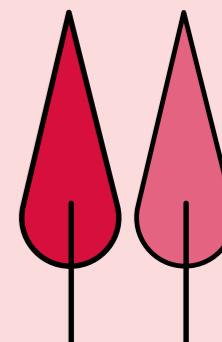
The action plan includes actions that the Commission believes need to be applied across the region as a whole, and specific actions for the Commission.

The ordering of the actions does not necessarily represent any prioritisation of different issues/actions, and there are clearly links between various elements of the plan.

The action plan should therefore be viewed in the round. The action plan will be a living document and the Commission will work to develop it and to promote its delivery through all of its activities and engagements in the coming years.

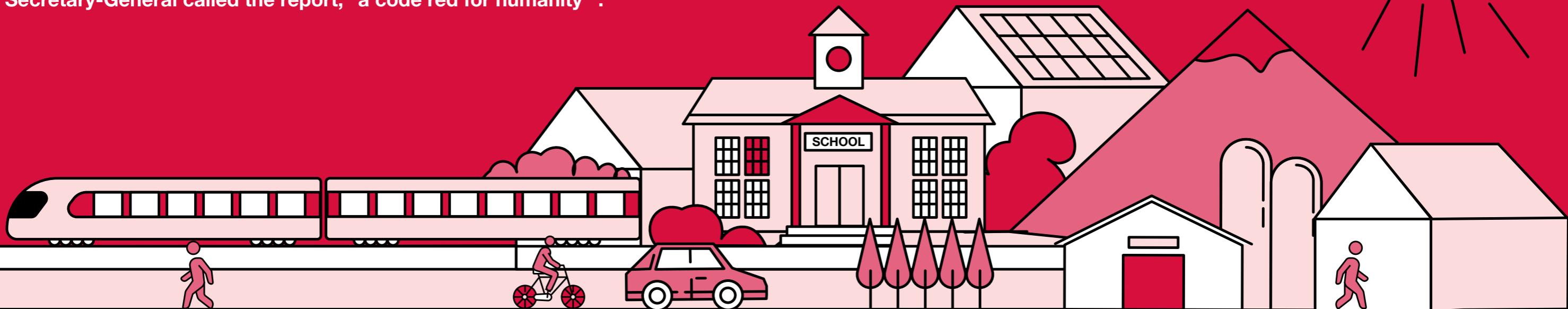


The action plan will be a living document and the Commission will work to develop it and to promote its delivery.”



INTRODUCTION

Climate change isn't some distant reality. The IPCC's latest report says climate change is now "widespread, rapid, and intensifying, and some trends are irreversible" and the UN Secretary-General called the report, "a code red for humanity"¹.



Climate change is impacting our homes and communities, our infrastructure, our agriculture, our water supplies and our natural environment here in Yorkshire and the Humber region, and it will do so with increasing frequency and intensity in the years to come.

The knock on impacts to our society and our economy will be profound.

We can't ignore it – we have to decide what we as a region are going to do about it.

What are our options?

It would be easy to say that this is a global issue and we're too small to make a difference, but that would be to opt out of our responsibilities. International cooperation is leading (although not quickly enough) to more ambitious commitments, and the vast majority of countries around the world have committed to accelerate climate action. Yorkshire and the Humber is a region of 5.5 million people; our population is larger than countries like Ireland or Norway, and the same size as Scotland or Finland. We have to do our bit.

Why regional action?

Within the UK, we could leave it to national government, but a top-down, one-size-fits-all approach isn't appropriate for such a large and varied region. Our response to climate change needs to be something that's done by us, and for us, rather than to us.

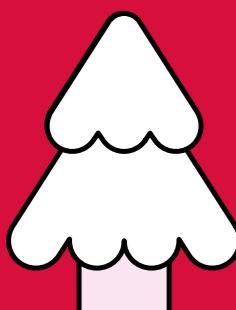
Within the region we could leave it to local government, but councils and combined authorities have limited capacities and scarce resources. We all have a role to play and there is much to be gained from cooperation and the pooling of resources at the regional scale.

What's in it for us?

There's no getting around the fact that addressing climate change is a massive challenge. But in responding to climate change we also have the opportunity improve our houses and communities, our businesses and economy, our transport and infrastructure, our national parks and green spaces and so on. At a human scale, our response to climate change can help us to tackle fuel poverty, improve public health, create and protect jobs, slash our energy bills, and so much more. Most fundamentally we can show that we're tackling one of the issues that our children and grandchildren are most worried about. We should be on the right side of history and work to give them a better future.

“

We can't ignore it – we have to decide what we as a region are going to do about it.”



So what do we need to do?

We need to accept that this is an emergency and act accordingly. We have set ourselves the target – as a region – of reaching net zero emissions by 2038, and of showing significant progress towards this goal by 2030.



To have a chance of meeting this target, we need to cut our carbon emissions rapidly. That involves continuing the rapid expansion of renewable energy sources, investing in smart energy grids, and upgrading our homes, buildings, businesses and transport systems to reduce their energy demand. We also need to address our wider carbon footprint by switching to a resource efficient, circular

economy and by rethinking consumption in key areas such as food, fashion and flying.

It's not only about cutting our carbon emissions. We need to invest in our readiness and resilience in the face of continuing climate impacts by protecting our homes and communities, our water, energy, transport and communications infrastructure, our farming and food systems and our nature and biodiversity. All of these aspects of resilience are central to our future health and wellbeing. We also need to recognise the links between climate change and inequality. We are not all equally responsible for climate change; the climate impacts of lower and higher income groups differ considerably.

And we're not equally exposed to the impacts of climate change itself or the policies that come with it – generally speaking it is the poor who will be hit hardest. We should be taking climate actions that help us to tackle inequalities and not exacerbate them or create new ones. To do this, we need to promote a just transition that actively involves people in the debate and that provides targeted support to make sure no-one and nowhere is left behind. Central to this is the clear need to work with businesses and workers to invest in jobs and skills.

Lastly, we need to promote climate actions that work with nature and that are more broadly sustainable. The climate crisis comes hand-in-hand with the ecological crisis, and we can only address one by also addressing the other. As we seek to cut our carbon emissions and increase our resilience we also have to protect and enhance our natural areas and promote nature-based solutions wherever possible.

Can we afford this?

Estimates² suggest that we need to invest 1% of our overall income (i.e. GDP) every year to address this massive challenge. If we don't commit this level of investment, the impacts on our overall income incurred by the damage caused by climate change could be at least five times greater³.

And there are huge benefits from acting. Estimates⁴ suggest that we could save £2.4 billion a year from our regional energy bill, while at the same time creating 33,000 years of new employment in the region and slashing our carbon emissions.

It's not a question of whether we can we afford to do this. It's a question of whether we can afford not to.



Our response to climate change needs to be something that's done by us, and for us, rather than to us."

Footnotes for Introduction

¹ Guterres, A. (2021) IPCC report: 'Code red' for human driven global heating, warns UN chief, Statement from the United Nations.

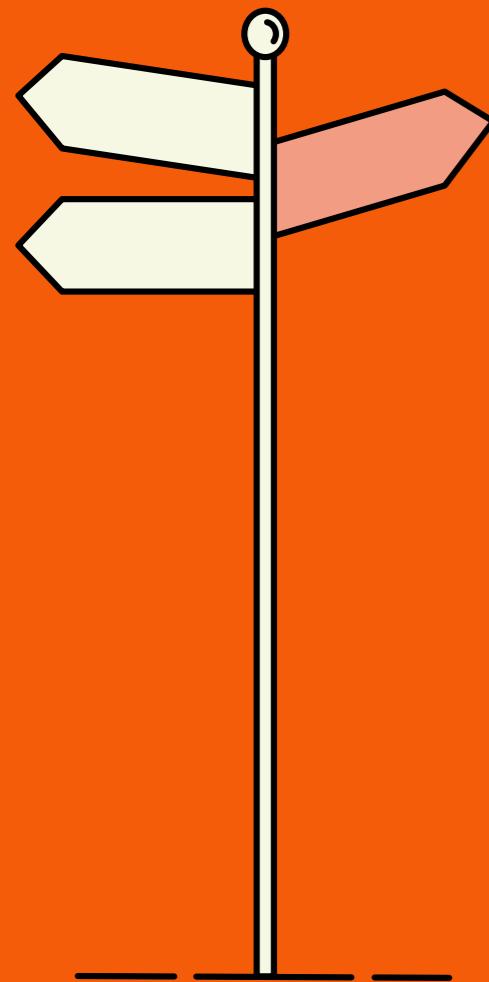
² UK Committee on Climate Change (2020) The Sixth Carbon Budget: The UK's path to net zero. Report published by the CCC.

³ Stern, N. (2006) The Economics of Climate Change, Cambridge University Press.

⁴ Gouldson, A., Sudmant, A. and Duncan, A. (2020) A summary carbon roadmap for Yorkshire and Humber, Report from the Place-based Climate Action Network.

The following cross-cutting actions will allow us to respond to the climate and ecological crises in an effective, fair and efficient way through a framework for change.

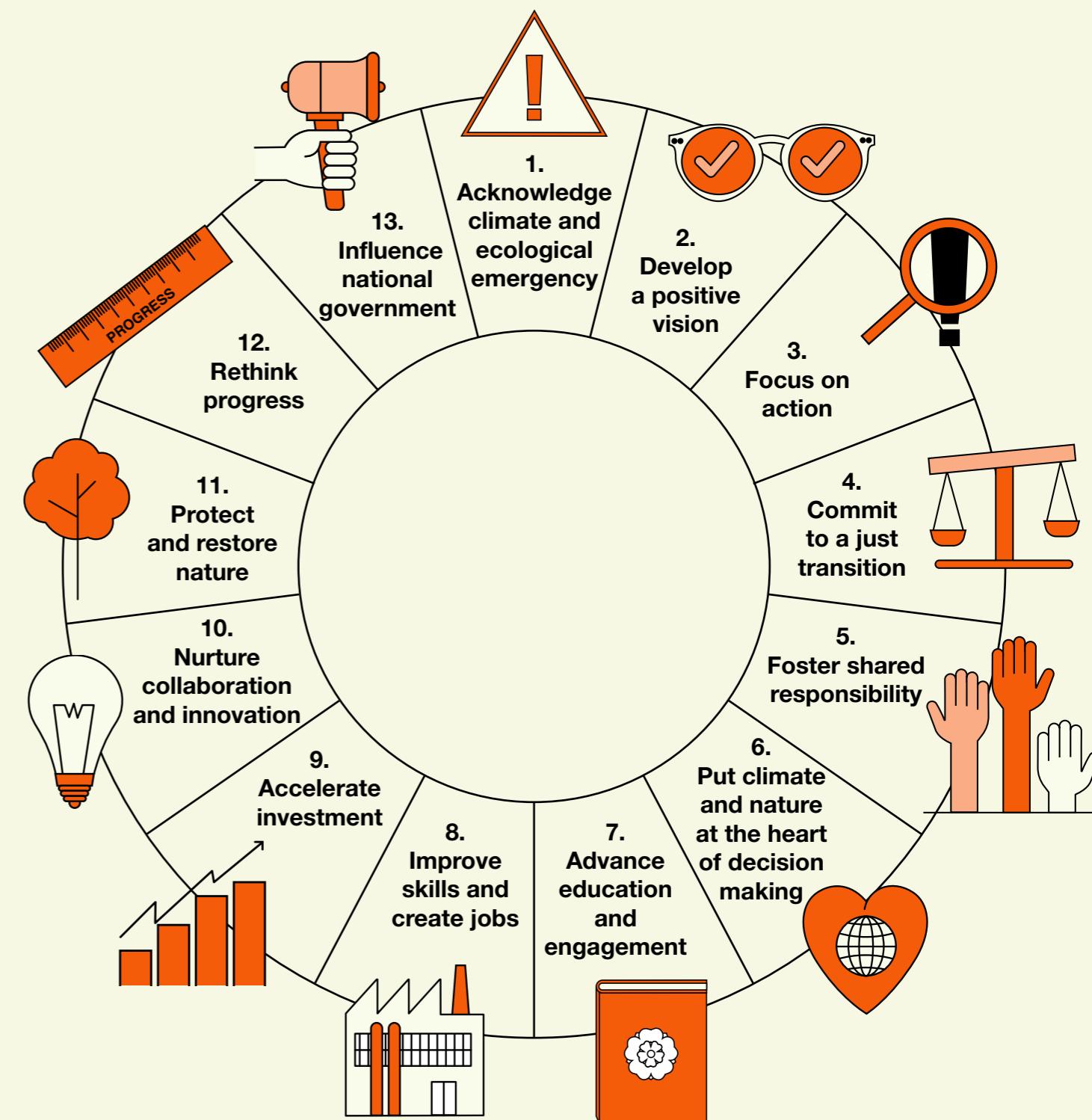
A FRAMEWORK FOR CHANGE



We need to put climate and nature at the front and centre of all of our big decisions – across government and the public sector, in businesses and the economy and in communities and civil society.

To do this we need to foster leadership, to build new capacities and cultures, to advance education and engagement and develop new skills, to support innovation and investment, to monitor and learn and to rethink what constitutes progress.

The main elements of this framework for change are set out below. They're deliberately broad – we need to do all of these things in a joined-up way that enables us to build our readiness and resilience and to reach our net zero targets, and to allow us to tackle the climate emergency while reducing inequality and protecting and restoring nature.



Acknowledge the climate and ecological emergency

Acknowledge that the climate and ecological emergency is real and accept that not responding with the required urgency and ambition will both prolong our contribution to the problem and worsen the impacts on our region.

The science is absolutely compelling – climate change is a massive issue that will shape our future in multiple ways for many decades to come; whether that be in Yorkshire, across the UK or elsewhere in the world.

Across the world average surface temperatures are now 1.1°C higher than pre-industrial levels. If we hit 1.5°C we could trigger natural feedback loops¹ that will lead to more and more warming. After this point, we're into the realm of dangerous or runaway climate change².

At the global scale, if we carry on emitting carbon³ as we are, we'll have locked ourselves into more than 1.5°C of warming within eight years. Within the region, we'll have used our share of the global carbon budget consistent with giving us a good chance⁴ of staying within 1.5°C of warming within six years.

All of the predictions align with what we're already seeing on the ground here in Yorkshire. Climate change is leading to more frequent and intense extreme weather events. These are already impacting with increasing severity on our homes and communities, our infrastructure, our food and water and our natural environments.

This is why we are completely justified in calling this a climate and ecological emergency. Our first main action is to recommend that, collectively as a region, we need to accept this and respond with an appropriate level of urgency and ambition.

1

Develop a positive vision

Develop a positive vision that shows how ambitious action on climate and nature at the regional scale can make Yorkshire and Humber a happier, healthier, fairer and more prosperous place to live and work.

Climate change is one of the biggest challenges that we face, but in responding to climate change we also have the opportunity improve our houses, communities, transport, businesses, infrastructure, food and farming, green spaces, nature and so on wider society.

A key issue here relates to our jobs and skills.

Imagine a future where we're more and more vulnerable to the impacts of climate change, where we fail to develop new skills and to adapt our businesses and infrastructure, and where we ignore the ambitious climate targets that are being adopted around the world.

But then imagine a future where we invest in jobs and skills for the future, where businesses and infrastructure adapt and become more resilient; and where we innovate and develop new businesses that can thrive in the future economy.

In the UK, the low carbon and environmental goods and services sector already employs 1.4 million people and it's growing rapidly⁵ – it is one of the biggest economic development opportunities we've ever seen. The huge investments in offshore wind and all of the associated jobs that have been (and will continue to be) created around the Humber show that this is already becoming a reality.

But the opportunities don't only relate to jobs. Climate and ecological action can enable us to improve our homes, strengthen our communities, improve our health, tackle poverty and inequality, enhance our green spaces and so much more.

Our second action then is that we should be positive and excited about a future where climate and ecological action create a happier, healthier, fairer and more prosperous region for us all.

2



Focus on action

Move from targets and planning to action by focusing on the real-world delivery of ambitious, accelerated change.

Building on the climate emergency declarations of local and combined authorities across the region, the Yorkshire Leaders Board has set a target of reaching net zero⁶ carbon emissions by 2038, with significant progress being achieved by 2030.

This target is broadly in line with science-based targets⁷, but we propose that it should be expanded to include aviation and shipping emissions and that we should introduce five-yearly carbon budgets to better enable us to track progress.

Specifically, we propose that we should build on the 44% reduction in our 2000 level of direct emissions⁸ that we have already achieved by including aviation and shipping emissions and committing to at least a 68% reduction on our 2000 level of emissions by 2025, an 84% reduction by 2030, and a 92% reduction by 2035 on the way to a 100% reduction by 2038.

With clear targets, we then urgently need to shift on to the question of how to rapidly decarbonise while at the same time building our readiness and resilience to on-going climate change and ensuring that our actions are both fair and more broadly sustainable.

Our third action then is to focus on delivery – and that is the focus of the rest of this action plan.



3

Commit to a just transition

Commit to a just transition that ensures climate actions actively reduce existing inequalities, and both empower and enable all people from across the region to have a say in the process of priority setting, delivering actions and evaluating outcomes.

One of the ways to accelerate climate action – and to make the most of its benefits – is to ensure that it is inclusive and fair⁹. This means including people in the process and making sure that the outcomes are fairly distributed.

It is important to point out that not responding to the climate emergency will have a bigger impact on inequalities than responding. Managed well, climate and ecological action will both prevent the immense human and economic costs of climate disruption and also generate new jobs and reduce inequality. To do this, we need to ensure that climate and ecological actions actively reduce inequalities, and at the very least do not reinforce or exacerbate them.

A good example of the potential to tackle inequality through climate action relates to fuel poverty. Building better homes and improving existing homes can clearly make homes more comfortable and more affordable to heat whilst at the same time cutting carbon emissions.

But there are also challenges where careful approaches are needed:

- How do we enable businesses and the people who work in higher carbon sectors to benefit from the transition to a green economy?
- How can we protect communities that are especially exposed to climate change, whether through floods, droughts, heatwaves or coastal change?
- How do we make sure that rural communities have the access to public transport and to digital services that they need to decarbonise?

Our fourth action – which involves promoting a just and inclusive transition that involves people in the process, supports them in the transition and focuses on generating fairer outcomes – is therefore of much wider importance.



4

Foster shared responsibility

Foster shared responsibility and distributed leadership by recognising that we can achieve so much more when we all act together, but whilst also acknowledging the need for our larger institutions in government and the public and private sectors to lead the way by delivering significant, tangible contributions to our response to the climate and ecological emergency.

While we call for collective action and climate leadership from across the region, we recognise that some people and organisations carry greater responsibilities and have greater capacities than others.

