



Becoming a Net Zero Carbon District by 2030

Securing the District's future



Contents

ZERO CARBON HARROGATE	4
About Us	4
Our Vision	4
CONTEXT	
Harrogate District	5
Climate Change and Carbon Emissions	6
Harrogate Emissions by Sector	7
2030 IMAGINED	9
Society & Culture	10
Buildings & Energy	12
Transport	14
Food & Drink	16
Natural Environment	18
2021 Strategic Plan	20
2021 Priority Focus	23
References	24

“The world is reaching the tipping point beyond which climate change may become irreversible. If this happens, we risk denying present and future generations the right to a healthy and sustainable planet – the whole of humanity stands to lose.”

Kofi Annan, Former Secretary-General of UN



Zero Carbon Harrogate

About us

We are an independent voluntary organisation, which brings together a group of residents from the Harrogate District, to work through advocacy and small scale projects to support a reduction in carbon emissions.

Our vision

For the Harrogate District to become a leading sustainable carbon neutral District where the annual volume of greenhouse gases per person is minimised and any remaining emissions effectively neutralised, so that residents experience an improved and more equitable quality of life.

The 2030 Imagined section of this document paints a picture of what the District could look like if immediate action is taken to rapidly decarbonise.



Harrogate District

Harrogate Borough Council recognised the 'climate emergency' in May 2019 and committed to become carbon neutral by 2038.

North Yorkshire County Council committed to be carbon neutral by 2030 in July 2019, with the UK government setting a legally binding net zero emissions target of 2050.

The Harrogate District Climate Change Coalition was established in November 2019. Driven by Harrogate Borough Council it is a group formed to promote and implement carbon reduction activities, with representation from the main sectors of the local economy.

The Harrogate District covers an area of 130,000 hectares compared to the 24,000,000 area of the UK, encompassing moorland, farmland, small rural villages and historic towns.

It has a population of 160,000¹, with approximately 70,000 living in the town of Harrogate, making it the largest settlement in the county of North Yorkshire.

In terms of greenhouse gas emissions this makes the District responsible for 0.24% of total UK emissions by population and 0.54% by area.

In 2018/19 the employment rate of 87%² was higher than the national average,

of 76%² but average weekly earnings of £460 were similar to the £451 for England².

It has an aging population, with fewer young adults² than average and is the least deprived district in North Yorkshire, although it does have some areas of disadvantage².

Approximately 4% of the population is from black, Asian and minority ethnic groups, compared to 15% in England².

Political representation at a Borough, County and Parliamentary level is predominantly Conservative.

Climate Change and Carbon Emissions

The Harrogate District, in common with the rest of the UK, is experiencing more extreme weather events and disruption of seasonal patterns, resulting in nature depletion, economic loss and personal suffering for some (e.g. flood victims).

The District emits a net total of one million tonnes of carbon dioxide (CO₂) a year from primary sources; essentially from burning fuel and generating electricity (scope 1 & 2 emissions). This is an average of 6.7 tonnes per person, compared to a national average of 5.2 tonnes (2018)¹.

The Intergovernmental Panel on Climate Change Special Report on 1.5°C (IPCC, 2018)³ concluded that by 2018 human activity had already raised global temperatures by 1°C; resulting impacts were already being felt around the world and impacts would only worsen with every bit of warming above this level.

Keeping the increase in global heating below 1.5°C will avoid the worst impacts of climate change; for a 66% chance of keeping below this

temperature rise the IPCC suggests that a total maximum emissions limit must be set.

To stay within this limit means managing a global carbon budget of 420 billion tonnes of CO₂³. Dividing this global budget equitably the remaining carbon budget for the Harrogate District, from the start of 2018, would be 9.6 million tonnes or 60 tonnes of CO₂ per person.

