

**Northamptonshire
Climate Change Strategy
2020 – 2023**

Contents

Executive Summary	4
1. Introduction.....	6
1.1. The 2017-2020 Strategy and 2020-2023 update.....	6
1.2. Changes in the local, national and international context since 2017.....	6
1.3. Developments in the understanding of the impacts of climate change since 2017	7
2. The international and national context	9
2.1. International Context	9
2.2. Central government policy and greenhouse gas emission targets	9
2.3. The National Adaptation Programme.....	10
2.4. National initiatives	11
3. The local context.....	11
3.1. Changes to local strategies and commitments.....	11
3.2. Report on what has been achieved since 2017	13
3.3. East Midlands Regional Climate Change Partnership	15
3.4. Local climate change impact	15
4. The impacts of climate change	16
4.1. Flooding and coastal change risks to communities, businesses and infrastructure.....	16
4.2. Risks to health, well-being and productivity from high temperatures.....	17
4.3. Risk of shortages in the public water supply, and for agriculture, energy supply and industry	18
4.4. Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity.....	19
4.5. Risks to domestic and international food production and trade	20
4.6. New and emerging pests and diseases, and invasive and non-invasive species, affecting people, plants and animals.	20
5. Aims and objectives for future action	22
5.1. Raise awareness of the issues of climate change	22
5.2. Reduce emissions of greenhouse gases	22
5.3. Plan and adapt to the impacts of climate change.....	23
6. Raise awareness of the issues of climate change.....	24
7. Reduce emissions of greenhouse gases	25

7.1.	Trends in emissions data	25
7.2.	Other local achievements in climate change mitigation	29
7.3.	Implications of national emissions targets over 2020 – 2023.....	31
8.	Plan and adapt to the impacts of climate change	32
8.1.	Built Environment and Infrastructure.....	32
8.2.	Healthy and Resilient Communities	32
8.3.	Natural Environment, Agriculture and Forestry	33
8.4.	Business, Industry and Commerce	34
8.5.	Local Government and Public Services	34
9.	Implementation of the Climate Change Strategy.....	35
	Appendices	36
	Appendix 1 – Northamptonshire Climate Change Officer Group (NCCOG) Current Membership	37
	Appendix 2 – Summary of emissions by Local Authority area (within scope of Local Authority influence).....	38

Executive Summary

The Northamptonshire Climate Change Strategy sets out a framework for tackling the causes and effects of climate change in the County. It was collectively developed by the Northamptonshire Climate Change Officers Group (NCCOG), which has been meeting regularly since 2008, and comprises officers from all local authorities, other public, and voluntary sector bodies, along with business sector partners.

The Strategy has three key objectives;

- Raising awareness of the issues of climate change and its impact on Northamptonshire;
- Reducing emissions of greenhouse gases across the County; and
- Planning for and adapting to the impacts of climate change.

The Strategy is implemented via annual Action Plans which collate the individual and collective actions of all partners to address the causes and effects of climate change in the County in order to achieve these objectives.

The Strategy was originally developed in 2010 and was refreshed in both 2014 and 2017. These updates were undertaken due to the rapidly changing context to climate change in terms government policy, technological advancements, regional pressures, societal change and initiatives. These ‘refreshes’ also allowed the opportunity to capture and review what had been achieved. The intention is to continue the partnership Strategy for a further three years, as the previous iterations of the Strategy have provided an effective framework for the co-ordination of activities in the county.

In this regard, this latest refresh covers the period 2020 – 2023. It has been ‘refreshed’ under the auspices of the Northamptonshire Local Nature Partnership to which NCCOG now reports. Whilst this is a partnership document, it should be noted that during the period of this Strategy there will be a change to Local Authorities across the County, with the formation of two Unitary Authorities covering North and West Northamptonshire in April 2021.

This refreshed Strategy provides a review of what has been achieved, along with a review of the evidence of progress towards the targets set and future actions, which will be captured within the associated annual action plans. It is a working document that can stand-alone, but it also references the preceding strategies where necessary rather than replicating or replacing them and in this respect is best read in conjunction with the original Strategy from 2010-2014. In particular the annually updated Climate Change Strategy Action Plans have played a critical role in the co-ordination of activities delivered by partners over the last ten years, and are demonstrative of the success of the Strategy’s implementation, with over 90% of actions within each year’s Action Plans successfully implemented as intended.