This proposal then is to call on larger organisations from across the region to demonstrate sustained, meaningful climate leadership.

This includes organisations in the public sector, such as local and combined authorities, health and care providers, schools, colleges and universities and other public services/agencies.

It also includes businesses in the private sector, such as financial services firms, construction businesses, manufacturing industries, energy and water

suppliers, transport providers, farmers and food processors, retailers, travel and tourism companies and those in the media and cultural sectors. And it includes our third sector and not-for-profit organisations, such as trade associations, chambers of commerce, trade unions, housing associations, colleges and universities, civic and heritage groups and community, faith and pressure groups.

We need leaders in organisations across these sectors to commit to developing and delivering ambitious climate actions, and to empower and expect others to match their commitment.



5

Put climate and nature at the heart of decision making

Act in a joined-up way by integrating climate and nature into all key areas of activity, by demonstrating that they are put at the heart of all major strategic, policy, planning and investment decisions and by showing that all of our climate actions are fully coordinated and coherent.

We can't address climate change if the issue is left on the sidelines.

Climate and nature should be put at the heart of all areas of decision making, whether in policy and planning, strategy and investment, commissioning and purchasing or the delivery and management of projects and programmes.

To do this we need to change the structures and cultures of decision making and to equip decision makers with the skills and capacities they need to make a difference. Major organisations can help this to happen by ensuring that climate change is adopted as a strategic priority, by making it a key part of the appointment and role descriptions of their leadership teams and by investing in training in climate/carbon literacy for all of their staff.

Crucially, major organisations should also commit to “climate proofing” their significant decisions; not only so that they

avoid major negative impacts, but also so that they ensure their decisions make a clear, tangible contribution to tackling this systemic challenge.

Central to this should be the inclusion of climate change as a key consideration in purchasing and procurement. As £1 of every £3 that is spent in the UK goes through the public sector, adopting climate as a priority in all publicly funded activities could have an especially significant impact.

But all organisations should adopt climate change as a priority in their purchasing policies. Where they actively support their suppliers – especially those that are small and medium-sized enterprises – to address the climate and ecological emergency, then their reach and influence could be significantly increased.



6

Advance education and engagement

Advance education and engagement by integrating climate and nature into the curriculum in schools, colleges and universities, and by promoting climate outreach and carbon literacy for individuals and organisations across the region.

Since the climate and ecological crisis is one of the greatest challenges that we face, we ought to be raising awareness and building understanding at every opportunity.

Our schools, colleges and universities are already seeking to integrate climate change throughout the curriculum. But we propose that climate change ought to be given greater prominence in multiple subject areas so that every school leaver and college or university graduate in the region has a solid cross-cutting understanding of the causes, consequences and, critically, the solutions to the climate and ecological emergency.

To enable this to happen, all governors, heads, teachers and lecturers should have access to climate outreach and carbon literacy programmes. The further development of shared learning materials could also enable teachers and lecturers to build awareness and understanding across a wider range of subjects and lessons.

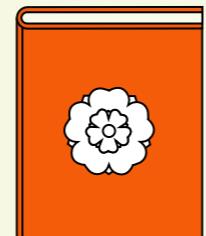
In schools, we can then address issues of climate and nature

more effectively - even within the constraints of the national curriculum by integrating it as a theme in multiple subject areas. In colleges and universities, we can ensure that all students gain familiarity with climate and ecological issues as a key part of their course.

By building awareness and equipping students with an understanding of what they can do to respond to the climate crisis, we can help to address the sense of powerlessness and anxiety that so many of our young people feel in the face of such an overwhelming challenge. We can also ensure that they recognise opportunities to contribute to tackling this enormous societal challenge in whatever job they choose to do.

More broadly, we should also be offering people at every stage of life the opportunity to learn about the climate crisis and what they can do to help. To enable this, community groups and social networks of every type should be able to access appropriate, engaging and affordable climate outreach and carbon literacy materials.

7



Improve skills and create jobs

Improve skills and create jobs by targeting opportunities to create good quality new jobs in the green economy, by supporting existing employers and employees to adapt, and by developing a regional network of excellence in climate related training and skills provision.

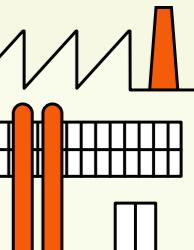
The fact that climate change represents both a challenge and an opportunity for the region is especially evident when it comes to the impact of climate change on jobs.

On the one hand, climate change and the need to decarbonise could put some jobs in high carbon sectors at risk. It has been estimated that 15% of all jobs in the region – or 360,000 people – are in industries with high-carbon emissions¹⁰. How we include, involve and support people in these industries to adapt and thrive as the region transitions to net zero is a crucial part of the just transition discussed above.

On the other hand, what is currently termed the green economy¹¹ is growing rapidly. As previously stated, an estimated 1.4million people in the UK are currently employed in the low carbon and environmental goods and services sector, and the sector has been growing by 7% a year. Skills shortages in this sector are already slowing the rate and increasing the cost of responding to the climate and ecological emergency.

This raises the vital question of how we can best train new workers and retrain existing workers so that they can prosper in the future. Clearly, we need to support the provision of tailored skills programmes that work for people at different stages and in different areas/fields of work and to ensure easy, affordable access to these programmes – especially for existing workers in high carbon sectors. Crucially, we also need to give people and organisations the confidence that they need to invest in skills development. To do this we need to ensure that there is stable long-term demand for the skills once they have been developed – and to a large degree this depends on having clear, credible government policies.

Some of this can be done at the local and regional scales. However, this is an area where much depends on national government and as a region we need to press politicians and policy makers in Westminster for the policy support that we need if we are to deliver on our climate ambitions.



Accelerate investment

Accelerate investment by building a climate and nature financing platform that helps to bring forward and develop new projects and programmes and to connect them to new forms of finance and investment, with a particular emphasis on the scope for local and regional investment in and ownership of new initiatives so that the benefits can be retained and reinvested in the region.

The UK Committee on Climate Change¹² has forecast that the net¹³ costs of reaching net zero will be less than 1% of GDP a year. For Yorkshire and Humber this equates to roughly £1.5bn a year.

This is of course a massive amount of money – but investing less than 1% of our income to secure a long-term future for the region and a liveable planet for our children and grandchildren should be seen as good value.

As long as we integrate climate change into decision making, much of what we need to invest will be raised as we continually invest in replacing or improving our buildings, businesses, transport, energy and water infrastructure, food systems, green spaces and so on.

But we certainly need to raise funds to invest in a wide range of projects and programmes that help us to address the climate and ecological emergency. We therefore call for the creation of a climate finance platform to support the development of investable climate-facing projects and programmes across the region and to connect them to different sources of finance.

We are especially interested in the potential for different actors in the region to invest in the transition, so that the benefits of those investments stay in the region. Even if a finance platform enabled a small percentage of the £45bn¹⁴ that residents of Yorkshire and Humber have in their ISAs to be invested in climate action in the region, this could make a massive difference.

9



Nurture collaboration and innovation

Foster collaboration and innovation by sharing/pooling resources and expertise and by stimulating innovation through a regional incubator/demonstrator network that allows good ideas to grow and people to learn from and replicate best practice across the region.

Climate and ecological action can come in many forms, and there are multiple examples of best practice already under way across the region. These front-running examples need to be recognised supported, scaled-up and replicated. We need to innovate and push forward the frontiers of best practice, but we could achieve so much simply by making best practice common practice.

To facilitate the replication and the advancement of best practice, we should develop a collaborative regional incubator and demonstrator network. By identifying good ideas and giving them a safe space to develop (i.e. incubating them) we could fast-track the development of new initiatives whether they are policies and plans, technologies and infrastructures, practices and behaviours or business models and financial arrangements. Once they have developed, we should showcase them and allow potential

users to come and see them in practice (i.e. demonstrating them), thereby familiarising people with new innovations.

We already have much of what we need to do this – in established innovation centres, in our colleges and universities and in commercial and community settings. But our tenth proposal is to bring these elements together in a better coordinated regional innovation scheme would allow us to develop and spread best practice so much more effectively.

10



Protect and restore nature

Protect and restore the natural and ecological systems that we depend upon by supporting the sustainable management of key natural assets such as moorlands, peat bogs, grasslands, soils forests, coastal and flood zones, by promoting regenerative approaches that protect biodiversity, green spaces and wild areas and by supporting the transition from grey (e.g. concrete and steel) to blue-green (e.g. nature-based) infrastructure.

Even though we depend on the natural world in so many ways, many of us are disconnected from nature and as a society we too frequently overlook or undervalue it.

Our natural and ecological systems play a vital role in helping us tackle climate change. Our soils and grasslands, moorlands and woodlands, and especially our peat bogs contain vast amounts of carbon, thereby limiting our carbon footprint and slowing global warming.

These systems also protect us from the impacts of climate change, especially by slowing the flow of water and reducing the risk of surface flooding, and by binding our coastlines and riverbanks together to reduce the impacts of sea-level rise and extreme weather events.

But nature and ecology in the region is under great stress, and has often been degraded, fragmented or lost entirely. Even if we only look at nature from a climate perspective, we desperately need to reverse

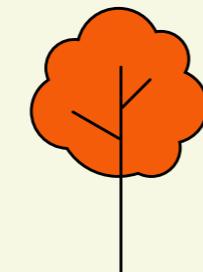
the decline by protecting and enhancing our natural assets.

We can tackle climate change through nature-based solutions that protect, sustainably manage and restore ecosystems, or through blue-green infrastructure that uses natural and semi-natural areas to aid in the management of water and protection against flooding.

These approaches have a range of benefits – as well as helping to address climate change they help to tackle the biodiversity crisis and to enhance access to green space, and this often makes them popular with the public and with politicians. They are also much more cost-effective and less carbon-intensive than engineered approaches.

Of course, there will be circumstances where nature-based approaches may not be appropriate, but for all of the reasons above we propose that a priority ought to be given to the protection and enhancement of nature and to the use of nature-based approaches as we respond to climate change.

11



Rethink progress

Rethink how we measure progress by developing a sustainable progress index for the region that adopts a wider view than one singularly focused on GDP by measuring progress based on different forms of capital (human, social, natural, intellectual, manufactured, financial), and by developing a regional climate observatory to survey emerging issues, collate the best available evidence and conduct monitoring and evaluation that enables us to track our progress in an open and transparent way.

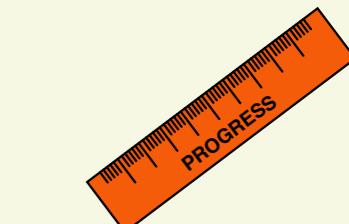
Are we as a region making progress?

If we define and measure progress only on the basis of our GDP¹⁵, then as a region our income has been growing gradually for some time. But this doesn't tell us whether we've been cashing in on different forms of capital to generate that income, whether our income is making us happier and healthier or more resilient and sustainable. Similarly, it doesn't tell us whether this income is distributed fairly or if we're leaving some people and places behind.

As a region we would benefit from a broader suite of measures to chart our progress. There is an old adage which says if you don't measure it then you can't manage it – and we therefore propose that we should develop a sustainable progress index to help us have a balanced view of whether we're heading in the right direction; not only economically, but also

socially and environmentally. Such an index can of course draw on other indices including the Sustainable Development Goals and those proposed by the recent Dasgupta Review¹⁶.

Related to this, we also need to collate and share the best available evidence on emerging issues, risks and opportunities. This will help us build our capacity to evaluate and learn about what works and to openly monitor and report back on progress towards our targets. We need to scan the world for examples of best practice that we could adapt and apply here in the UK. To better enable this to happen, we propose that universities across the region should work to establish a regional climate observatory.



12

Influence national government

13

Showcase the climate actions underway in Yorkshire and the Humber, share good practice with other regions and connect with national government to make sure we have support and clear, stable national policies to enable ambitious regional action.

We want Yorkshire and Humber to be recognised as an authentic climate leader. Where we can justifiably claim to be adopting innovative climate actions, we should be promoting our activities to other actors, including in other regions and at the national level. Of course, there will always be opportunities for us to learn from leaders in other parts of the UK and internationally. As is so frequently the case, we have a lot to gain through opening up and being collaborative. The participation of the Yorkshire and Humber Climate Commission in the UK-wide Place-based Climate Action Network can enable such collaboration and learning.

A key issue then is how as a region we can best connect to and influence national government. There is a lot that we can do within the region under current policies, and we shouldn't wait for all of the ideal policies to be in place before we get to work. However, there will be instances where we need national policy change to make further progress. To enable this to happen, we

need to be in regular contact with our MPs and peers, and with politicians and civil servants in the key ministries in national government and with important bodies such as the UK Infrastructure Bank or the UK Committee on Climate Change.

To address this need, our thirteenth proposal is that the Commission establishes both a regional climate policy forum to learn about what decision makers on the ground across the region need from national policy makers, and a national climate policy forum to enable us to make those requests and to shape national policy developments on a regular basis.



We can't address climate change if the issue is left on the sidelines. . . Climate and nature should be put at the heart of all areas of decision making

“

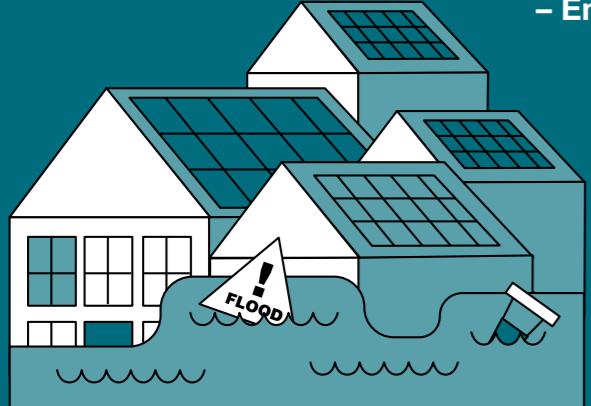
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We know that we face increasing risks from climate change. We need to plan ahead so that we become climate ready and to build our resilience so that we can cope and recover quickly when these risks become reality.

CLIMATE RESILIENCE

Section contents:

- People and Communities, Health and Wellbeing
- Land, Water, Nature and Food
- Business, Industry and Infrastructure
- Emergency Preparedness and Response



Changing weather and climate in the UK

The UK's weather and climate is changing. Recent decades have been warmer, wetter, sunnier and stormier than the 20th century. 2020 was the third warmest, fifth wettest and eighth sunniest on record in the UK, and in line with predictions we experienced record-breaking rainfall and severe flooding, strong winds and storms and heatwaves with unusually high overnight temperatures¹⁷.

The most recent set of national forecasts expects these trends to continue in the years to come. It is projected that, as the weather and climate continue to change, the UK will experience:

- more frequent and intense storms and other extreme weather events throughout the year;
- longer, hotter, drier summers with more frequent heatwaves and droughts;
- milder, wetter winters with less snow and ice but more intense rainfall and flooding;
- rising sea levels and increased coastal erosion¹⁸.



Climate change impacts, risks and opportunities

Changing weather and climate patterns like these will impact on Yorkshire and the Humber in a wide range of ways. Climate change will bring both risks, when the occurrence of the impact is likely to cause negative or harmful outcomes, and opportunities, such as longer growing seasons due to warmer and drier weather. On balance there are far more risks than opportunities.

Every five years, the UK Climate Change Committee (CCC) publishes an updated summary of the climate change risks and opportunities facing the UK. In 2021¹⁹, it identified the eight most urgent risks as:

1. Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards;
2. Risks to soil health from increased flooding and drought;
3. Risks to natural carbon stores and sequestration from multiple hazards leading to increased emissions;
4. Risks to crops, livestock and commercial trees from multiple hazards;
5. Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks;
6. Risks to people and the economy from climate-related failure of the power system;

7. Risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings;
8. Multiple risks to the UK from climate change impacts overseas.

To respond to risks such as these, we need to adopt adaptation measures that increase our resilience.

What do we mean by adaptation and resilience?

Adaptation aims to reduce the likelihood and severity of harm caused by climate change. Examples of adaptive actions include building flood defences and reducing water usage during the summer. As some warming has already occurred, even with ambitious efforts to reduce carbon emissions quickly, we will inevitably continue to experience some climate impacts in the years to come. We therefore need to build our capacities to adapt and become more resilient by coping and recovering quickly when faced with long-term stresses or extreme events.

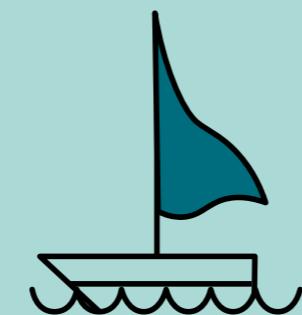
What is “good” adaptation?

There is no fixed definition of good adaptation. The actions needed will be dependent on the impacts being addressed and the risks and opportunities they bring. Adaptation decision making will often also be place specific and need to consider the needs, concerns and hopes of the people involved. However, the below provides a checklist of things likely needed to ensure good adaptation.

- Awareness of risks: Is there a good understanding of the risks and how they might interact with other factors and drivers of change?
- Visions and strategies: Are roles and responsibilities clearly defined? Is there support from champions as well as governance and legislation?
- Partnerships and collaboration: Are there mechanisms in place to support sharing of experience and best practice, and joint decision making?
- Learning and opportunities for course correction: Are actions being recorded and reviewed? Are there opportunities in place to review plans and make changes?



the UK is not yet demonstrating sufficient progress with adaptation to manage current or future risks”



Are we making progress with adaptation?

In 2008 the UK government adopted the Climate Change Act. As part of the Act the government is required to produce a five-yearly climate change risk assessment, which then feeds into National Adaptation Programmes (NAPs) for each part of the UK. In England, the next NAP will be published in 2023.

In addition, every two years the CCC provides an assessment of the UK government’s progress with adaptation. The most recent report concluded that the UK is not yet demonstrating sufficient progress with adaptation to manage current or future risks and that there is an urgent need to scale up the UK’s adaptive actions, to mainstream adaptation into policy and planning for all sectors, and to greatly increase people’s engagement with adaptation²⁰.

This includes UK residents and householders, who have crucial roles to play in taking actions to protect themselves and their homes from extreme weather and in providing essential pressure on the government and other organisations to adapt more quickly.

Adaptation in Yorkshire and Humber

The region published its first climate risk assessment in 2002 and a second in 2012. A regional partnership, *Your Climate*, ran from 2004 to 2016. During this period many local councils produced detailed risk assessments and adaptation plans. However, since 2016 there has been a gap for a region-wide, coordinating body to drive action. The Commission could bring people and organisations together to fill this gap, with this action plan as a first step.

Moving forward, the most recent Climate Change Risk Assessment stressed that we already know a huge amount of what we need to do and how. Now we just need to do it. Adapting now will be much more cost effective than delaying, and will limit the harm caused. Further, taking adaptive actions to protect against climate change impacts offers many wider social, economic and environmental benefits across the region.