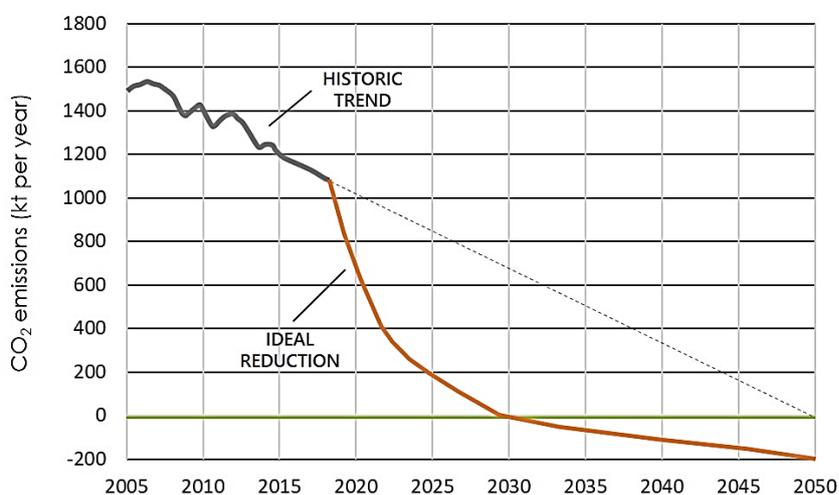
Whilst historically emissions for the Harrogate District have been falling by 2.5% per annum on average since 2005¹ - mainly as a result of national changes in the way our electricity is generated - a 'business as usual' scenario

would see the District's entire carbon emissions budget exceeded in just over eight years, which means during 2026.

To avoid exceeding this budget, CO₂ emissions produced in the District need to be cut by a quarter, every year, for the next 10 years, accompanied by similar reductions in other greenhouse gases, to reach net zero by 2030.

Further longer-term actions are also required to remove historic CO₂ emissions from the atmosphere and achieve a stable, balanced climate for the future.

Chart 1: Harrogate District annual CO₂ emissions trend



Harrogate Emissions by Sector

Harrogate District has specific decarbonisation challenges, with its annual per capita carbon emissions running some 1.5 tonnes of CO₂ above the UK average¹.

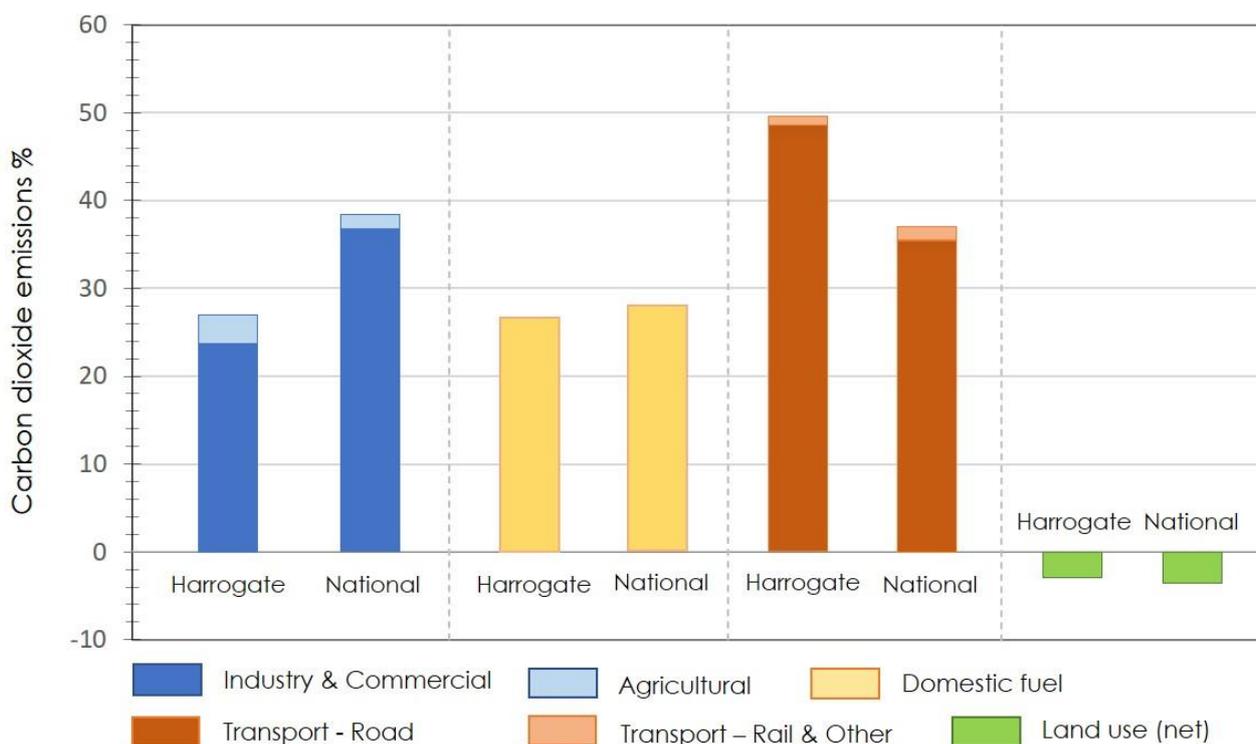
Emissions from transport are significantly higher than the national average, with the A1M accounting for a large proportion of this, whilst the rural nature of the area is reflected in the higher than average agricultural emissions.

Emissions from domestic energy use compare favourably with the national average, whilst emissions from industry are lower than average due to the lower level of industrial activity in the district.

Net emissions from land use at -3.0%, are similar to the UK average of -3.4%, even though carbon capture in the district is significantly less effective, due to the lower level of woodland cover.

Non-CO₂ greenhouse gas emissions, mainly methane and nitrous oxide from agriculture and ruminant livestock production, are not included in this data. Neither are CO₂ emissions from aviation or goods and services consumed in the district but produced outside (scope 3).

Chart 2: Proportion of CO₂ emissions for Harrogate District in 2018, compared to national emissions, by sector (BEIS, 2020).



Context

EMISSIONS TREND

Whilst emissions from road transport are one of the largest in the District, accounting for 49% of the total, they have only been reduced by 0.6% over the last 10 years.

This compares with a reduction of almost 28% in emissions from domestic energy generation, which account for 26.5% of the district's emissions.

Emissions from the generation of energy for the industrial and commercial

sectors, including agriculture, which are responsible for 27% of the total, saw an even greater reduction, of 35.5%, over that period.

Whilst land use only has a relatively small effect on the overall emission figures, there has been a significant increase in its net contribution towards emission reduction since 2009.

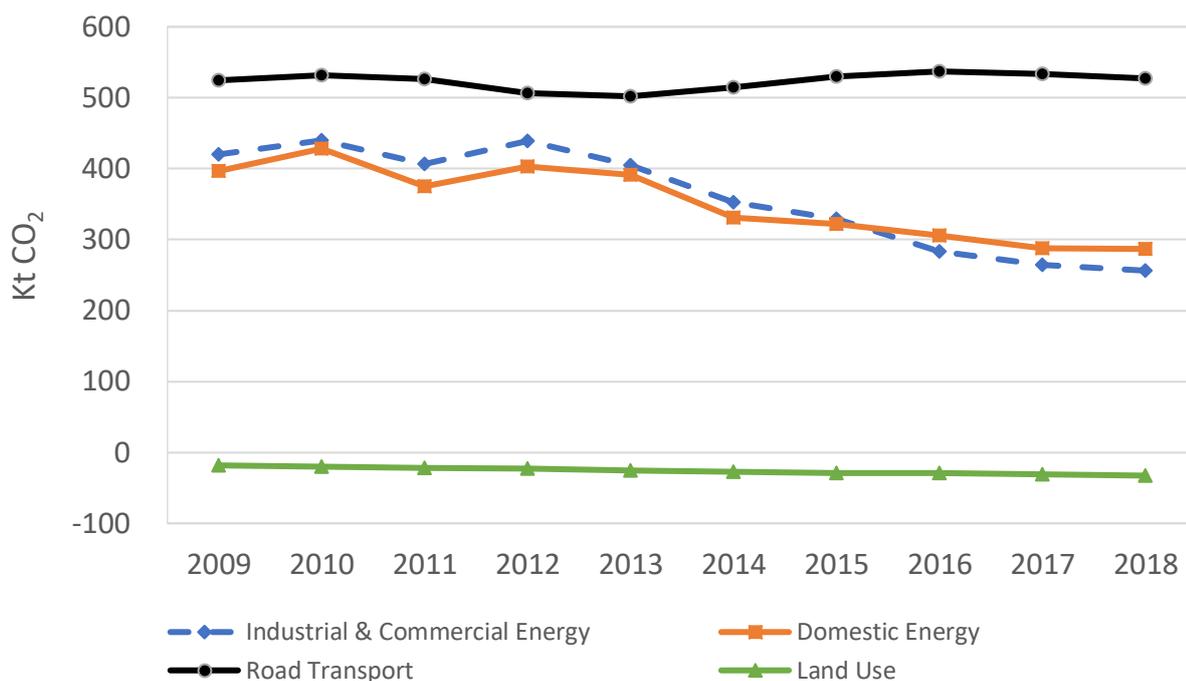
Emissions from other forms of transport other than road (mainly rail), contribute very little to the District's figures

but have remained consistent in recent years.

The non-CO₂ emissions from arable and livestock farming, excluded from the data, accounted for 10-12%⁴ of total global emissions and have seen only very gradual reductions in recent years.

Emissions related to goods and services consumed in the District, regardless of source, are difficult to assess but can be two to three times greater than those produced in the District.