Adapting now will be much more cost effective than delaying, and will limit the harm caused.”



People and Communities, Health and Wellbeing



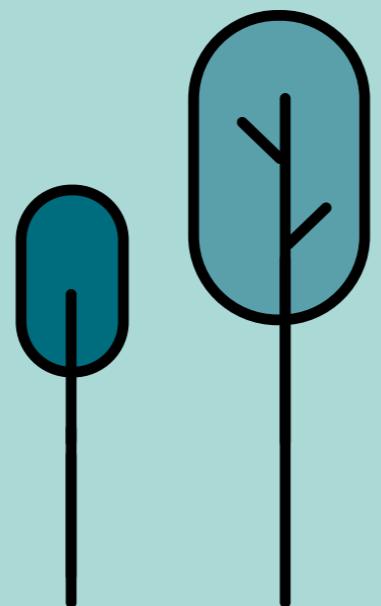
**The residents
of Yorkshire
and Humber
are not new to
the challenges
of extreme
weather
and climate
change”**

Yorkshire and Humber is home to over five million people, living in ancient market towns, thriving urban hubs, beautiful rural areas and along an impressive coastline. It is also very culturally diverse, bringing together people from across the UK, Europe and beyond. This is a region proud of its heritage and natural resources but also one that is forward looking and ambitious.

The residents of Yorkshire and Humber are not new to the challenges of extreme weather and climate change, especially flooding, which can be particularly devastating to homes and communities. Increasingly, longer periods of unusually hot weather, as well as drought and cold snaps, are bringing new challenges.

The region also has greater inequalities than the national average, with residents less likely to eat healthily, exercise sufficiently, and live in adequate housing. There is considerable evidence that more vulnerable and disadvantaged groups are both more likely to negatively experience climate change impacts, and be less able to adapt effectively.

But the opportunities for taking actions which will increase our climate resilience and our wellbeing in a joined up way are many.



Case Study: Climate Cafes

Climate Cafés in York and Hull were co-organised by Yorkshire Flood Resilience (City of York Council) and the Energy and Environment Institute (University of Hull). These free Climate Cafés took place in September 2021 and focused on flooding and climate change. Academics, flood risk managers from local authorities, Environment Agency representatives, and community groups presented their thoughts on this important topic. Members of the public were invited to ask questions, give their views, and have a chat with others attendees over a free tea or coffee.

[Find out more here](#)



Take action now





Proposed Actions for the Region

14

Develop climate risk communications that are tailored to different audiences to effectively communicate the significance of different types of climate risk and the relevance and meaningfulness of resilience to everyone, including through youth and community networking.

15

Promote inclusive climate decision making and the co-creation of solutions by enabling local people to prepare adaptation plans to make where they live and work “climate ready”, supporting the development of climate champions as key points of connection with communities, and supporting further climate assemblies/juries.



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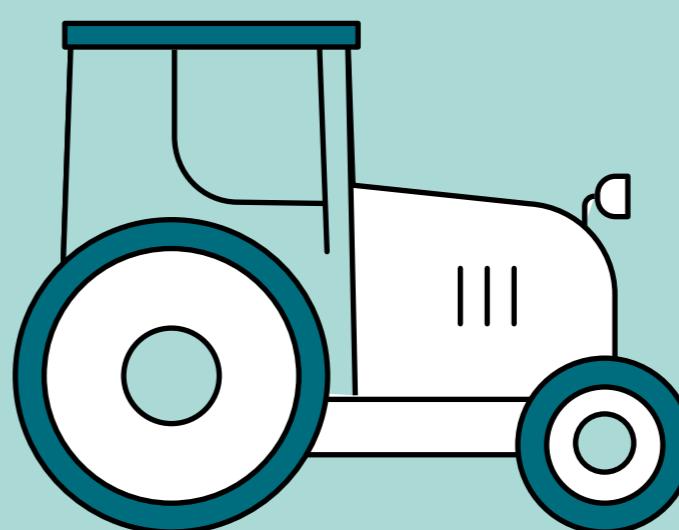
Encourage the wider adoption of area-wide and site-specific climate adaptation plans and actions by combined or local authorities, the managers of key sites such as schools, hospitals, transport interchanges, and homeowners, recognising the opportunity to align with net zero action, for example through retrofitting.

17

Promote resilience actions that offer health, wellbeing and community benefits by reducing risks, improving resilience, accelerating recovery and reconnecting people and communities to each other and to nature through climate and nature-based activities in urban and rural areas.

Over
70%

of the region's land area is covered by farming activities.



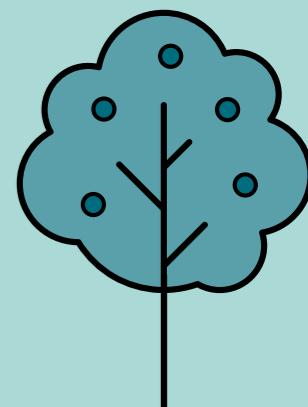
Land, Water, Nature and Food

The region contains three National Parks, three Areas of Outstanding Natural Beauty and two World Heritage Sites. We have an incredible diversity of landscapes, habitats and species, some of which are unique to the region and of international importance. For example, the region is home to a quarter of the national stock of peatland, which plays an essential role in storing carbon.

Our natural areas and green spaces are crucially important in improving the physical and mental wellbeing of people across the region, and the region's natural landscapes are also major tourist attractions.

The agriculture sector is incredibly important for Yorkshire and the Humber. Farming activities cover more than 70% of the region's land area, provide employment to more than 30,000 people and have a total output value of £2.5 billion. Additional to producing sufficient and nutritious food, farms have integral roles to play in looking after the region's countryside where they are responsible for caring for a wide range of natural assets such as soils and water.

The climate and biodiversity emergencies, as well as Brexit, are already generating significant policy change in this area. Yorkshire and Humber has an opportunity to harness the national level attention now being directed at this sector, and to develop the region as a leader in sustainable, productive, nature-positive land management.





Andy Hay (rspb-images.com)

Case Study: Rejuvenation of the Dearne Valley

The Dearne Valley in South Yorkshire is one of only 12 Nature Improvement Areas in England. Once the heart of the Yorkshire coalfield, Dearne Valley is now characterised by wetlands, farmland and woodland, rejuvenating a landscape once marked by mining and heavy industry. Important features of the area's industrial heritage have been retained and provide a home for a rich variety of plants and animals. Examples include spoil heaps planted with a mixture of woodland and grassland, and new wetlands in areas of subsidence. The RSPB are working as part of the Dearne Valley Green Heart Partnership to transform the valley into a place where people and nature thrive, and where people can work, live and enjoy their leisure. As a result, a now healthy and attractive natural environment is being supported by the development of a growing green economy and flourishing local communities.

[**Find out more here**](#)



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Proposed Actions for the Region

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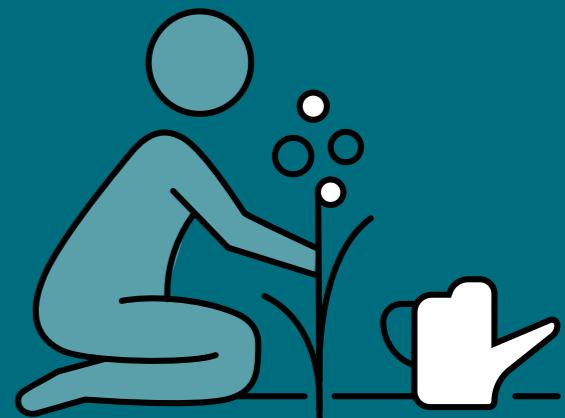
Promote resilience in land use by restoring and enhancing the region's many key natural assets, including moorlands, peat bogs, grasslands, soils, wetlands, woodlands, flood and coastal zones and biodiversity more generally, by planning and working across natural and political boundaries and by helping land-use to be carbon negative as a contribution to broader net zero targets.

20

Promoting nature-based solutions and the development of blue-green resilient infrastructure wherever possible, recognising that this will contribute to net zero and to our response to the ecological as well as the climate crisis, potentially to be delivered through a Regional Nature Service which encourages community involvement in nature and green spaces.

19

Prepare the food and farming sector for current and future changes through research and innovation, skills and knowledge development, network building and stakeholder engagement, acknowledging the huge opportunity for farmers to help address the climate and ecological emergencies if provided with the necessary support.



Business, Industry and Infrastructure

“

Essential infrastructure services... support and enable wider societal, economic and environmental resilience”

Businesses throughout Yorkshire and Humber are already experiencing the damaging impacts of extreme weather and the challenges brought by global climate change with a wide range of immediate and longer-term effects. For example, as well as doing damage to physical assets, a flooded business site can affect processes, schedules, reputation, employee wellbeing, and access to affordable insurance.

At the same time, many businesses, such as in food production, essential retail, public transport and communications, bolster the resilience of people and households, while others, such as construction, and finance and investment, provide necessary foundations for other businesses.

Essential infrastructure services such as water, energy, transport and digital underpin, support and enable wider societal, economic and environmental resilience. They are essential for the wellbeing of homes and communities, as well as business and industry, and in supporting emergency response. Further, reliable, resilient infrastructure that is accessible to all will not only help the region grow and develop, it will be a crucial tool in addressing socio-economic inequalities.

Due to requirements set by the national government, parts of the infrastructure sector are well advanced in planning for climate change impacts. However, many challenges remain, particularly in ensuring that resilience planning is coordinated across different sub-sectors, such as across water, power and transport networks, and externally, for example, with business and industry.

Investing in digital infrastructure presents a huge opportunity. The data services it enables form a critical backbone of our modern society. Delivering rapid communication and data processing can help better forecast extreme events, predict supply chain security or public health risks, and proactively build resilience through community linkages or climatic forecasting for agriculture.



Case Study: Tools to boost SMEs' flood resilience

Two exciting tools have been developed to advance the flood resilience of small and medium sized enterprises (SMEs) across Yorkshire and the Humber. One tool helps local and regional governments to assess the wider economic costs of flooding on SMEs to enhance their business cases for flood protection. The other tool helps insurers, lenders, surveyors, brokers and SMEs to assess effective resilience to unlock better flood insurance for SMEs. Led by Paola Sakai (UKRI) at the University of Leeds, this partnership with the University of York, iCASP, West Yorkshire Combined Authority, Environment Agency, local governments, and the insurance industry, is moving SMEs' flood resilience forward.

[Find out more here](#)



Take action now



Proposed Actions for the Region

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Promote climate resilience in business and industry through enhanced risk assessment, management and communication (including the application of ISO/BSI standards and guidance), and through collaboration and the sharing of best practice, recognising that larger business can play an active role in building capacities in SMEs through sector, area or supply chain cooperation.

22

Develop a regional network for climate readiness and resilience training to build applied understanding of different climate risks and approaches to adaptation, with resilience champions sharing best practice and fostering collaborations between schools, colleges, universities, unions, businesses, trade associations and chambers of commerce.

23

Align all infrastructure sectors to deliver a regional systems approach to resilience planning recognising that systems interactions and interdependencies mean that if one part of our infrastructure isn't resilient, none of it is.

24

Invest in digital infrastructure that's accessible to all to enable effective emergency responses and strengthen back-up provision of essential services such as health and education and to enable rapid recovery in all urban and rural areas.



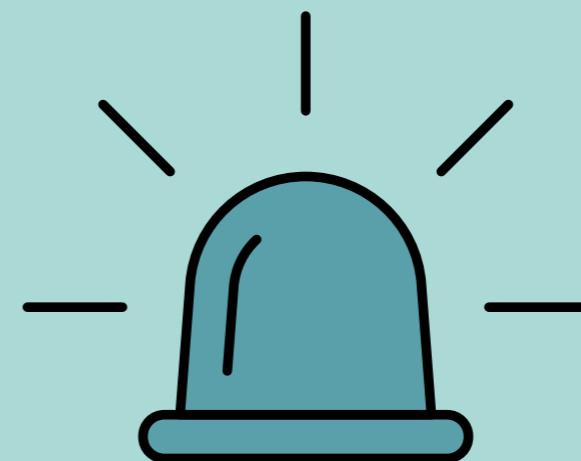
Emergency Preparedness and Response

“
Being resilient means being well prepared.”

By their nature, emergencies are disruptive and are potentially damaging and dangerous. It is how we prepare and respond that makes the difference.

Yorkshire and Humber is at the forefront of emergency preparedness and response having been impacted by numerous incidents over the past 20 years. Significant flooding incidents from river, coastal and surface water sources, long duration dry weather, and of course the pandemic are just some of the instances where day-to-day living has been disrupted, sometimes significantly in the recent past. We need to assess and learn from our experiences to date and strive for continuous improvement in our emergency response in the future.

Being resilient means being well prepared. Considered emergency planning and response is essential to help Yorkshire and Humber communities maintain their function, identity and structure following the disturbance of an emergency. This will ensure that when emergencies happen, those impacted know what to do to help themselves and others get back to normal life as quickly as possible. It will also ensure there is planning in place for long-term support after the immediate emergency has passed.





Case Study: Ready For Anything

Following the devastation caused by the Boxing Day floods in 2015, Ready for Anything was set up in York and is now being rolled out across the whole of North Yorkshire by the North Yorkshire Local Resilience Forum.

During the floods, resources were stretched, but the practical support offered by members of the public and businesses was invaluable. To ensure the response is even better in the future, a database of enthusiastic volunteers has been set up. There are currently 480 volunteers.

Ready For Anything volunteers were deployed three times during the recovery phase of the flash flooding in Richmondshire in August 2019. They have helped with checking on residents affected, giving information and being a reassuring presence in Leyburn, Bellerby, Reeth and Arkengarthdale. In 2020 and 2021 volunteers were deployed to assist with numerous incidents, from helping in rest centres for evacuated people and door knocking for warning and informing.

[Find out more here](#)



Take action now



Proposed Actions for the Region

25

Build climate readiness through improved emergency and recovery planning by promoting regional climate risk assessment, multi-agency collaborations, provision of climate response training for emergency responders and support for local resilience forums.

26

Develop a whole of society approach to emergency response raising awareness of new risks to the region and the available hazard warning systems, followed by clear communications and training as to what individuals, communities and businesses should do during differing emergency scenarios, including opportunities for community volunteering as appropriate.

27

Promote the provision and uptake of affordable, comprehensive flood insurance for home and business owners and tenants, particularly focusing on the communities least able to afford insurance and the communities most at risk of flooding.

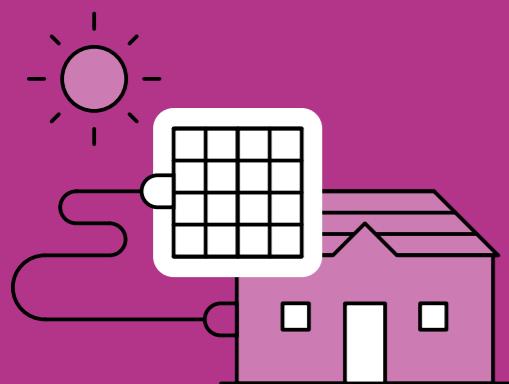
28

Strengthen plans for the long-term management of change and loss caused by sea level rise by working with communities to manage and respond to acute events such as storm surges and chronic events including sea level rise and loss of land.



We know that we need to reduce our emissions of carbon and other greenhouse gases rapidly. We might be able to capture and store some carbon by planting trees or through new carbon capture and storage technologies. But the first option has to be to minimise emissions in the first place.

NET ZERO



Section contents:

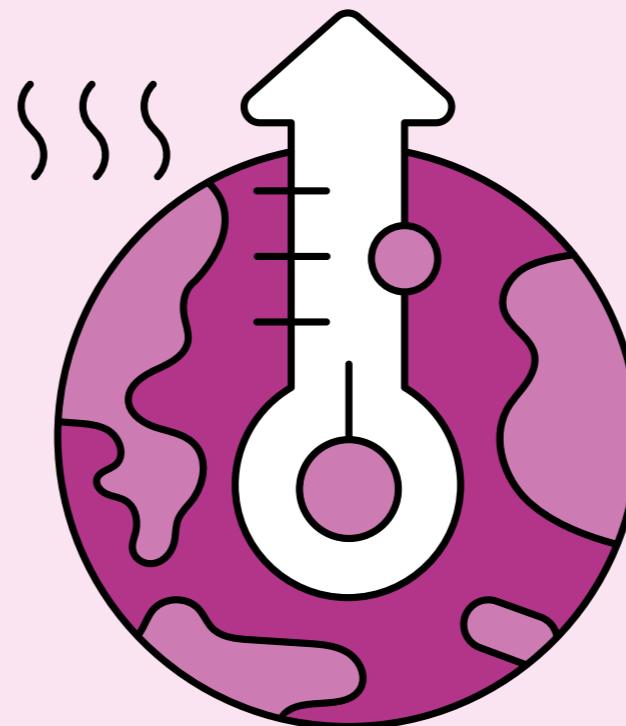
- Targets
- Energy
- Buildings
- Transport
- Business, Industry and Infrastructure
- Land Use and Nature
- Resource Efficiency and the Circular Economy
- Lifestyles and Consumption

What are the causes of climate change?

Gases that trap heat in the atmosphere are collectively known as greenhouse gases (GHGs).

The main GHG is carbon dioxide (CO₂), which is emitted when we burn fossil fuels such as oil, coal or natural gas or other materials such as wood or waste. Carbon dioxide can be removed from the atmosphere by growing plants, or through technologies that remove CO₂ from the atmosphere or from waste gases and use it or store it underground (so called carbon capture utilisation and storage, or CCUS). If we remove at least as much carbon dioxide as we emit, then we say we are at net zero.

Because some GHGs can stay in the atmosphere and cause global warming for many years after they are emitted, there is a time delay between reducing our emissions and slowing climate change.



This means that even if we reduce or mitigate our emissions now, we will still need to adapt to the impacts of climate change for years to come.

What are the consequences of climate change?

The science is clear - if we emit more GHGs (e.g. through burning fossil fuels) than we absorb (e.g. through forest growth) or capture and store (e.g. through CCUS) then our atmosphere will trap more heat. This warming will then lead to changes in our weather and seasonal patterns, more frequent and intense extreme weather events, sea level rise and loss of low-lying areas and disruptions to our ecosystems and our food and water systems. The knock-on impacts to society and the economy are profound – to the extent that climate change has been described²² as the biggest threat modern humans have ever faced.

We measure the level and rate of global warming by referring to average global surface level temperatures. Currently, the world is around 1.1°C warmer than pre-industrial levels²³. This doesn't sound like much but these are long-term averages over the entire world's surface. Some areas are seeing much higher temperature increases at key moments in time – the summer of 2020, for example, saw the highest ever recorded temperature in the Arctic Circle²⁴.