Chart 3: Amount of CO₂ emissions for Harrogate District in 2018, by sector (BEIS, 2020). These figures exclude emissions from goods produced outside the district.



Society & Culture

A low carbon lifestyle is part of everyday life and culture – it has become normalised



Society & Culture Imagined

- Harrogate District is an exemplar for other UK districts transition engagement.
- People have an awareness of their greenhouse gas emissions.
- Local government & organisations, businesses & schools have written policies in place which are being implementing and monitored.
- A low carbon lifestyle and preparedness for a changing climate is part of everyday life and culture. It has become 'normalised'.
- Art and culture reflect this normality.
- Zero carbon is an integral part of cross-party political decision making and is core to all policy.
- Reinforcing and supporting climate resilience awareness is the main task.
- Stronger local communities have been created and all local groups collaborate on ensuring preparedness for change.
- There is wider ethnic diversity as a result of climate refugees moving to the district.
- Short lived social unrest has been dealt with equitably.

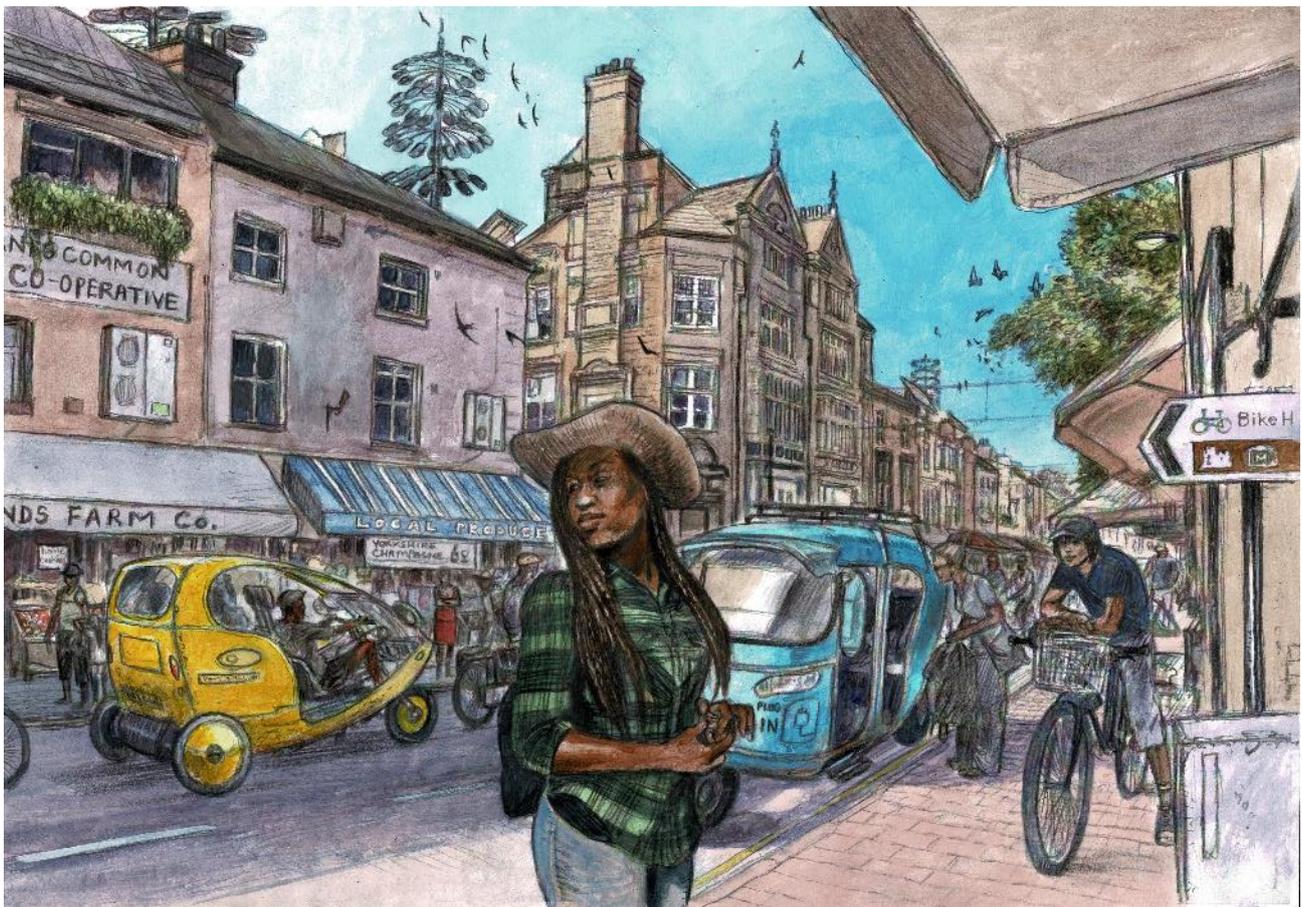


Illustration © James McKay "A Dream of a Low Carbon Future"