The science of climate change is continually assessed through the Intergovernmental Panel on Climate Change (the IPCC). In 2018, the IPCC published a report assessing a range of thresholds or tipping points in the climate. They highlighted issues such as melting icecaps, thawing permafrost, changing ocean currents or the loss of forests where tipping points will be triggered when we reach a particular level of warming. Once these tipping points have been triggered, natural processes that drive climate change will accelerate and then be very difficult or impossible to slow down or turn off. This is referred to as dangerous or runaway climate change²⁵.

Alarmingly, the IPCC²⁶ concluded that the level of warming where we risk triggering these tipping points is 1.5°C. The fact that we are already perilously close to this point – and to triggering dangerous, runaway climate change – is why this can justifiably called a climate emergency.

What is happening internationally?

Countries around the world discuss what to do about climate change through the United Nation's Framework Convention on Climate Change (UNFCCC).

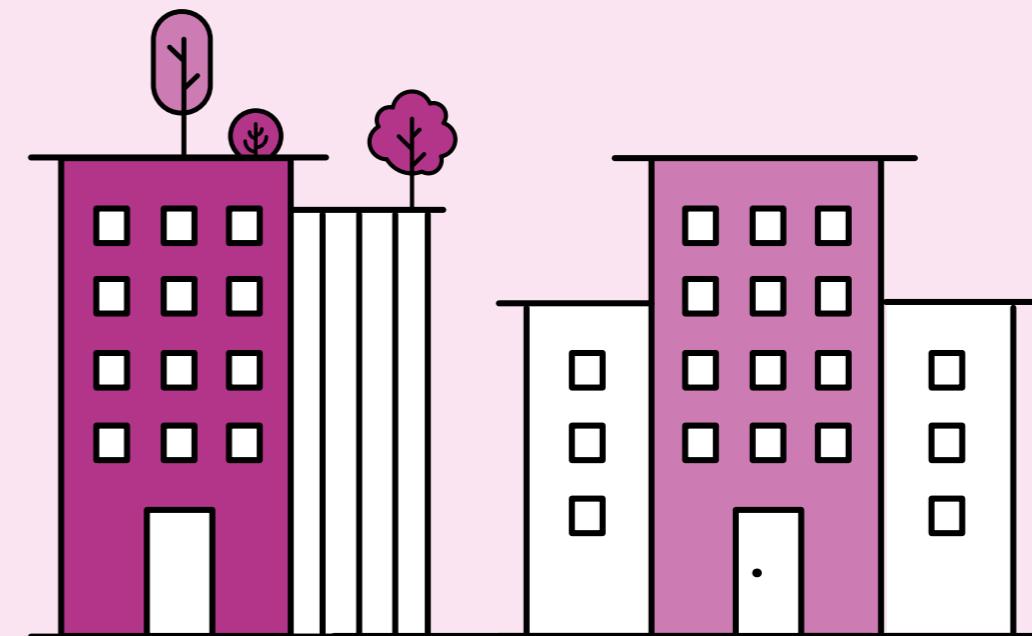
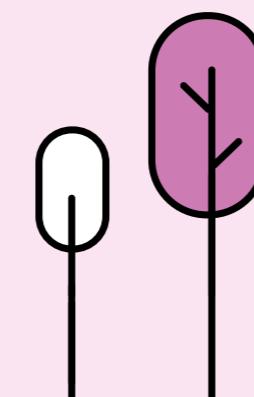
In the UNFCCC negotiations in Paris in 2015, countries were asked to table what they were prepared to do to tackle climate change²⁷ and to come to a global agreement on what to do next. The Paris Agreement then made a commitment to limiting warming to at most 2°C and ideally 1.5°C by the end of this century.

Analysis of the commitments made by the countries around the world in Paris suggests that - if they are delivered – they will limit warming to approximately 3.2°C²⁸. This is still past the tipping points discussed above and so we are headed well into the realm of dangerous climate change.

Since Paris, multiple countries/negotiating blocs (including the US, China, the EU and the UK) have upgraded their climate change commitments²⁹. However, the Paris Agreement requires all countries to review and upgrade their commitments every five years, which is what makes the negotiations at COP26 in Glasgow in November 2021 so important.

“

To meet this target we have to significantly step up our efforts and accelerate the rate at which we're cutting our carbon emissions.”



Past, Present and Future Emissions from Yorkshire and Humber

In Yorkshire and Humber, we directly emit 7.5% of UK emissions, which means that as a region we emit³⁰ more than countries like Croatia, Slovenia or Cyprus.

We should step up and do our bit to reduce emissions – mainly to minimise the damage that climate change will do both globally and in our region – but also because as a region we could save £2.4bn through sensible, cost-effective investments that would cut our energy bill and our dependence on volatile energy markets whilst reducing our emissions at the same time. Through such actions we can also put ourselves at the forefront of the green industrial revolution that the race to net zero is triggering.

Our direct emissions have already fallen by 44% since 2000, due to a combination of increasingly decarbonised electricity supply, structural change in the economy, and the gradual adoption of more efficient buildings, vehicles and businesses.

We project³¹ though that if we carry on as we are, Yorkshire and Humber's direct emissions will only fall by a total of 51% between 2000 and 2050. This is a long way short of our regional commitment to reach net zero emissions by 2038. To meet this target then we have to significantly step up our efforts and accelerate the rate at which we're cutting our carbon emissions.

44%

Fall in Yorkshire and Humber direct emissions since 2000

Targets

2038

We should introduce five-yearly carbon budgets to guide our transition towards net zero by 2038.

The Yorkshire Leaders Board, which includes the leaders and chief executives of the 22 local and combined authorities across the region, have committed the region as a whole to reach net zero by 2038, and to demonstrate significant progress towards this goal by 2030. We believe that this target is broadly consistent³² with what we as a region need to do to stay within our share³³ of a global carbon budget that gives us a good³⁴ chance of avoiding dangerous climate change.

However, in line with the recommendations of the UK Climate Change Committee in its Sixth Carbon Budget³⁵, we believe that the target should be expanded to incorporate emissions from aviation and shipping. As is shown in Figure 1, expanding our budget in this way would add 10% to our current baseline emissions. It would also mean that we have to reduce our emissions more quickly in order to reach our 2038 target to reach net zero.

We also propose that we should introduce five-yearly carbon budgets to guide our transition towards net zero by 2038. We therefore propose that we should build on the 44% reduction on our 2000 level of

direct emissions³⁶ that we have already achieved by adding in aviation and shipping emissions and then committing to a 68% reduction on our 2020 level of emissions by 2025, an 84% reduction by 2030, and a 92% reduction by 2035.

We also need a clear and transparent way of monitoring progress on a yearly basis.

Our current and projected³⁷ sectoral breakdown of emissions is presented in Figure 2. Currently, transport within the region constitutes 31% of our emissions, domestic housing 25%, industry 17%, public and commercial buildings 10%, aviation and shipping 10%, waste 4%, and land use, land use change and forestry (LULUCF) 3%. This highlights the fact that we need action across a range of sectors if we are to realise our overall target of net zero by 2038.

We also recognise the significance of our the broader³⁸ consumption-based emissions that arise in other areas as the produce of the goods and services that we consume in the region.

Figure 1: Yorkshire and Humber Greenhouse Gas Baseline and Target

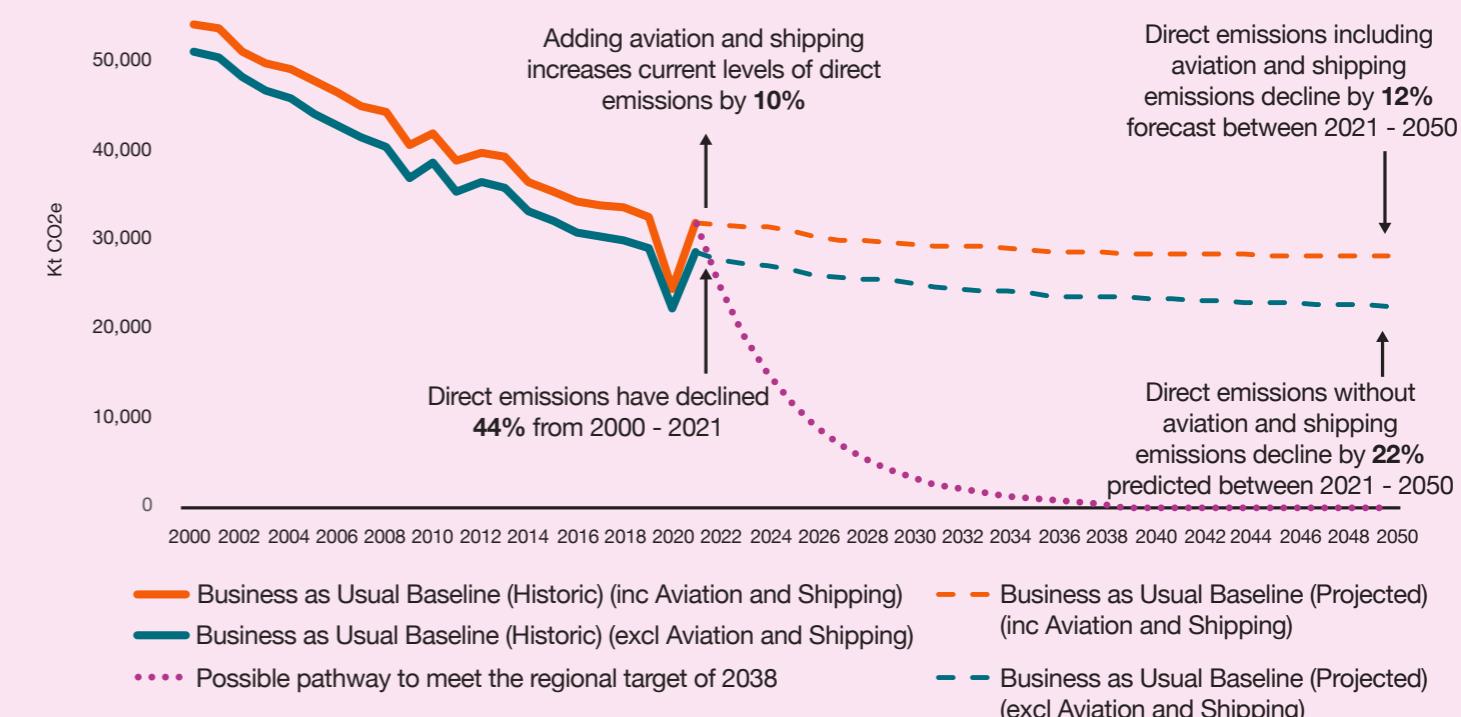
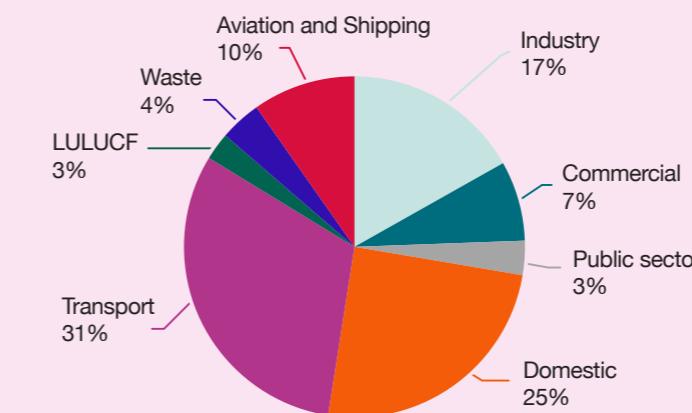
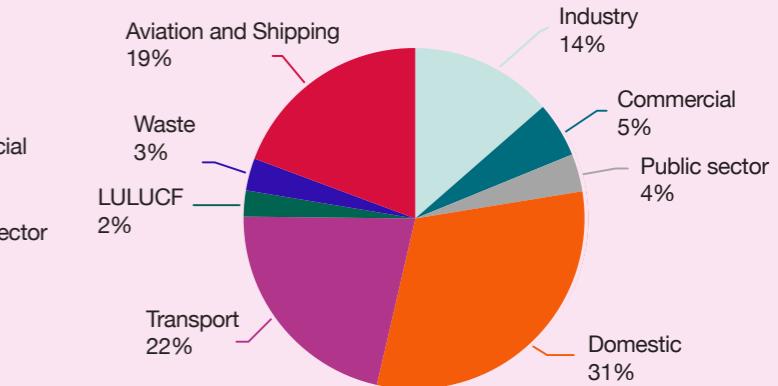


Figure 2: Current and projected (2050) sectoral breakdown of emissions for Yorkshire and the Humber

Yorkshire and Humber Sectors 2021



Yorkshire and Humber Sectors 2050

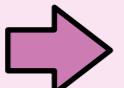




Case Study: Net Zero Carbon Roadmaps

Researchers with the ESRC Place-based Climate Action Network (PCAN), including at the University of Leeds, have produced a suite of net-zero carbon roadmaps for multiple authorities around the UK, including Leeds, York and Kirklees. Each of the roadmaps shows the pathway to net zero emissions for the respective city's climate change target. The roadmaps illustrate each city's share of the global carbon budget to keep to 1.5°C of warming (the level of global temperature rise at which we risk triggering dangerous climate change) and show when, at current rates of emissions, this budget will be used up. They also set out cost-effective, more ambitious, and innovative interventions that will help each city reach net zero by its target date, and demonstrate the benefits – especially financial (in terms of energy savings) and years of extra employment – that doing these actions would result in. The roadmaps act as a guide for decision makers and stakeholders in each area. In Leeds, the roadmap was reviewed and revised following a Citizens' Jury and it has helped to inform policy decisions, eg the creation of a £100m scheme to retrofit housing across the city.

[Download the roadmaps and infographics here](#)



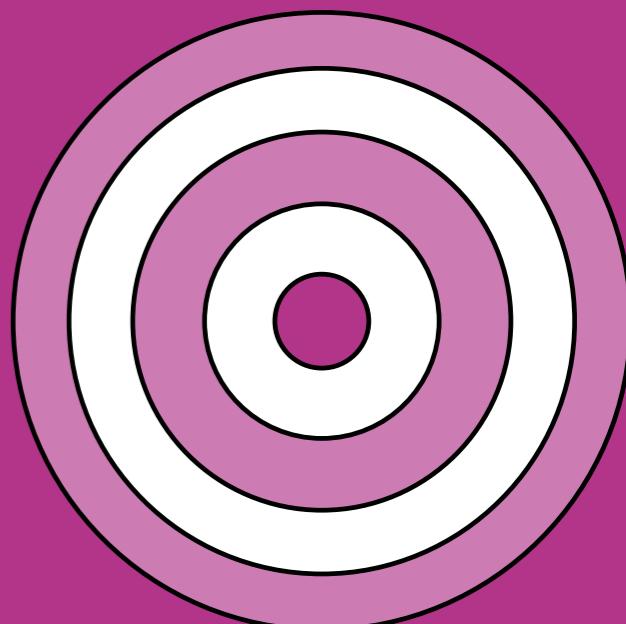
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Proposed Actions for the Region

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Build on our current targets, including our regional target of achieving net zero emissions³⁹ by 2038 with significant progress by 2030, but accept the UK Climate Change Committee's call for these budgets to be extended to incorporate aviation and shipping emissions and to adopt and work towards five-yearly carbon budgets, while also seeking to address our broader consumption-based emissions⁴⁰.



Energy



**By 2030,
we predict
that as a
region we
will generate
nearly
three times
as much
electricity as
we currently
consume.”**

As a region, we are both a significant energy generator and a large energy consumer.

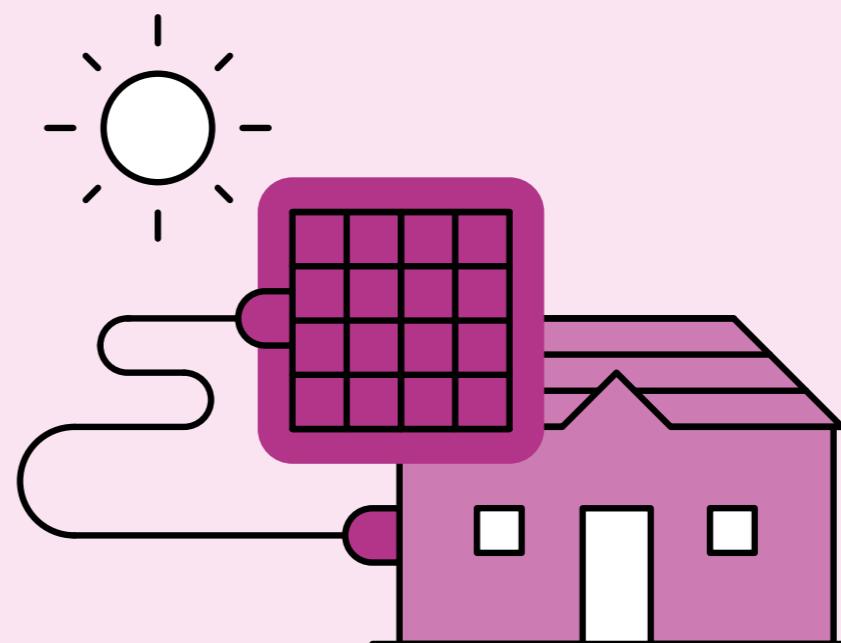
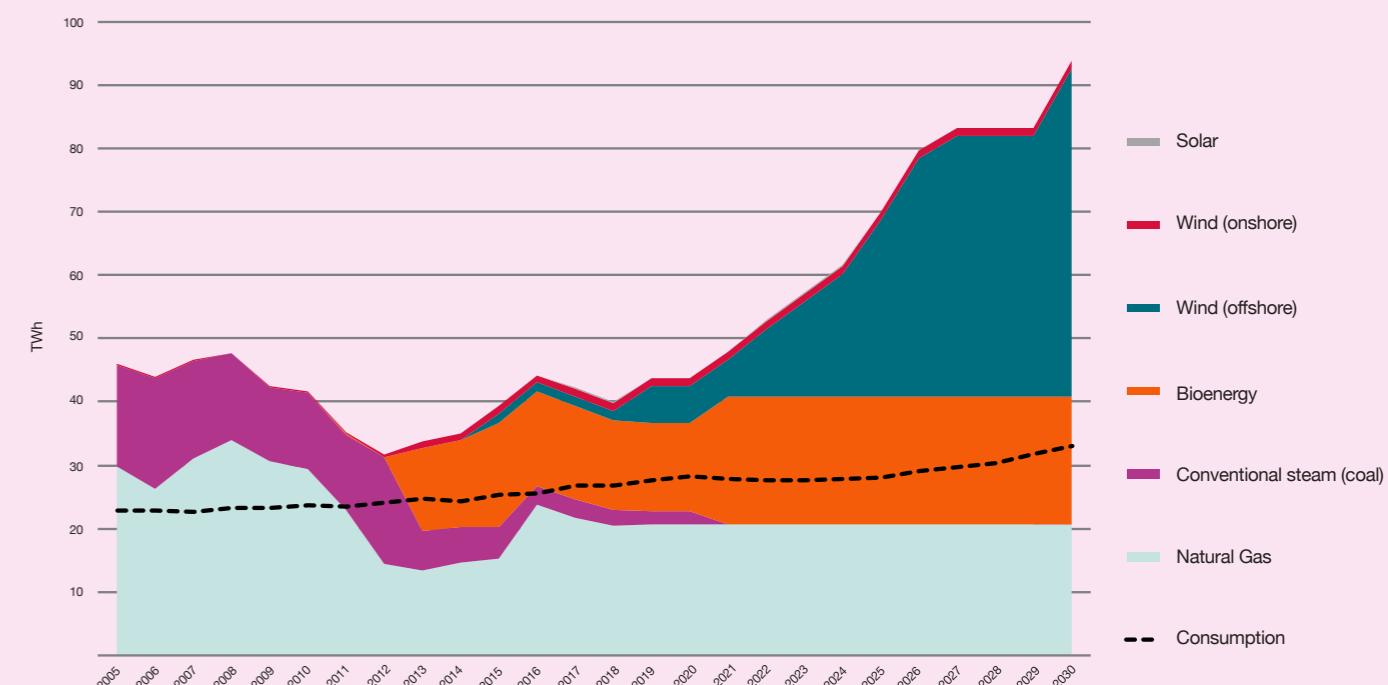
Focusing only on electricity, which makes up around 18% of our total energy use, the graph below shows that in the last 15 years as a region our consumption has been gradually increasing, and that our generation of electricity has stayed roughly constant but is expected to increase rapidly in the coming years, largely because of significant growth in offshore wind energy.

In the electricity generation sector, the use of coal has largely disappeared except for back up purposes; gas continues to play a significant role; biofuels have become significant, and the offshore wind sector that has emerged in the last few years will grow dramatically through the 2020s.

By 2030, we predict that as a region we will generate nearly three times as much electricity as we currently consume. However, we note that significant increases in net zero electricity generation are likely to be needed to enable the electrification and hence decarbonisation of a significant proportion of heating and transport in the region.

Looking forward, to reach net zero we will need to decarbonise the whole of the energy system in a joined up and integrated way. We need to focus on reducing demand, on smart and flexible distribution that can flexibly match demand with supply and that enables distributed generators to feed into the grid, and the incorporation of different forms of energy storage, on the lowest carbon and most sustainable energy sources and on the development of CCUS.

Figure 3: Yorkshire and Humber electricity balance: generation vs consumption





Case Study: Offshore Wind, Orsted

Orsted are the global leader in offshore wind and claim to be the most sustainable energy company in the world. The UK is their largest market and they have 12 operational offshore wind farms of which five are in the Humber region, including the world's largest, Hornsea One and Two. Orsted's offshore wind farms are already providing clean, green electricity for over 4.4 million UK homes and they have a big ambition to create a world that runs entirely on green energy. Over the next few years Orsted are continuing to develop their pipeline of offshore wind farms and alongside this are collaborating in the regions where they operate to support the wider decarbonisation and net zero agenda through innovative green hydrogen projects such as Gigastack and Project Oyster. Orsted employ over 400 people at their East Coast Hub in Grimsby, which operates their offshore wind farms. Thousands work in offshore wind farm construction and throughout the supply chain, making them a key green employer in the region with much potential for growth in the future.

[Find out more here](#)



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Proposed Actions for the Region

30

Put the primary emphasis on reducing demand for all types of energy as the most effective and efficient way of cutting carbon by promoting ambitious demand reduction and energy efficiency initiatives across all sectors.

31

Introduce smart and flexible energy networks by developing local/regional energy action plans that enable management and matching of supply and demand (including through energy storage and load spreading and the application of smart technologies) and by upgrading our distribution networks to proactively enable decarbonisation, for instance through the electrification of heating and transport and the wider uptake of hydrogen.

32

Support the greatly accelerated decarbonisation of energy supply, ensuring that the highest sustainability standards are met, recognising that:

- renewables such as offshore wind should make an increasingly significant contribution;
- green hydrogen can play an important role where the scope for electrification of heating and transport is limited;
- large scale bioenergy can play a role providing that competing land uses are accounted for in sustainability terms;
- carbon capture, utilisation and storage (CCUS) could make a significant contribution to the decarbonisation of some key industrial sectors where they cannot decarbonise through electrification or switching to green hydrogen.

33

Promote significant expansions in community energy and distributed renewables by actively enabling and investing in distributed and especially community led/owned schemes on solar, on-shore wind, anaerobic digestion, air/ground/water source heating and district heating.

Buildings



We urgently need ambitious retrofit schemes with targeted initiatives focusing on council and social housing, private rented housing and owner-occupied housing."

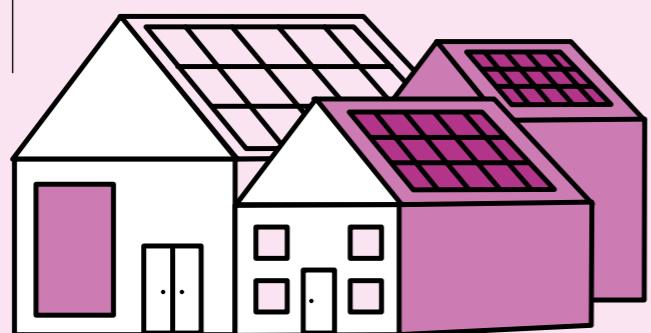
Our homes and public and commercial buildings account for 35% of our total carbon emissions.

For existing homes, we urgently need ambitious retrofit schemes, with targeted initiatives focusing on council and social housing, private rented housing and owner-occupied housing. Our first priority should be to tackle fuel poverty across the region but we need broader plans to make all types of homes more comfortable and efficient while also tackling carbon emissions and making homes more climate resilient.

We also need to design and construct new homes and communities to the highest possible standards across the whole life of the building. We should consider the materials used and the scope to integrate renewable energy generation and nature-based solutions from the outset.

We should “future proof” new homes and communities so that they do not need to be upgraded and retrofitted – whether for net zero or for climate resilience – within a few years of being built. For public and commercial buildings, we also need to ensure that developers adopt the highest standards of retrofit when buildings are changing use (for example, from commercial to residential), to encourage owners to invest in leased buildings through the development and wider application of green leases, and to promote the highest standards of energy management once buildings are operational.

A key issue is also to promote the transition to net zero and climate resilience in listed buildings and conservation areas. Of course, there may be a small number of buildings where this is impossible, but in the majority of cases we should make sure that climate considerations have the priority that is required as we invest in protecting and restoring heritage buildings.



Case Study: Climate Innovation District, Leeds

The Climate Innovation District is a purpose-led development in Leeds, designed to reduce carbon emissions, change how we live in the city and prove that sustainable living and development is more than achievable at scale. The Climate Innovation District has been named the largest sustainable development in the UK with a growing and thriving community.

The landscaped neighbourhood features communal areas for all residents, including gardens, decking and a pop-up bar across the river. The Climate Innovation District is home to a growing community of like-minded people and their passion for the project is a vital marker of the success of the project.

Citu owns the whole process of delivery, manufacturing the timber frame system used in an onsite factory with the building install led by in-house squads. All homes have a mechanical ventilation heat recovery (MVHR) system which brings in a constant flow of fresh air. The temperature of this air is warmed or maintained by re-using heat already produced in the house.

[Find out more here](#)



Take action now



Proposed Actions for the Region

34

Deliver ambitious retrofit for housing, with a major focus on reducing fuel poverty, through:

- a regional retrofit scheme for council and social housing;
- an initiative to promote/enable investment in private rented housing;
- support for owner-occupied retrofit (e.g. through house-level net zero plans and logbooks/service records);
- the promotion of area/neighbourhood retrofit schemes that address net zero and resilience in a joined up way at the community scale;
- the development of a regional quality assurance programme to build confidence and enhance the performance of all retrofit activities.

35

Deliver ambitious retrofit and active energy management for public and commercial buildings through the promotion of buildings upgrades and ambitious energy management in sectors such as local government, health and education, and in the commercial sector, especially by promoting the highest standards of retrofit by building owners when buildings change purpose, supported through more innovative green leases, and through the widespread application of ambitious energy management standards by building users.

36

Explore ways to better address climate objectives in heritage buildings and conservation areas by developing progressive design standards that allow old buildings to be sensitively upgraded to address both the net zero and resilience aspects of the climate challenge.

37

Minimise the impact and maximise the contribution of new developments by ensuring that all new developments minimise energy demand through the adoption of the highest possible whole-life carbon/energy management standards (including in sourcing, construction, use and reuse/disposal), whilst also incorporating renewables to the fullest extent possible, and by ensuring that new developments are also climate resilient and incorporate green spaces and nature-based solutions.



We need to promote the use of public transport wherever possible by expanding and improving provision and coverage, especially in rural areas.”

Transport

Transport within the region currently accounts for 31% of our direct carbon emissions.

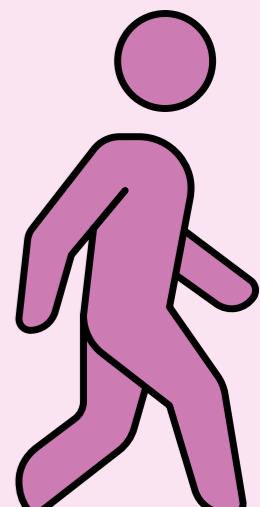
To address these emissions, we need to promote the use of public transport wherever possible by expanding public transport provision and improving coverage, especially in rural areas, and by promoting its affordability and accessibility. There is much that we can do in the next few years to promote the wider use of existing public transport links. However, some of the larger schemes, such as new train lines or new mass transit schemes in our urban areas, will take many years to build.

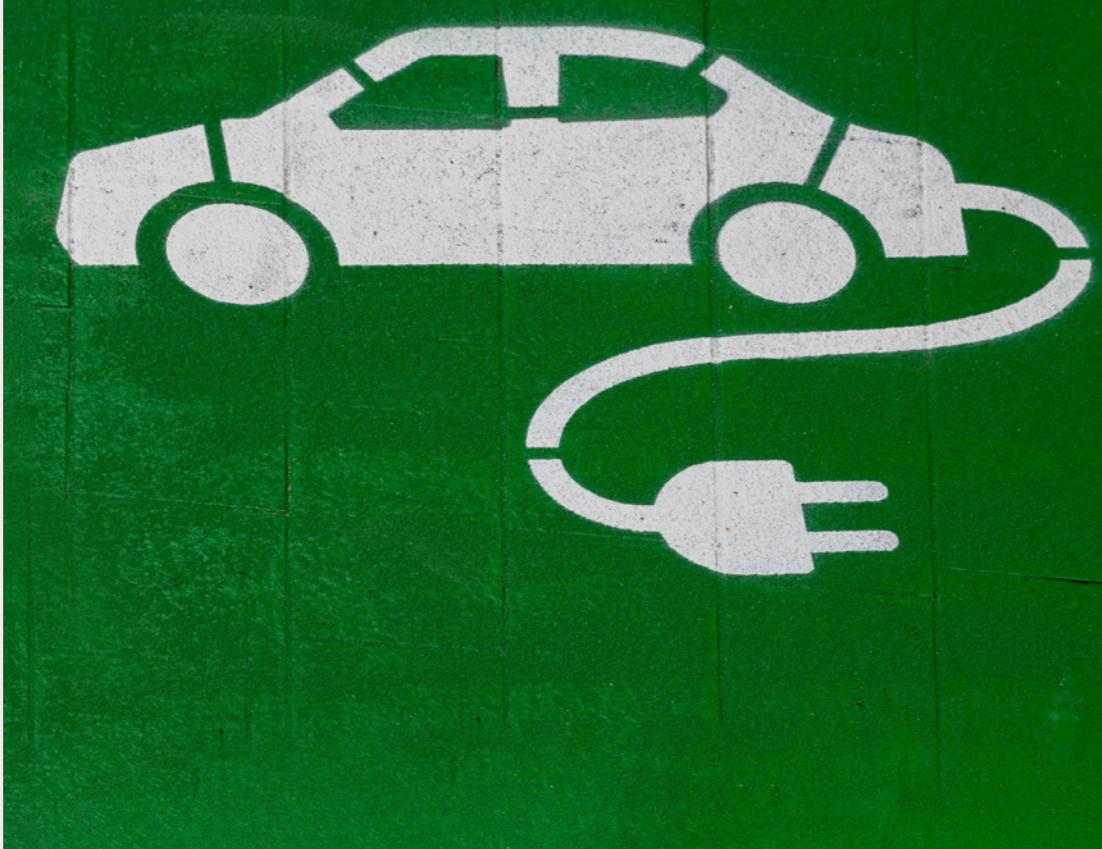
We also need to significantly increase rates of walking and cycling across the region and to promote “20-minute neighbourhoods” where people can live, play and work locally, thereby minimising the need to travel longer distances.

Linked to this, we need to reduce the need for people to use private cars wherever possible, while being sensitive to the challenges of rural areas and the needs of key workers.

Remote working and virtual meetings that have become so common in lockdown can also make a significant contribution here. The electrification of transport can also play an important role, although we need to consider the whole-life impacts of electric vehicles and accept that for some types of vehicle a switch to hydrogen as a fuel source may be more appropriate.

And finally, of course, we need to acknowledge the increasing proportion of emissions that come from aviation. These form an increasingly significant part of our carbon footprint, and we should encourage all measures to tackle them, especially for frequent flyers, whilst recognising that some of these will require policy change at the national scale.





Rural EV charging

Ryedale is a rural district with market towns that service large areas of North Yorkshire. The area is also popular with tourists and day visitors. The EV charging points installation programme includes the long stay car parks of the market towns of Malton, Pickering, Helmsley and Kirkbymoorside. The aim of locating the charging points in the long stay car parks is to make them available to both local residents who don't have access to home charging units and tourists. It is hoped the charging points will provide convenient charging points for visitors but also residents who can't install charging points in their own homes. In 2020, 1125 recharges were recorded at the council owned charging points, which equates to 15,700kg CO₂ saved. With the addition of the new charging points in 2021, these figures should rise rapidly. This project has been funded by the Office for Zero Emission Vehicles (OZEV) and the Energy Saving Trust, in partnership with Ryedale District Council.

[Find out more here](#)



Take action now



Proposed Actions for the Region

38

Promote public transport through the wider development of mass-transit schemes and the active promotion of more accessible, affordable and better integrated public transport schemes in both urban and rural areas, supported by digital technologies, recognising the time it will take to build some new infrastructure and the time it will take to repay the upfront carbon costs of construction, and the importance of the “last mile” in successful transport systems.

41

Support low emissions vehicles through vehicle share/loan schemes, the provision of electric vehicle charging infrastructure for cars, taxis and vans, green hydrogen infrastructure for heavy goods and agricultural vehicles and some forms of public transport and innovative approaches to logistics and last mile distribution, while recognising the need to consider the whole-life impacts of electric vehicles.

39

Enable active travel through support for 20-minute neighbourhoods⁴¹ in cities and towns and especially through the widespread delivery of ambitious, joined up plans for walking and cycling and the wider provision of charging points for electric bikes and scooters.

42

Minimise the impacts of aviation by acknowledging that at pre-Covid levels our purchases of flights effectively added 7% to the region's direct⁴² emissions. This could increase to 11% by 2030 if demand for flying increases and other sectors decarbonise⁴³, highlighting the need to address the emissions associated with flying, especially by promoting alternative forms of travel and changing the behaviour of the 14% of people who take 70% of all flights⁴⁴.

40

Minimise the need for private car ownership, while recognising the needs of rural communities and some key workers, by making best use of digital technologies for home working and virtual meetings and car/lift sharing, promoting compact, mixed-use and transit-oriented development and by promoting behaviour change such as switching to active or public transport, supported by access to clean taxis.

Business, Industry and Infrastructure



Within the region, we are already seeing the benefits of new businesses succeeding in the green economy.”

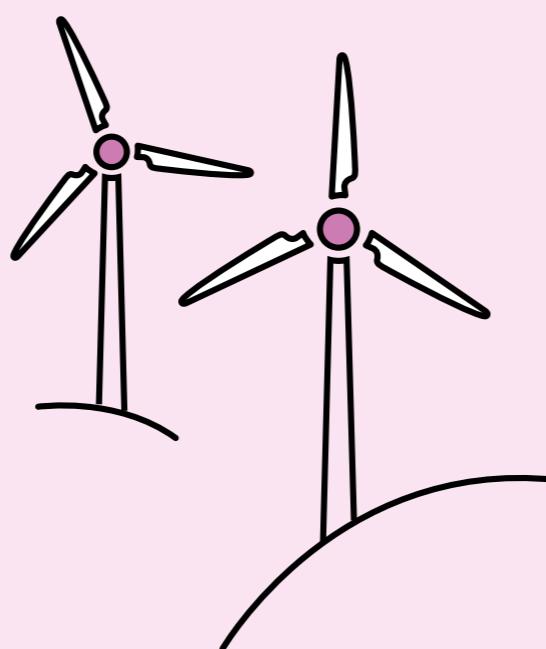
Industry accounts for 17% of our regional carbon footprint, and for some of our wider footprint (e.g. from transport and commercial buildings).

Within the region, we are already seeing the benefits of new businesses succeeding in the green economy. The massive expansion in the offshore wind energy sector around the Humber is perhaps the most prominent example, but multiple businesses, including SMEs, are succeeding in this rapidly expanding sector. We should make sure that this sector and the jobs it can provide are a central part of this region's future. Developing local supply chains – for example, in the manufacturing of windows, insulation and heat pumps – could generate significant benefits within the region.

Many existing businesses are also delivering significant reductions in their carbon footprint but more could be done to innovate and to promote the faster and wider adoption of ambitious net zero practices. Larger organisations could do a lot to support change by working with the suppliers and customers to help them to address their emissions.

The food and farming sector has a special role to play that spans net zero, climate resilience and nature/biodiversity. The significant changes in UK agri-environmental policy that are emerging now will have a major impact on the sector and on these aspects of our response to the climate and ecological emergencies.

Our infrastructure sector in all of its forms also has a major role to play. In recent years we have seen exciting innovations in the use of nature-based solutions and blue-green infrastructure that can deliver multiple benefits whilst also being much more popular and more cost-effective. We ought to be prioritising the use of such approaches wherever possible.