Buildings & Energy

All electricity is now
generated renewably
with no carbon
dioxide emissions



Buildings & Energy Imagined

ENERGY GENERATION

- Energy consumption minimised through efficient use of insulation, allowing all electricity supplies to be generated renewably, with no CO₂ emissions.
- A local company (Harrogate Energy) is responsible for most of local electricity supply.
- Archimedes screw turbines are now used on the River Nidd.
- There is a six-fold increase in wind turbines on Knabs Ridge, with others elsewhere.
- Solar PV panels are on most domestic and commercial building roofs.
- Several large Solar PV farms located on grazing land.
- Anaerobic digestion of all council collected food waste.
- Storage of electricity smooths the supply / demand balance.
- Domestic battery packs are installed in many homes and businesses, to store their own solar power.
- Plugged-in electric car batteries providing a large cumulative public smart storage capacity.
- Temporary surpluses of electricity from heat pumps are used for heating tanks of water; phase-change materials store latent heat.
- Brown-field sites used for storage of heat and liquid air.
- Carbon capture from flue gases at Allerton Waste Recovery Park.

BUILDING IMPROVEMENTS

- All new homes now built to Passivhaus standard.
- No gas heating installations.
- All existing buildings have been upgraded and retrofitted to ensure energy efficiency.

- Most buildings are now electrically heated with air- or ground-source heat pumps (which yield about three times as much heat/kWh as direct electric heating).
- Far-infrared technology used to create heat.

OTHER FACTORS/BENEFITS

- All house sales require an energy assessment.
- Stamp Duty replaced by a tax relating to energy assessment on the property.
- Harrogate College programmes train designers and installers of renewable energy devices and building retrofits.
- Fuel poverty has been eliminated.
- Upfront improvement costs offset by much lower fuel bills.
- Indoor comfort levels improved, with associated health benefits for residents.

Transport

Electric vehicles combine with a viable active travel infrastructure to form an emission free integrated transport network



Transport Imagined

- Public transport is reliable, effective and operates with renewable fuel sources.
- Town planning prioritises pedestrians, active travel and disabled access.
- Active transport is the preferred option for shorter journeys.
- A network of pedestrian and cycle routes in and between urban areas make active travel a pleasurable choice.
- Home zones have reduced traffic and improved street safety.
- Town centre mostly pedestrianised, with regular electric minibus services from all areas of town.
- Car ownership has significantly reduced with residents taking advantage of car club vehicles when needed.
- Most personal motorised vehicles use electric power from batteries or hydrogen fuel cells.
- Electric charging points for cars and bikes are plentiful and easy to access.
- Park & Ride facilities are available for all towns, serviced by self-drive, electric buses help to keep town centres free of traffic.
- Home deliveries are coordinated by local courier hubs to minimise journeys.
- Hydrogen gas is generated locally for powering much of public transport and haulage.
- Road construction has been limited to the reallocation of street space and improvement of the existing network.
- The air quality around our roads and streets is vastly improved, no longer posing a health hazard.
- Home working and community hubs have significantly reduced the need to commute.

Prototype electric self-drive people carrier



2030 Imagined

Food & drink

There is a vibrant,
healthy food culture
and low carbon
supply chain,
allowing local farms
to thrive



Food & Drink Imagined

PRODUCTION

- Local farmers grow more crops for human food.
- Less meat is consumed and sustainable farming techniques are employed to minimise GHG emissions.
- More people work on the land due to incentivisation and training from the government and NFU.
- More people are engaged with growing their own food and connected with the land and seasons and HBC is actively engaged with providing more allotments.
- Agroforestry is widely practiced in the District and natural bio-controls are in use instead of pesticides.
- There are much lower levels of hidden hunger because of better education about nutrition and affordable healthy choices.
- There are increased levels of biodiversity.
- Hydrogen powers agricultural machinery and hot houses use

energy from renewable sources.

- Improved soil quality and much higher proportion of locally grown fruit and veg from low carbon certified producers.
- All food is harvested regardless of gluts, and processed into meals, thanks to the gleaning network.
- Most methane resulting from animal husbandry is converted into biogas for fuel use.