Case Study: Taylors of Harrogate

In 2020, Taylors of Harrogate became a carbon neutral business. To achieve this, they have followed the principles of the carbon hierarchy: avoiding, reducing and substituting carbon emissions. They then compensated the remainder in a unique way that brings direct benefit to people in their supply chain, including tree planting and clean stoves projects with their smallholder farmers. Steps taken to reduce their carbon footprint include designing new buildings to BREEAM guidelines, installing a biomass boiler and LED lighting onsite, and working to improve transport efficiency, a large part of their footprint. Taylors were also able to reduce their carbon footprint by looking at waste and consumption. They have sent nothing to landfill since 2017, and despite increasing waste volumes arising from production growth, their overall emissions from waste reduced by 22% from 2018 to 2019. Taylors recommends making carbon emissions reduction a priority and embedding it into your business strategy, and paying attention to detail – small, simple changes can have impact as well as big ones.

[Find out more here](#)



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Proposed Actions for the Region

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Focus economic development, business support and training on greening the region's economy, recognising that in the UK in 2019 the low carbon and environmental goods and services sector had a turnover of £200 billion, employed more than 1.2 million people and pre-Covid was growing at more than 7% a year⁴⁵, but also focusing on greening the economy more broadly by enabling established sectors/firms and their work force to innovate and reposition themselves to succeed in a net zero, climate resilient economy.

44

Support net zero transitions in existing businesses by expecting the highest standards of energy management, promoting resource efficiency and the circular economy, integrating net zero into procurement and supply chains and into business support programmes (especially for SMEs), promoting sectoral and area-based collaboration and capacity building and involving and training the workforce, enhancing access to alternative fuel sources (including green hydrogen), developing net zero industrial zones and when demand management and fuel switching options are restricted enhancing access to CCS.

45

Support net zero agriculture and food production by developing and sharing best practice, promoting new start-ups in net zero, and sustainable, nature friendly and where appropriate community-based food production, promoting sustainable innovations in agriculture and food production, enabling changes in consumer behaviour (including to local/regional and seasonal produce and to more sustainable food sources) and facilitating reductions in food waste.

46

Support net zero infrastructure by introducing a presumption in favour of blue-green infrastructure and nature-based solutions that avoid the need for more carbon-intensive grey infrastructure and offer attractive, skilled employment, and by promoting developments that reduce the need for potentially carbon intensive climate resilience measures.

Land Use and Nature



We should protect and enhance our land and forests so that we can turn a net source of emissions into a net sink for emissions.”

Land use, land-use change and forestry (so called LULUCF) emissions are assessed by considering both the carbon that is emitted and the carbon that is absorbed across an area.

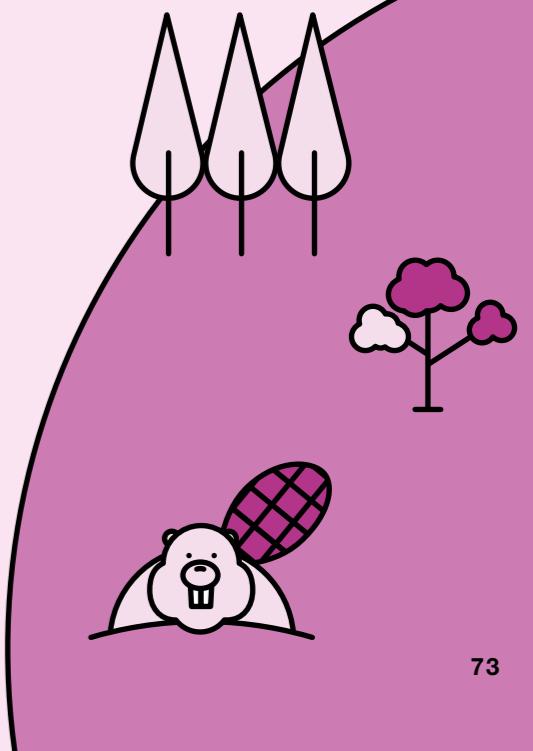
Across the UK, LULUCF has been absorbing more carbon than it emits in recent years, however in Yorkshire and the Humber it emits more than it stores, and so our LULUCF emissions account for around 3% of our direct emissions.

This may be a comparatively small figure, but significant amounts of carbon are stored in our moorlands, woodlands, grasslands and soils and especially in our peat bogs. Poor land use that leads to degradation of these areas could release very large amounts of carbon.

From a carbon perspective, we should therefore be seeking to protect and enhance our land and forests so that we can turn a net source of emissions into a net sink for emissions. Doing so, for example by protecting and restoring our peat bogs and supporting tree planting, would help to compensate for any ongoing emissions from other sectors or areas of activity.

Aside from the carbon aspect, as stated above, land use also plays a central role in enabling climate resilience, and in responding to the ecological crisis by protecting natural areas and biodiversity. We therefore need to look after our land and protect our natural areas for a range of different reasons.

The land use planning system has an especially important role to play here, for example by setting the highest standards for new developments that require net zero, climate resilience and nature-based solutions to be integrated into new developments, and by channelling these towards brownfield (e.g. former industrial) rather than greenfield sites.





Case Study: Harden Moor peat bog management

Harden Moor (Ilkley, Baildon, Harden and Penistone Hill near Haworth) contains an active blanket bog which is permanently wet due to high levels of rainfall. This helps peat to form, which absorbs carbon and stores it more effectively than trees. Rainfall has increased due to global warming, which can cause flooding in the valleys in this area. Bradford Council has been working in partnership with the Environment Agency, the Peak District National Park-based Moors for the Future Partnership and Friends of Ilkley Moor. The Moors for the Future project produces a variety of eco-system services, including flood reduction, increased biodiversity, reduction in carbon emissions, increased air and water quality, plus a range of recreational and public health benefits. The wetter moorland will also help reduce the risk or spread of moorland fires. The work includes blocking ditches and drains to keep the water on the land for longer, and planting sphagnum moss which holds the water and forms peat. The project shares best practice with other landowners, building local climate mitigation and resilience.

[Find out more here](#)



Take action now



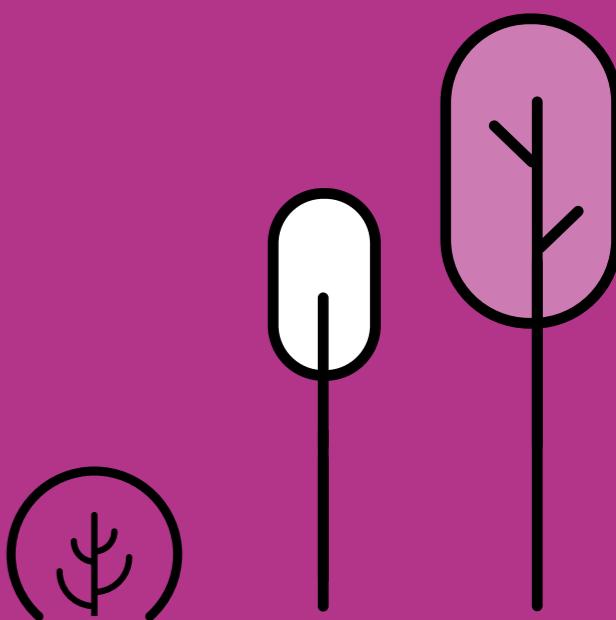
Proposed Actions for the Region

47

Promote changes in planning that put climate and nature at the heart of the design and delivery of local plans, that actively work towards the highest possible whole-life energy management standards and integrated renewable requirements for new buildings and that enable compact, connected, mixed-use new developments that promote resilience and incorporate nature-based solutions, blue-green infrastructure and better protection for natural areas.

48

Promote net zero in land use by protecting and enhancing key natural assets including moorlands, peat bogs, grasslands, soils, woodlands, wetlands, flood and coastal zones, and to do this in a way that supports sustainable food production whilst also fostering climate resilience and promotes biodiversity.



Resource Efficiency and the Circular Economy



Promoting resource efficiency and the circular economy should be a central part of our response to the climate and ecological crises.”

In a linear economy, materials and goods quickly move through the product lifecycle from raw material extraction through the stages of processing, manufacturing, packaging, distributing, retailing and consuming before reaching the end-point with the final disposal of the product. This approach, which in many ways is the essence of unsustainable business and the throwaway society, is highly materials-intensive and often massively wasteful.

In contrast, a circular economy focuses on the service to be supplied or consumed (e.g. mobility) rather than the product itself (e.g. cars), and then on designing ways of providing that service in the least energy and resource-intensive way.

A key aspect of the circular economy is minimising demand for energy and materials, and ensuring that the energy and materials that are used stay in the system and keep generating social value for the longest time possible.

Thinking in this way encourages companies to rethink their business models, redesign their products, restructure their supply chains and build new relationships with their customers and with other companies, all with the aim of doing more with less and becoming more sustainable. It also encourages consumers to rethink their behaviours. Reductions in single-use plastic are but the tip of the iceberg in what could be done to reduce the impacts of our consumer society.

Promoting resource efficiency and the circular economy should be a central part of our response to the climate and ecological crises as it could lead to fundamental changes in the ways in which, as examples, we produce and consume food, design and build houses or think about transport and mobility.



Case Study: Carbon negative gin

Cooper King distillery near York produces carbon negative gin – Every 700ml bottle of Cooper King Dry or Herb Gin removes 1kg more CO₂ from the atmosphere than it emits. The distillery runs on 100% green energy and uses innovative rotary evaporators and cooling systems that use a fraction of the energy and water required to run a traditional gin still. Each bottle of gin also plants one square metre of native broadleaf UK woodland, thanks to their charity partnership with the Yorkshire Dales Millennium Trust. Over 12,000m² of woodland has been planted so far. Using a circular economy approach is integral to the business. Cooper King offer a bottle refill scheme, avoid single-use plastic packaging and send zero waste to landfill. Their ethos and strong vision has attracted talented employees to this growing business, ensured a steady flow of new customers and secured national press coverage. It has also led to a number of high calibre collaborations from which innovative products and processes have been developed. As they testify, taking a Circular Economy approach across their activities has ensured a sustainable and resilient business going forward.

[Find out more here](#)



Take action now

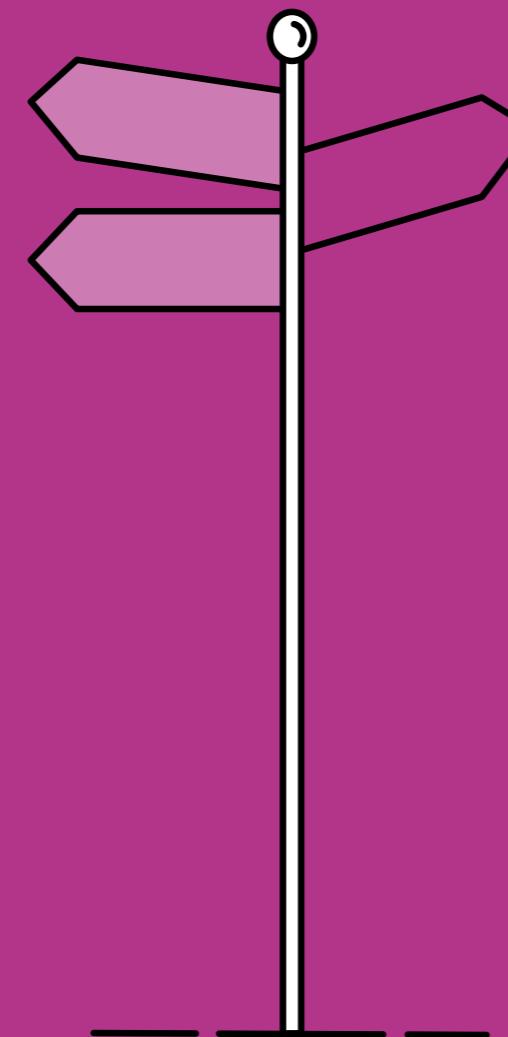




Proposed Actions for the Region

49

Promote the highest standards in resource efficiency/waste management and the circular economy through initiatives that reduce material and energy consumption, facilitate circular resource flows, promote sharing, repairing and remanufacturing, develop industrial clusters that promote resource efficiency and facilitate sustainable waste management (including through energy recovery with the highest sustainability standards).

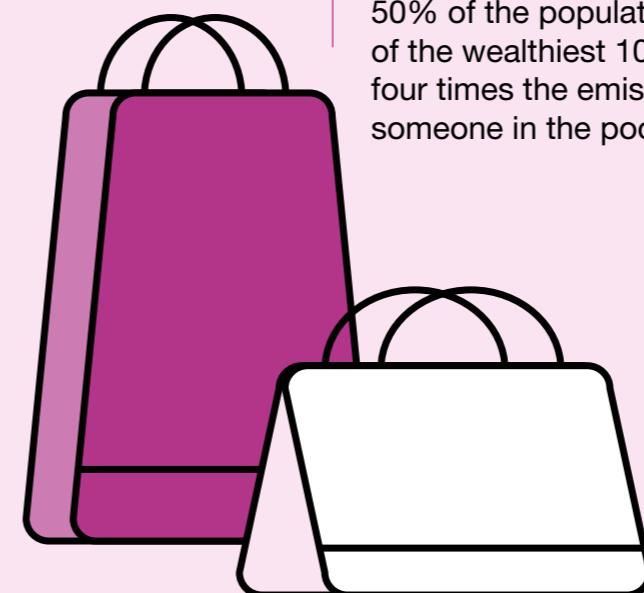


Lifestyles and Consumption

“

The potential is there... to tackle emissions much more effectively, efficiently and equitably by thinking about consumption-based emissions.”

While this is the picture for the region as a whole, within the region responsibility for these consumption-based emissions is not evenly spread. Recent research⁴⁸ has found that across the UK each of the wealthiest 1% of the population generates 11 times the carbon footprint of the average person in the poorest 50% of the population, while each of the wealthiest 10% generates four times the emissions of someone in the poorest 50%.

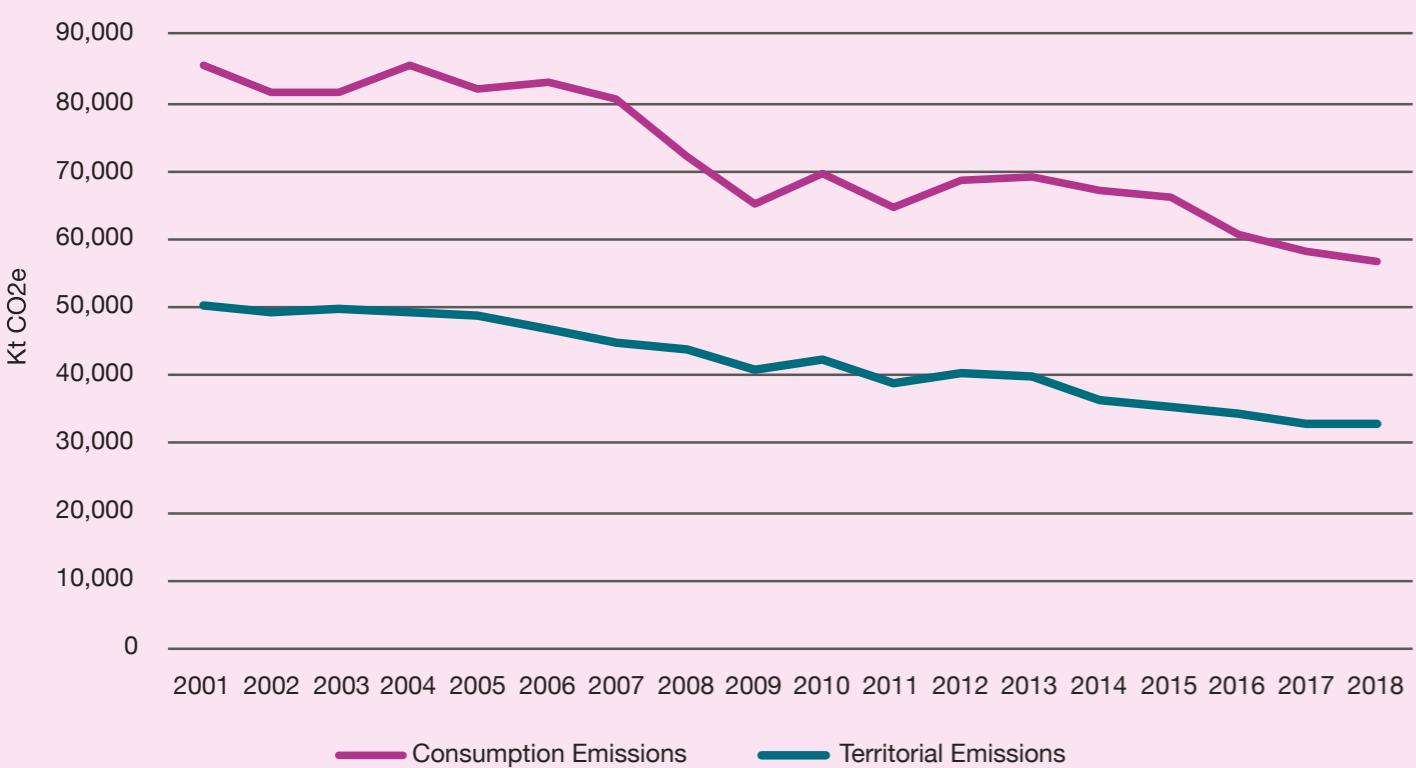


We know that measuring our carbon footprint based only on the fuels and electricity that we directly use within the region⁴⁶ only tells part of the story. We also have to consider the carbon impacts associated with the goods and services that are made elsewhere but that are consumed within the region⁴⁷. As is shown in Figure 4, our consumption-based emissions are around 80% higher than our direct emissions.

Given this inequality, Kate Raworth's influential work on Doughnut Economics⁴⁹ proposes that we should have floors and ceilings on our consumption, with social foundations and basic living standards guiding minimum levels of consumption, and ecological ceilings and planetary boundaries informing maximum levels. This work should inform our climate actions, for example as we retrofit houses to address fuel poverty and under-consumption in some areas, and focus on the climate and ecological impacts of over-consumption in others.

The question of how we should address our consumption-based emissions is a big one. The vast majority of countries, regions, cities and so on only focus on their direct emissions, even though the potential is there for them to tackle their emissions much more effectively, efficiently and equitably by broadening their horizons and thinking about consumption-based emissions. There is much to be learned in this space, and much to be gained from doing so.

Figure 4: Consumption emissions vs territorial emissions for Yorkshire and the Humber



Case Study: Incredible Edible

In Todmorden in 2008, frustrated by lack of action on climate change, food security and lifestyles, a group of locals began a movement about food. They called it “Incredible Edible” and in two years, it went global. Ten years later they created a 15-acre farm which is now a stand-alone, not-for-profit social enterprise. The farm (now in a new location at Heeley Clough) is a unique project offering inspiring activities to engage all ages about a sustainable food future. The focus is primarily on permaculture and the Incredible Farm aims to teach small scale market gardening and farming and create the opportunity for young people to become involved in agriculture, food production and land management. Incredible Edible also started up a network of local food growers, which now boasts over 100 groups in the UK and 600 globally. The network shares values and knowledge, building community connections and encouraging people to develop cooking and growing skills. This small group in West Yorkshire has truly started an incredible movement.

[Find out more here](#)



Take action now

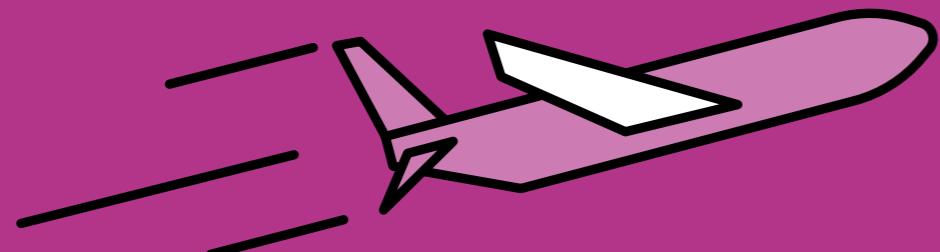




Proposed Actions for the Region

50

Address our wider impact by promoting more sustainable production, consumption and lifestyles that address our wider⁵⁰ carbon and ecological footprint through changes across the lifecycle of goods and services, especially for key sources of consumption-based impact such as diet, fashion and flying, whilst recognising the vastly uneven carbon impacts of lower and higher income groups and the value of ideas such as Doughnut Economics⁵¹ in informing foundations and ceilings for consumption.



In responding to climate change we have the opportunity to improve our homes and communities, our businesses and economy, our transport and infrastructure, and our national parks and green spaces.

“

”

SPECIFIC ACTIONS

FOR THE YORKSHIRE AND HUMBER CLIMATE COMMISSION

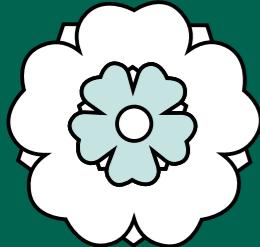
Climate change is a massive issue that demands transformative actions across a wide range of areas. An effective response clearly requires the mass mobilisation of people, organisations and resources. We know that these are challenging times, but we could wait a long time for the ideal conditions to act. We need to act with a sense of urgency and ambition now.

We think that it makes sense to focus our efforts at the regional level. Across Yorkshire and the Humber, we have 22 local and combined authorities, a huge number of organisations in the public, private and third sectors, and of course our communities and the wider public all seeking to act. There is so much to be gained by pooling our resources and coordinating our efforts.

The Yorkshire and Humber Climate Commission was established to build our capacity for ambitious, inclusive action on climate and nature. It has already brought people and organisations from across the region together – and this action plan is the result of a huge amount of collaboration, consultation and co-production over the last few months.

However, the Commission is an independent advisory body with limited funding and no formal powers or delivery roles. Of course, the Commission needs to focus its resources on the highest impact activities, but in many instances it can only turn this action plan into reality through ongoing collaboration, and in some instances it will need to seek new resources to enable actions.

To play its part in the delivery of this ambitious action plan, over the next two and half years the Commission therefore commits to the following specific actions. (Actions that Commission will pursue with existing resources are marked A; those that it will pursue through collaborations and partnerships are marked B, and those where it will need to seek extra resources to enable delivery are marked C.)



YORKSHIRE AND HUMBER

On the need for action:

the Commission will continually make the case for urgent action on climate and nature whilst providing a positive vision of how such action will make the region a better place to live and work. (A)

On equity and inclusion:

the Commission will develop a just transition plan that maps the links between climate change and inequality and that assesses the ways in which action on climate and nature can help to tackle (and certainly not exacerbate) existing inequalities in the region. (A, B)

On community involvement:

the Commission will develop a Citizens' Forum to enable diverse voices to shape the climate debate (A), and explore ways of developing a regional network of Community Climate Champions. (B)

On education and awareness:

the Commission will explore ways to further integrate climate and nature into the curriculum in schools, colleges and universities (B), and to enhance access to climate outreach and carbon literacy for everyone in the region, including through an online, open access Climate Leadership Programme. (B, C)

On leadership and capacity building:

the Commission will bring forward a Climate Leaders' Pledge to promote ambitious actions in key organisations across the region, including by putting climate and nature at the heart of their decision-making processes and assessing their climate readiness. (A, B)

On jobs and skills:

the Commission will work with skills providers, businesses, trade unions and workers to develop and enhance access to climate and nature related training across the region. (B)

On health and wellbeing:

the Commission will work with health professionals to develop an outline strategy on how to address the climate and nature and health and wellbeing agendas in a joined up way to make a tangible difference for the most vulnerable people in our society. (B)

On innovation and best practice:

the Commission will complete an audit of the science and innovation activities related to climate and nature in the region (A) and will work to develop a climate innovation network to enable the incubation, demonstration and replication of best practices. (B)

On finance and investment:

the Commission will work with the finance sector to explore ways to develop a climate and nature finance platform for the region, supporting community investment in regional climate action wherever possible. (B)

On economic development:

the Commission will work with local authorities and others to develop an outline economic plan for the region that demonstrates how climate and nature can be fully integrated into our economic development activities. (A)

On business:

the Commission will seek to promote the integration of climate and nature into business support and mentoring initiatives, including through the supply-chain and purchasing policies of larger organisations. (B)

On nature and biodiversity:

the Commission will work to develop an outline strategy for nature-based solutions and blue-green infrastructure for the region (A), helping the region to establish local nature recovery networks and maximise the benefits of biodiversity net gain requirements. It will also explore ways of developing a Yorkshire and Humber Nature Service. (B, C)

On land use and farming:

the Commission will work with others to develop an outline action plan on land-use change, considering how to protect and enhance the natural capital of the region such as moorlands, peat bogs, grasslands, soils, woodlands, wetlands, flood and coastal zones in a way that promotes net zero, climate resilience and the conservation of biodiversity and where appropriate sustainable food production. (A, B)

On climate risks and resilience:

the Commission will work with our local resilience forums to help incorporate climate risks into wider resilience strategies (A, B). It will also promote the development and spread of best practice in adaptation and the wider application of new approaches to climate risk assessment, management and communication, especially for businesses and infrastructure providers (A, B). It will also work with others to promote access to affordable flood insurance, especially for the most vulnerable areas and groups. (B)

On net zero targets:

the Commission will recommend the adoption of five-yearly carbon budgets and that the regional climate target is expanded to include emissions from aviation and shipping (A). It will also introduce a transparent monitoring framework and annual reports on progress towards net zero. (A)

On energy:

the Commission will seek resources to develop a regional area energy plan (or a nested set of local plans) (C), and will work with others to support the development of smart, flexible energy networks (B), the wider adoption of community energy initiatives (B), and the adoption of the highest sustainability standards for all energy sources. (B)

On homes and buildings:

the Commission will work with others to support ambitious (net zero and resilience facing) retrofit schemes for council, social, private-rented and owner-occupied housing (B), along with the application of area-wide retrofit schemes (B), the development of best practice guides for the retrofit of heritage buildings (B) and the adoption of quality assurance schemes for retrofit activities (B). It will also promote the application of the highest whole-life standards for new buildings. (A, B)

On transport:

the Commission will work to spread best practice on active travel, public transport and low emissions vehicles (A, B), and to explore how we can adopt behavioural interventions that shape transport choices (including on aviation) across the region. (A)

On lifestyles and consumption:

the Commission will develop and publish consumption-based carbon accounts and to develop a menu of options on how we can best address our consumption-based carbon and ecological footprint. (A)

On research and evidence:

the Commission will seek to develop a regional climate observatory that will assess risks, analyse policies, scan for best practice and that will develop a Sustainable Progress Index for the region (C). It will also work to establish a regional climate summer school and internship programme to enable postgraduate students to conduct their dissertations with/for the Commission. (C)

On collaboration:

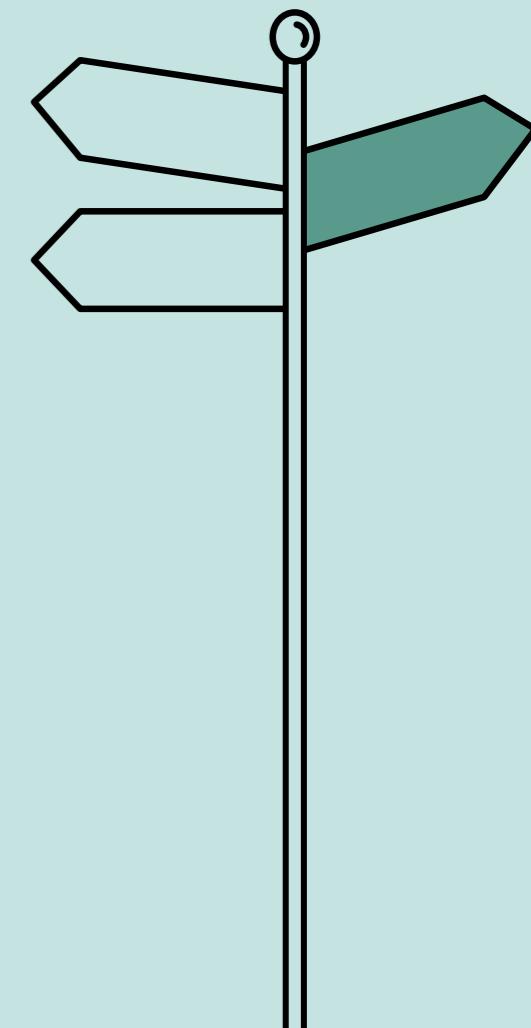
the Commission will work to identify and map the organisations and collaborations that have critical roles to play in responding to the climate emergency (A). This will enable the Commission to build new collaborations where they are needed and to support and strengthen existing relationships. (A, B)

On regional policy and planning:

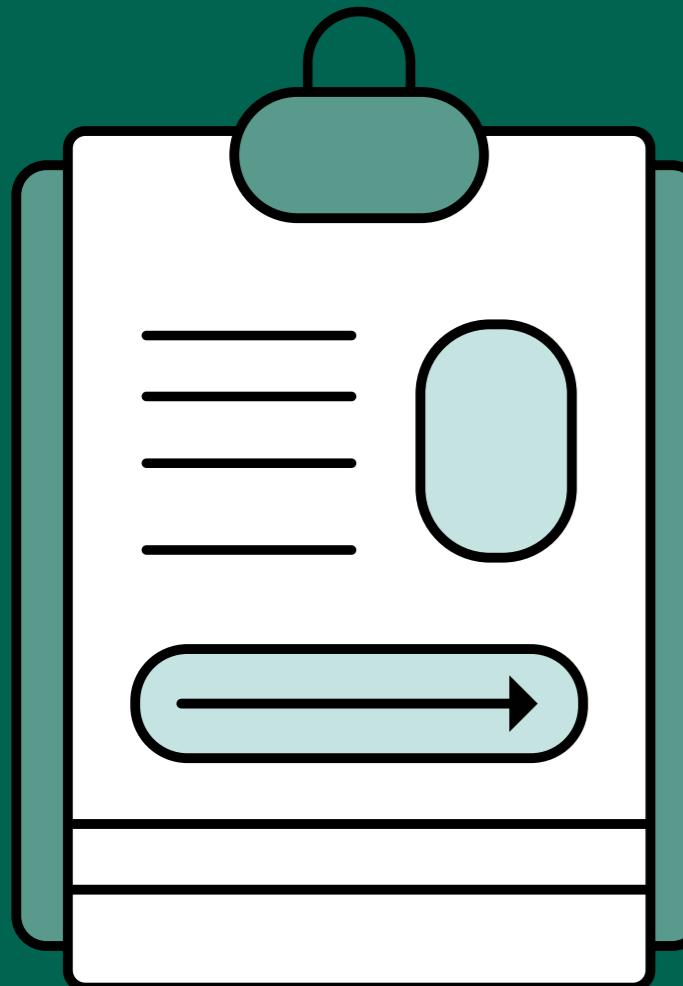
the Commission will work with combined and local authorities across the region to explore how best practices in policy and planning can be consistently developed and applied across the region. (A, B)

On national policy:

the Commission will press national government for the policies that we need to deliver on our regional climate ambitions, for example on planning and new build standards, on policies for (net zero and resilience facing) retrofit, on policies for agriculture and land management and on the need for a national aviation strategy that is consistent with the 6th Carbon Budget. (A, B)



Across the previous sections (A Framework for Change, Climate Resilience, Net Zero) we have identified a total of 50 proposed actions for the Yorkshire and Humber region to take forward collectively.



APPENDIX 1

PROPOSED ACTIONS FOR THE REGION

YORKSHIRE AND HUMBER

— 1

Acknowledge that the climate and ecological emergency is real and accept that not responding with the required urgency and ambition will both prolong our contribution to the problem and worsen the impacts on our region.

— 2

Develop a positive vision that shows how ambitious action on climate and nature at the regional scale can make Yorkshire and Humber a happier, healthier, fairer and more prosperous place to live and work.

— 3

Move from targets and planning to action by focusing on the real-world delivery of ambitious, accelerated change.

— 4

Commit to a just transition that ensures climate actions actively reduce existing inequalities, and both empower and enable all people from across the region to have a say in the process of priority setting, delivering actions and evaluating outcomes.

— 5

Foster shared responsibility and distributed leadership by recognising that we can achieve so much more when we all act together, but whilst also acknowledging the need for our larger institutions in government, the public and private sectors to lead the way.

— 6

Act in a joined-up way by integrating climate and nature into all key areas of activity, by demonstrating that they are put at the heart of all major strategic, policy, planning and investment decisions and by showing that all of our climate actions are fully coordinated and coherent.

— 7

Advance education and engagement by integrating climate and nature into the curriculum in schools, colleges and universities, and by promoting climate outreach and carbon literacy for individuals and organisations across the region.

— 8

Improve skills and create jobs by targeting opportunities to create good quality new jobs in the green economy, by supporting existing employers and employees to adapt, and by developing a regional network of excellence in climate related training and skills provision.

— 9

Accelerate investment by building a climate and nature financing platform that helps to bring forward and develop new projects and programmes and to connect them to new forms of finance and investment, with a particular emphasis on the scope for local and regional investment in and ownership of new initiatives so that the benefits can be retained and reinvested in the region.

— 10

Foster collaboration and innovation by sharing/pooling resources and expertise and by stimulating innovation through a regional incubator/demonstrator network that allows good ideas to grow and people to learn from and replicate best practice across the region.



More actions

— 11

Protect and restore the natural and ecological systems that we depend upon by supporting the sustainable management of key natural assets such as moorlands, peat bogs, grasslands, soils forests, coastal and flood zones, by promoting regenerative approaches that protect biodiversity, green spaces and wild areas and by supporting the transition from grey (e.g. concrete and steel) to blue-green (e.g. nature-based) infrastructure.

— 12

Rethink how we measure progress by developing a sustainable progress index for the region that adopts a wider view than one singularly focused on GDP by measuring progress based on different forms of capital (human, social, natural, intellectual, manufactured, financial), and by developing a regional climate observatory to survey emerging issues, collate the best available evidence and conduct monitoring and evaluation that enables us to track our progress in an open and transparent way.

— 13

Connect with national government to make sure we have support and clear, stable national policies to enable ambitious regional action.

— 14

Develop climate risk communications that are tailored to different audiences to effectively communicate the significance of different types of climate risk and the relevance and meaningfulness of resilience to everyone, including through youth and community networking.

— 15

Promote inclusive climate decision making and the co-creation of solutions by enabling local people to prepare adaptation plans to make where they live and work “climate ready”, supporting the development of climate champions as key points of connection with communities, and supporting further climate assemblies/juries.

— 16

Encourage the wider adoption of area-wide and site-specific climate adaptation plans and actions by combined or local authorities, the managers of key sites such as schools, hospitals, transport interchanges, and homeowners, recognising the opportunity to align with net zero action, for example through retrofitting.

— 17

Promote resilience actions that offer health, wellbeing and community benefits by reducing risks, improving resilience, accelerating recovery and reconnecting people and communities to each other and to nature through climate and nature-based activities in urban and rural areas.

— 18

Promote resilience in land use by restoring and enhancing the region’s many key natural assets, including moorlands, peat bogs, grasslands, soils, wetlands, woodlands, flood and coastal zones and biodiversity more generally, by planning and working across natural and political boundaries and by helping land use to be carbon negative as a contribution to broader net zero targets.

YORKSHIRE AND HUMBER**— 19**

Prepare the food and farming sector for current and future changes through research and innovation, skills and knowledge development, network building and stakeholder engagement, acknowledging the huge opportunity for farmers to help address the climate and ecological emergencies if provided with the necessary support.

— 20

Promoting nature-based solutions and the development of blue-green resilient infrastructure wherever possible, recognising that this will contribute to net zero and to our response to the ecological as well as the climate crisis, potentially to be delivered through a Regional Nature Service which encourages community involvement in nature and green spaces.

— 21

Promote climate resilience in business and industry through enhanced risk assessment, management and communication (including the application of ISO/BSI standards and guidance), and through collaboration and the sharing of best practice, recognising that larger business can play an active role in building capacities in SMEs through sector, area or supply chain cooperation.

— 22

Develop a regional network for climate readiness and resilience training to build applied understanding of different climate risks and approaches to adaptation, with resilience champions sharing best practice and fostering collaborations between schools, colleges, universities, unions, businesses, trade associations and chambers of commerce.

— 23

Align all infrastructure sectors to deliver a regional systems approach to resilience planning recognising that systems interactions and interdependencies mean that if one part of our infrastructure isn’t resilient, none of it is.

— 24

Invest in digital infrastructure that’s accessible to all to enable effective emergency responses and strengthen back-up provision of essential services such as health and education and to enable rapid recovery in all urban and rural areas.

— 25

Build climate readiness through improved emergency and recovery planning by promoting regional climate risk assessment, multi-agency collaborations, provision of climate response training for emergency responders and support for local resilience forums.

— 26

Develop a whole of society approach to emergency response raising awareness of new risks to the region and the available hazard warning systems, followed by clear communications and training as to what individuals, communities and businesses should do during differing emergency scenarios, including opportunities for community volunteering as appropriate.

— 27

Promote the provision and uptake of affordable, comprehensive flood insurance for home and business owners and tenants, particularly focusing on the communities least able to afford insurance and the communities most at risk of flooding.