PROCESSING

- Processing companies check the credentials of their suppliers to ensure they are carbon neutral.
- There are minimal amounts of food waste since consumers moved towards eating "imperfect" fruit and veg.

RETAILING

- The majority of food sold in supermarkets, shops, cafes and restaurants has a low carbon supply chain.
- Harrogate District has thriving towns and villages, where good

quality, locally produced, low 'carbon cost' food is sold.

- 90% of businesses have been accredited as net zero carbon by the Harrogate District Climate Change Coalition.

DIETARY CHOICES

- Schools, restaurants and businesses provide a range of low carbon choices on their menus with the greenhouse gas (GHG) emissions listed next to the price.
- Shops and supermarkets have to show the estimated GHG emissions associated with everything they sell and the receipt shows the total GHG emissions per shop.
- Cookery programmes are focused on seasonal, low carbon meals.

WASTE

- Resurrected Bites now operate only one café per week in each town as food waste is so low.
- Levels of edible domestic food waste have dropped to nearly zero.



2030 Imagined

Natural Environment

Harrogate District's ecosystems are far more resilient, better equipping the District to meet the increasing challenges of climate change

Natural Environment Imagined

- Extensive reforestation is taking place. Harrogate District is well on its way to increasing its woodland cover by one third, in line with Northern Forest and White Rose Forest targets, bringing with it associated multiple benefits;
 - reduction in CO₂ levels through absorption
 - lower flood risk
 - creation of habitats that support biodiversity
 - economic growth
 - more green spaces for recreation
- Harrogate District's ecosystems are far more resilient, better equipping the District to meet the challenges of climate change.
- Greater number of people enjoying the outdoors, with more time spent on outdoor activities, leading to improved physical and mental health, and lower rates of obesity and diabetes.
- A palette of incentives and long term support are readily taken up, helping landowners and farmers transition to land-use and management measures, that are regenerative of the land under their stewardship.
- Peatlands now managed to support carbon sequestration, biodiversity and flood management.
- Agroecology principles have been widely adopted over the whole region, which are regenerative and contribute to the circular economy.
- Increased employment in woodland management, both for woodland cover and for timber and biomass.
- Timber used more and more in building construction. More timber grown in the UK, reducing reliance on imports and creating jobs.
- Stronger ecosystems with a significant increase in biodiversity, flora and fauna, resulting from changes in land use, management and habitat creation.
- Re-wilding has seen long absent flora and fauna successfully re-introduced to the district.
- The White Rose Forest Visitor Centre, in the grounds of Conyngham Hall, Knaresborough, is due to open in 2031, to help reconnect people with nature, and promote the recreational and educational opportunities available.
- There is a comprehensive interpretation of the natural and built heritage of the historic Forest of Knaresborough.

2020

Strategic Plan

To engage positively and constructively with people, communities, business and policy makers to achieve a carbon neutral environment for the Harrogate District



2021 Strategic Plan

If we are to achieve a carbon neutral district and avoid the worst effects of climate change we must eliminate at least 90% of greenhouse gas emissions and put in place processes to capture the equivalent of those emissions that remain, within the next 10 years.

In order to achieve this actions need to be taken by individuals, business, commercial enterprises and above all governments and policy makers.

There will be resistance to actions which might threaten the current social, financial and cultural standards of those individuals and sectors who remain relatively unaffected by the impact of climate change. Any proposed actions should therefore bring net positive outcomes, wherever possible, to avoid or minimise conflict but there must be enforcement of policy, where deemed essential.

In order to achieve carbon neutrality and minimising the threats that face us through climate change ZCH will continue to engage positively and constructively with people, communities, business and policy makers to achieve our vision for the district, building relationships within and without the Borough, to raise awareness and encourage action.

Working groups have been established to take responsibility for and undertaken actions in the following key areas.

ENGAGEMENT

- Communicate the need for climate action with all individuals and businesses across the district.
- Work collaboratively with like-minded climate organisations.
- Identify and promote the key actions needed to achieve carbon neutrality by 2030.
- Differentiate the message for those who are already active, from those who are willing but not active and those unwilling or unable to take action.
- Encourage infrastructural and cultural change so that everyone can access a low carbon lifestyle.

BUILDINGS & ENERGY

- Encourage homeowners and landlords to retrofit buildings to improve energy efficiency by demonstrating the benefits.
- Promote the use of renewable, carbon neutral energy and assist in developing projects that “power up” generation capacity from a variety of sources.
- Work with policy makers and developers to introduce ‘eco’ building standards that lead to energy efficient, low carbon buildings.