— 28

Strengthen plans for the long-term management of change and loss caused by sea level rise by working with communities to manage and respond to acute events such as storm surges and chronic events including sea level rise and loss of land.

— 29

Build on our current targets, including our regional target of achieving net zero emissions by 2038 with significant progress by 2030, but accept the UK Climate Change Committee's call for these budgets to be extended to incorporate aviation and shipping emissions and to adopt and work towards five-yearly carbon budgets, whilst also seeking to address our broader consumption-based emissions.

— 30

Put the primary emphasis on reducing demand for all types of energy as the most effective and efficient way of cutting carbon by promoting ambitious demand reduction and energy efficiency initiatives across all sectors.

— 31

Introduce smart and flexible energy networks by developing local/regional energy action plans that enable management and matching of supply and demand (including through energy storage and load spreading and the application of smart technologies) and by upgrading our distribution networks to proactively enable decarbonisation, for instance through the electrification of heating and transport and the wider uptake of green hydrogen.

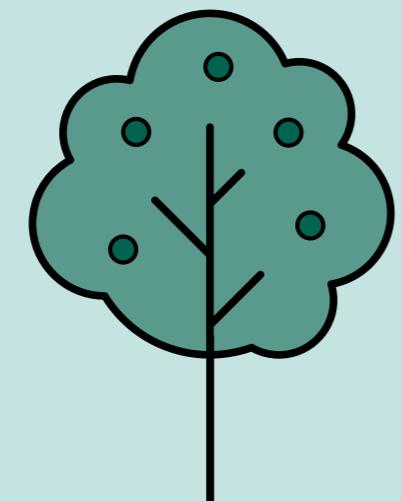
— 32

Support the greatly accelerated decarbonisation of energy supply, ensuring that the highest sustainability standards are met, recognising that:

- renewables such as offshore wind should make an increasingly significant contribution;
- green hydrogen can play an important role where the scope for electrification of heating and transport is limited;
- large scale bioenergy can play a role providing that competing land uses are accounted for in sustainability terms;
- carbon capture, utilisation and storage (CCUS) could make a significant contribution to the decarbonisation of some key industrial sectors where they cannot decarbonise through electrification or switching to green hydrogen

— 33

Promote significant expansions in community energy and distributed renewables by actively enabling and investing in distributed and especially community led/owned schemes on solar, on-shore wind, anaerobic digestion, air/ground/water source heating and district heating.

**— 34**

Deliver ambitious retrofit for housing, with a major focus on reducing fuel poverty, through:

- a regional retrofit scheme for council and social housing;
- an initiative to promote/enable investment in private rented housing;
- support for owner-occupied retrofit (e.g. through house-level net zero plans and logbooks/service records);
- the promotion of area/neighbourhood retrofit schemes that address net zero and resilience in a joined up way at the community scale;
- the development of a regional quality assurance programme to build confidence and enhance the performance of all retrofit activities.

— 35

Deliver ambitious retrofit and active energy management for public and commercial buildings through the promotion of buildings upgrades and ambitious energy management in sectors such as local government, health and education, and in the commercial sector, especially by promoting the highest standards of retrofit by building owners when buildings change purpose, supported through more innovative green leases, and through the widespread application of ambitious energy management standards by building users.

— 36

Explore ways to better address climate objectives in heritage buildings and conservation areas by developing progressive design standards that allow old buildings to be sensitively upgraded to address both the net zero and resilience aspects of the climate challenge.

— 37

Minimise the impact and maximise the contribution of new developments by ensuring that all new developments minimise energy demand through the adoption of the highest possible whole-life carbon/energy management standards (including in sourcing, construction, use and reuse/disposal), whilst also incorporating renewables to the fullest extent possible, and by ensuring that new developments are also climate resilient and incorporate green spaces and nature-based solutions.

— 38

Promote public transport through the wider development of mass-transit schemes and the active promotion of more accessible, affordable and better integrated public transport schemes in both urban and rural areas, supported by digital technologies, recognising the time it will take to build some new infrastructure and the time it will take to repay the upfront carbon costs of construction, and the importance of the "last mile" in successful transport systems.

— 39

Enable active travel through support for 20-minute neighbourhoods in cities and towns and especially through the widespread delivery of ambitious, joined up plans for walking and cycling and the wider provision of charging points for electric bikes and scooters.

— 40

Minimise the need for private car ownership, while recognising the needs of rural communities and some key workers, by making best use of digital technologies for home working and virtual meetings and car/lift sharing, promoting compact, mixed-use and transit-oriented development and by promoting behaviour change such as switching to active or public transport, supported by access to clean taxis.

— 41

Support low emissions vehicles through vehicle share/loan schemes, the provision of electric vehicle charging infrastructure for cars, taxis and vans, green hydrogen infrastructure for heavy goods and agricultural vehicles and some forms of public transport and innovative approaches to logistics and last mile distribution, while recognising the need to consider the whole-life impacts of electric vehicles.

— 42

Minimise the impacts of aviation by acknowledging that at pre-Covid levels our purchases of flights effectively added 7% to the region's direct emissions. This could increase to 11% by 2030 if demand for flying increases and other sectors decarbonise, highlighting the need to address the emissions associated with flying, especially by promoting alternative forms of travel and changing the behaviour of the 14% of people who take 70% of all flights.

— 43

Focus economic development, business support and training greening the region's economy, recognising that in the UK in 2019 the low carbon and environmental goods and services sector had a turnover of £200 billion, employed more than 1.2 million people and pre-Covid was growing at more than 7% a year, but also focusing on greening the economy more broadly by enabling established sectors/firms and their work force to innovate and reposition themselves to succeed in a net zero, climate resilient economy.

— 44

Support net zero transitions in existing businesses by expecting the highest standards of energy management, promoting resource efficiency and the circular economy, integrating net zero into procurement and supply chains and into business support programmes (especially for SMEs), promoting sectoral and area-based collaboration and capacity building and involving and training the workforce, enhancing access to alternative fuel sources (including green hydrogen), developing net zero industrial zones and when demand management and fuel switching options are restricted enhancing access to CCS.

— 45

Support net zero agriculture and food production by developing and sharing best practice, promoting new start-ups in net zero, and sustainable, nature friendly and where appropriate community-based food production, promoting sustainable innovations in agriculture and food production, enabling changes in consumer behaviour (including to local/regional and seasonal produce and to more sustainable food sources) and facilitating reductions in food waste.

— 46

Support net zero infrastructure by introducing a presumption in favour of blue-green infrastructure and nature-based solutions that avoid the need for more carbon-intensive grey infrastructure and offer attractive, skilled employment, and by promoting developments that reduce the need for potentially carbon intensive climate resilience measures.

— 47

Promote changes in planning that put climate and nature at the heart of the design and delivery of local plans, that actively work towards the highest possible whole-life energy management standards and integrated renewable requirements for new buildings and that enable compact, connected, mixed-use new developments that promote resilience and incorporate nature-based solutions, blue-green infrastructure and better protection for natural areas.

— 48

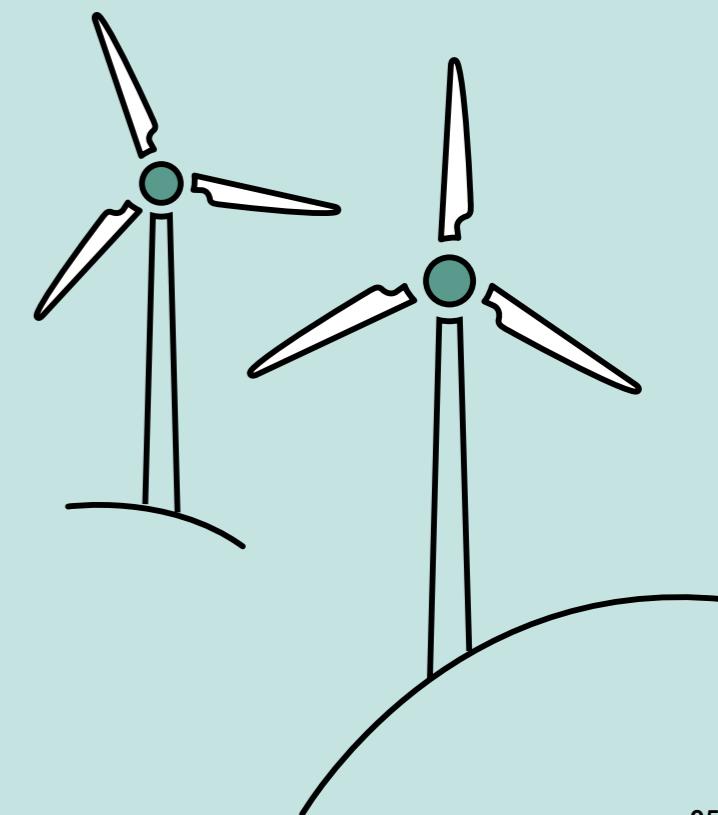
Promote net zero in land use by protecting and enhancing key natural assets including moorlands, peat bogs, grasslands, soils, woodlands, wetlands, flood and coastal zones, and to do this in a way that supports sustainable food production whilst also fostering climate resilience and promotes biodiversity.

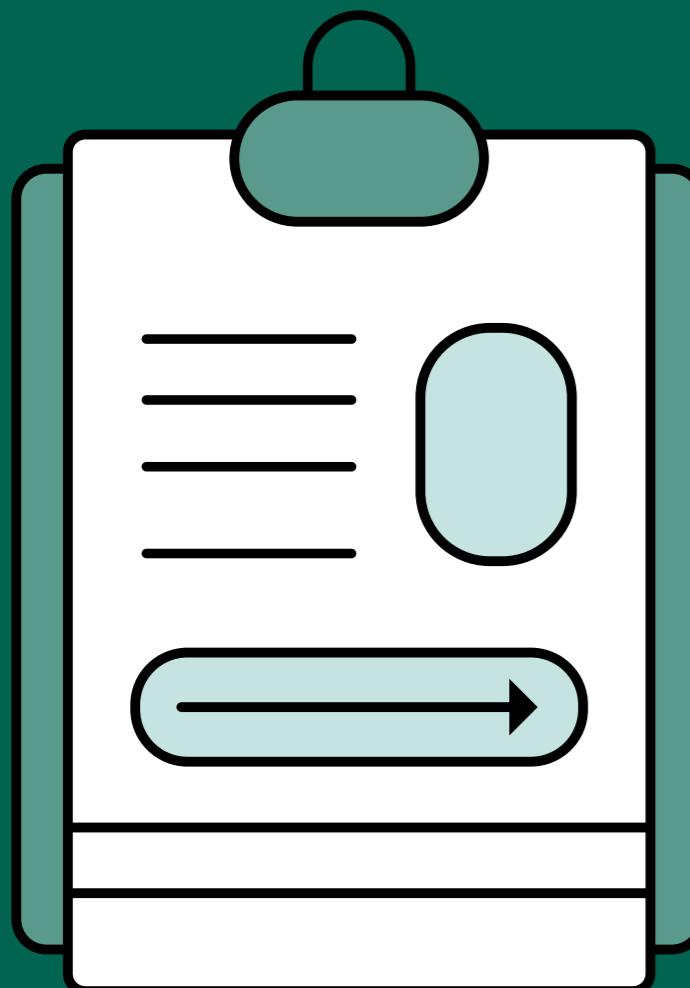
— 49

Promote the highest standards in resource efficiency/waste management and the circular economy through initiatives that reduce material and energy consumption, facilitate circular resource flows, promote sharing, repairing and remanufacturing, develop industrial clusters that promote resource efficiency and facilitate sustainable waste management (including through energy recovery with the highest sustainability standards).

— 50

Address our wider impact by promoting more sustainable production, consumption and lifestyles that address our wider carbon and ecological footprint through changes across the lifecycle of goods and services, especially for key sources of consumption-based impact such as diet, fashion and flying, whilst recognising the vastly uneven carbon impacts of lower and higher income groups and the value of ideas such as Doughnut Economics in informing foundations and ceilings for consumption.





APPENDIX 2

FOOTNOTES

A Framework For Change

¹ There are a wide range of these – with warming leading to more forest fires that lead to more warming, to the melting of permafrost leading to releases of methane that lead to more warming, and the melting of ice caps and glaciers revealing ground that absorbs rather than reflects heat so leading to more warming and so on (see IPCC, 2018).

² Intergovernmental Panel on Climate Change (2018) Global Warming of 1.5°C, Special Report from the IPCC.

³ For simplicity, we use the term ‘carbon’ to refer to emissions of carbon dioxide and other greenhouse gases.

⁴ Defined as a 66% chance of limiting average global surface temperature warming to 1.5°C – see Intergovernmental Panel on Climate Change (2018) Global Warming of 1.5°C, Special Report from the IPCC.

⁵ KMatrix (2021) UK Low Carbon and Environmental Goods and Services Sector: Where we were, where we are and where we’re going. Report from KMatrix Data Services Ltd.

⁶ Achieving net zero means not emitting more carbon dioxide and other greenhouse gases (GHGs) into the atmosphere than can be removed, mainly through photosynthesis but potentially also through carbon capture utilisation and storage (CCUS).

⁷ Set by dividing the global carbon budget consistent with having a 66% chance of limiting average global surface level temperature increase to 1.5°C on a per capita basis.

⁸ Scope 1 and 2 direct emissions.

⁹ Robins, N. et al. (2019) Financing Inclusive Climate Action in the UK, Report from the ESRC Place-based Climate Action Network.

¹⁰ Diski, R. (2021) Preparing for a Just Transition in Yorkshire and the Humber, Report by the New Economics Foundation.

¹¹ Labelling this the green economy or calling these green jobs makes sense for now, but what is currently unusual or innovative is quickly becoming the new normal, and in the future every sector and job needs to be green.

¹² UK Climate Change Committee (2020) The Sixth Carbon Budget: The UK’s path to net zero. Report published by the CCC.

¹³ I.e. the extra cost – taking into both costs and the benefits.

¹⁴ HMRC (2020) Individual Savings Account (ISA) Statistics, Report from HM Revenue and Customs.

¹⁵ GDP – Gross Domestic Product, the dominant measure of economic activity/growth, taking into account consumer and government spending, investment, exports and imports.

¹⁶ Dasgupta, P. (2021) The Economics of Biodiversity: The Dasgupta Review, Report for the UK Government.

Climate Resilience

¹⁷ Kendon et al. (2021) State of the UK Climate 2020, Report from the UK Met Office.

¹⁸ Met Office (2018) UK Climate Projections, Report from the UK Met Office.

¹⁹ Climate Change Committee (2021) Independent Assessment of UK Climate Risk: Advice to Government For the UK’s third Climate Change Risk Assessment.

²⁰ Climate Change Committee (2021) Progress Report to Parliament, Report from the UK CCC.

Net Zero

²¹ CO₂ is not the only GHG. Other gases that also contribute to climate change include:

- Methane, that is emitted during the production of coal, gas and oil, from the decay of organic materials such as waste food in landfill sites, and from livestock and land-use changes.
- Nitrous oxides, that comes from agriculture, industry, the burning of fossil fuels and wastewater treatment.
- Fluorinated gases, that are powerful GHGs that are manufactured by industry, and used in applications such as refrigeration and the cleaning of electrical components.

We measure the impact of these other gases on global warming by referring to their CO₂ equivalence (or CO₂e).

²² David Attenborough (2021), contribution to the United Nations.

²³ Intergovernmental Panel on Climate Change (2021), Climate Change 2021: The Physical Science Basis, 6th Assessment Report of the IPCC.

²⁴ Blunden, J. and T. Boyer (Eds) (2020) “State of the Climate in 2020”. Bull. Amer. Meteor. Soc., 102 (8), S1-S475, doi: 10.1175/2021BAMSStateoftheClimate.1.

²⁵ Intergovernmental Panel on Climate Change (2018) Global Warming of 1.5°C, Special Report from the IPCC.

²⁶ Intergovernmental Panel on Climate Change (2021), Climate Change 2021: The Physical Science Basis, 6th Assessment Report of the IPCC.

²⁷ In the form of Nationally Determined Contributions or NDCs.

²⁸ United Nations Environment Programme (2019) Emissions Gap Report, UNEP Report.

²⁹ China, which emits 28% of world GHG emissions, has committed to peak its emissions by 2030 and to reach net zero by 2060. The US, which emits 15% of world GHG emissions, has committed to halve its 2005 level of emissions by 2030 and to reach net zero by 2050. The EU (27), which emits 8% of world GHG emissions, has committed to reduce its 1990 level of emissions by 55% by 2030, and to reach net zero by 2050. The UK, which emits 1% of the world GHG emissions, has committed to achieve net zero emissions by 2050.

³⁰ Based on our scope 1 and 2 emissions – i.e. emissions from fuels used and from electricity consumed in the region.

³¹ Factoring in on-going decarbonisation of UK electricity (assumed total by 2045), economic growth (assumed at 2.5% p.a.), population growth (assumed at 0.1% p.a.) and on-going improvements in energy and fuel efficiency (assumed at 1% p.a.).

³² As long as this includes all GHGs and is measured as CO2e.

³³ Share determined on a per capita basis, with Yorkshire and Humber having 5.5 million in a global population of 7.9 billion.

³⁴ i.e. 66% chance, as determined by the IPCC.

³⁵ Climate Change Committee (2020) Sixth Carbon Budget, Report from the CCC.

³⁶ Scope 1 and 2 direct emissions.

³⁷ Under business as usual conditions, see footnote 26.

³⁸ I.e. Scope 3.

APPENDIX 3

COMMISSIONERS’ ORGANISATIONS

Yorkshire and Humber Climate Commission includes Commissioners who are senior leaders drawn from key organisations and groups across the region, including:

Asda	NHS Yorkshire Ambulance Service
Aura Innovation Centre	Northern Powergrid
Carbon Literacy Project	Northern Gas Networks
CBI	Project Rome
Community Energy England	Sewell Group
Connect Housing	Sheffield City Council
Drax Group	Sheffield City Region
East Riding of Yorkshire Council (Humber)	Sikh Alliance Yorkshire
EcoSikhUK	South Yorkshire Climate Alliance
Environment Agency	TUC
Federated Hermes	Transport for the North
Fore Group	University of Hull
Friends of the Earth	University of Leeds
Greenhead College	Wakefield Council
Harrogate Borough Council	Yeme Architects
Hull City Council	York City Council
Hull and East Yorkshire LEP	Yorkshire Building Society
ITV Studios	Yorkshire Universities
Leeds City Council	Yorkshire Water
National Farmers Union	Yorkshire Wildlife Trust
National Trust	
Natural England	
NatWest	

A full list of Commissioners is available at: www.yorksandhumberclimate.org.uk/commissioners



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