TRANSPORT

- Support the establishment of a sustainable transport network across the district and help to ignite a modal shift to active travel...

2021 Strategic Plan

...TRANSPORT

- Promote and encourage the switch from fossil fuelled, personal vehicles to alternative renewable fuel transport (e.g. battery and fuel cell vehicles)
- Encourage adoption of 'appropriate' transport use, based on journey length and destination.
- Highlight the benefits of an integrated transport system which accommodates all forms of travel.

FOOD

- Work with local farmers, food processing businesses and retailers to encourage the introduction of low carbon processes.
- Raise awareness with stakeholders, within the sector and with the public, of the carbon footprint of food and the options for a low carbon diet.
- Champion the introduction of labelling that identifies the carbon impact of production, processing and transport.

NATURAL CLIMATE SOLUTIONS

- Work with local and regional stakeholders to develop Harrogate District's contribution to the White Rose Forest, one of the community forests of the Northern Forest Project.
- Encourage the creation of local 'green' jobs in the district, so that a carbon neutral environment can have a positive effect on the economy.
- Campaign for the implementation of low carbon sustainable strategies with local and national government as necessary.

CARBON OFFSETTING

- Highlight the need to offset emissions,

that cannot be completely eliminated, through accredited schemes

- Clearly communicate that offsetting is not an alternative to eliminating emissions but a last resort.
- Raise awareness of such schemes and promote engagement
- Encourage involvement with local offsetting schemes that directly impact the district.

PRODUCTION & SUPPLY

Carbon emissions are associated with all products, whether through their production, processing, supply or waste management. These emissions may occur far from where they are consumed and are generally included in the emission figures for the location in which they are generated.

We however need to take personal responsibility for all emissions associated with the products we consume, regardless of source.

ZCH will therefore encourage consumers to make themselves aware of the carbon footprint of all products consumed and include the outcome in their buying decision. Choosing where possible those products with zero or minimal associated carbon cost.

COVID-19

Living with coronavirus provided first hand experience of dealing with a global threat to our way of life and gave a glimpse of the environmental and social benefits to be gained by limiting the impact of human activity.

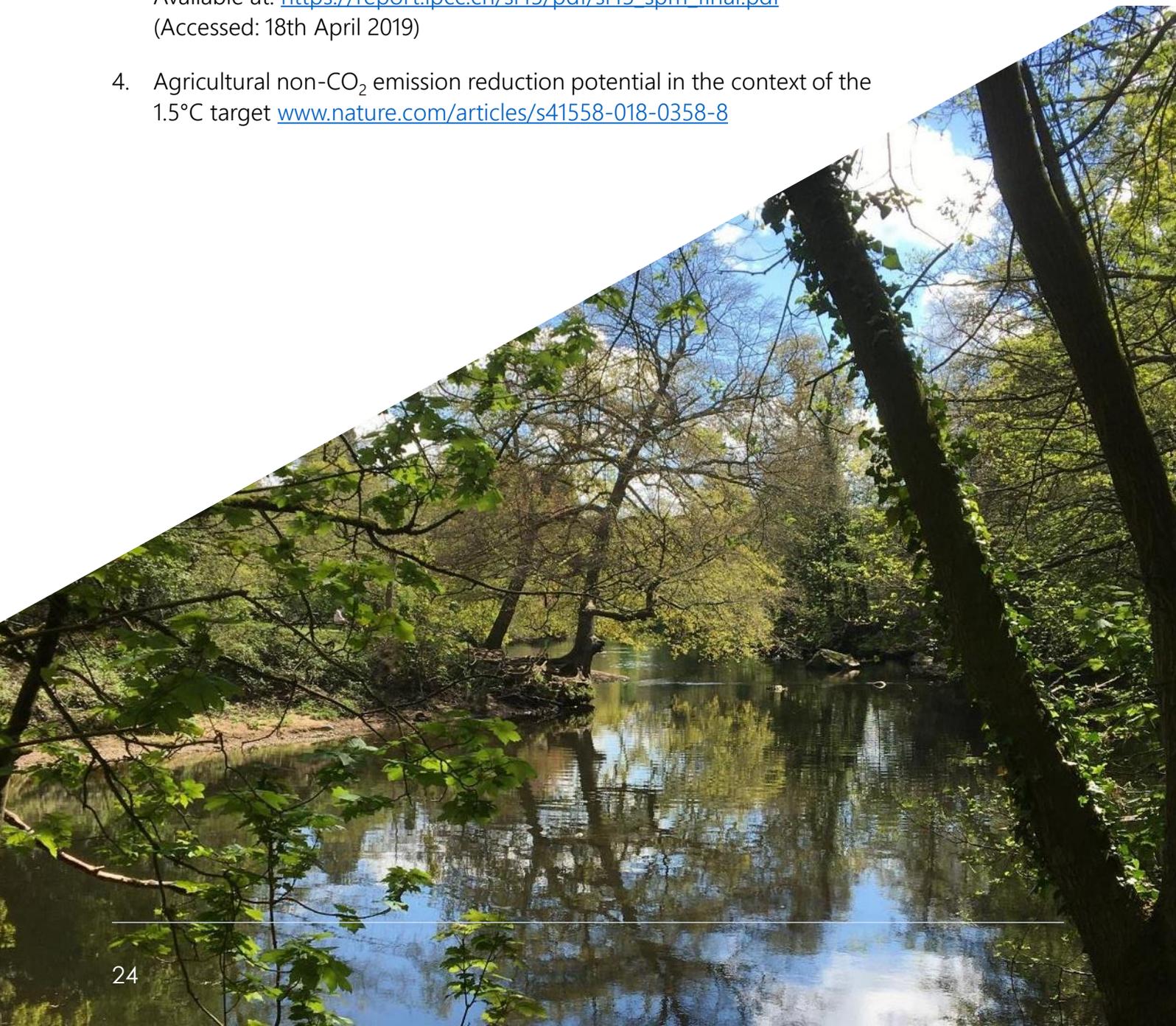
We must learn lessons for our response to the climate threat and take the opportunity to shift our culture and economy to a low carbon path.

2021 Priority Focus

ENGAGEMENT	BUILDINGS & ENERGY	TRANSPORT	FOOD & DRINK	THE NATURAL ENVIRONMENT
<ul style="list-style-type: none"> • Establish clarity of core messages • Develop business and school's policies • Develop and implement a business partnership strategic plan • Establish a school sub-group and agree the initial strategic plan • Prepare business case studies to highlight good practice and encourage broader uptake • Collaborate with other organisations to maximise impact 	<ul style="list-style-type: none"> • Liaise with Borough and County Councillors & officials on planning and standards for new District housing • Offer central government advice, via local MPs, on the use of on-site generated renewable energy in building regulations • Encourage and assist local colleges to run courses on insulation and renewable energy installations • Provide education and advice to assist the move towards buildings with lower energy consumption and CO₂ emissions • Cooperate with other groups on initiatives and ways of funding improvements 	<ul style="list-style-type: none"> • Help to establish the Car Free Friday initiative • Encourage home working • Liaise with County and Borough councils to encourage and support the development of an active travel infrastructure • Promote the uptake of Car Clubs • Work with the Borough council to establish a network of electric charging points • Highlight the need to change travel perceptions, with the public at large • Raise objections to inappropriate infrastructure schemes 	<ul style="list-style-type: none"> • Raise public awareness of food's carbon footprint • Reach out to the local farming community • Build relationships with Harrogate District food manufacturers and retailers • Reduce food waste by raising awareness 	<ul style="list-style-type: none"> • Actively engaging with the White Rose Forest Group • Seek incentives and long-term financial support for landowners and farmers • Build relationships with local landowners in order to gain support for tree planting programmes. • Work with local schools on tree planting projects • Work with the Nidd Gorge Community Land Trust

References

1. Department of Business, Energy and Industrial Strategy (2020) UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2018, Available at: www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018 (Accessed: 6th July 2020).
2. North Yorkshire Joint Strategic Needs Assessment (2019) Harrogate Borough Summary Profile, Available at: <https://hub.datanorthyorkshire.org/dataset/harrogate-district-jsna-2019/resource/895f2079-ff5c-43c4-ac6f-54cb8bd74c85> (Accessed 16th May 2020)
3. IPCC (2018) Global Warming of 1.5° C Summary for Policy Makers, Available at: https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf (Accessed: 18th April 2019)
4. Agricultural non-CO₂ emission reduction potential in the context of the 1.5°C target www.nature.com/articles/s41558-018-0358-8



Zero Carbon Harrogate

Facebook: www.facebook.com/zerocarbonharrogate

Twitter: twitter.com/ZeroCHarrogate

Email: zerocharrogate@gmail.com

Web: www.zerocarbonharrogate.org.uk