All three previous iterations of the Strategy proposed a target of a reduction in emissions per capita of 1.5% per year to match and support the then UK national targets for reducing emissions. Overall there has been clear progress in the reduction of carbon dioxide emissions (from transport, domestic, and industry and commercial) in the county, with a 28.8% reduction in total emissions

recorded between 2005 and 2017 and a 37.2% reduction in per capita emissions. Whilst latest emissions data at the local authority level made available by government shows that in Northamptonshire, a reduction in per capita emissions of 3.9% was achieved between 2016 and 2017, greater than the annual reduction targets prescribed by the previous Climate Change Strategy.

Progress on adaptation to climate change is less clear, due to the challenges in placing a figure or value on this. However, significant progress has been made towards tackling the biggest climate change risk to the County, that of making the county more flood resilient. This has been achieved through advice on sustainable urban drainage systems on new developments, community flood resilience projects, the implementation of property flood resistance measures, and natural flood management landscape interventions.

With the intense international spotlight on climate change and the UK government commitment to making UK carbon neutral by 2050. For Northamptonshire to match the national government ambitions of achieving carbon neutrality by 2050 - a 121 kt/year reduction of CO₂ emissions is required in the 33 years from 2017 (the most recent year for which greenhouse gas emission data is available with emissions totalling 4009.8 kt CO₂) to 2050. Precluding any carbon capture measures - **this equates to an overall annual 3% reduction in emissions.**

The actions associated with this Climate Change Strategy will support the uptake of measures which contribute towards the achievement of these national targets.

Whilst it is acknowledged that as individual organisations and collectively as partners we only have a limited ability to affect such a reduction at a local level, we can each play our part in making our best efforts to effect such a step change and allows partners to adopt even more challenging targets and to commit additional resources as individual organisations should they so wish.

This partnership Climate Change Strategy for Northamptonshire with its associated Annual Action Plans provides the opportunity and a framework to capture all this activity taking place in the County and present it in a coherent way to demonstrate the reduction to overall emissions and other adaptations being achieved collectively throughout Northamptonshire.

1. Introduction

1.1. The 2017-2020 Strategy and 2020-2023 update

The refreshed Northamptonshire Climate Change Strategy for 2014-2017 sought to develop and build upon the success of previous strategies developed through the Northamptonshire Climate Change Officers Group (NCCOG) with this partnership approach providing a mechanism through which local and national climate change policy could be reviewed and assessed in the context of Northamptonshire. The Strategies also highlighted the activities which had taken place to support climate change mitigation and the provisions in place to adapt to future climate change.

In order to implement the Strategies, annual Action Plans detailing the various activities to be undertaken by partners over each forthcoming year were developed. The actions, which follow the headings used in the Strategy, are all funded/resourced and highlight the 'lead organisation' for each activity. These annual Action Plans provide the framework for monitoring and capturing the various activities being undertaken to tackle the causes and effects of climate change. They are actively monitored on a quarterly basis via NCCOG with progress on actions assessed using a RAG rating.

The overall objectives of the Strategy, as detailed in [chapter 5](#) of this document and in line with previous editions, are to:

- 1. Raise awareness of the issues of climate change;**
- 2. Reduce emissions of greenhouse gases; and**
- 3. Plan for and adapt to the impacts of climate change.**

This document provides a review of what has been achieved over the past three years and updates the Strategy to reflect the changes in the international, national and local context and the developments in the understanding of the impacts of climate change that have occurred since 2017.

1.2. Changes in the local, national and international context since 2017

Reporting on the Climate Change Strategy now takes place through the Northamptonshire Local Nature Partnership (LNP), which will need to endorse this strategy update. The LNP brings together the work of NCCOG with elements of the Local Flood Risk Operational Group, the Biodiversity Partnership and other associated activities.

Local authorities are required to report on data to central government via a 'Single Data List'¹. The Single Data List includes:

- Emissions from local authority own estate and operations;
- Local nature conservation/biodiversity;
- Flood and coastal erosion risk management and sustainable drainage systems;

¹ The Single Data List is a list of all the data that local authorities are required to submit to central government departments in a given year - <https://www.gov.uk/government/publications/single-data-list>

- The government is also still issuing per capita CO₂ emission data so this can be used for monitoring local change.

It is intended to use national government targets as the basis of the partnership Climate Change Strategy, however individual partners, may wish to set more ambitious targets, depending upon the resources, values, and political will within their respective organisations.

1.3. Developments in the understanding of the impacts of climate change since 2017

Global temperatures continue to increase at an unprecedented rate, attributable to human activity.

- Global temperatures have increased by 0.2°C in the period 2015-2019 compared to 2011-2015² and the World Meteorological Organization (WMO) predicts that 2019 will be the warmest year on record.
- Greenhouse gases (including carbon dioxide) reached record levels in the atmosphere at 405.5 parts per million (ppm) in 2017.³
- In the 5-year period 2014 -2019, the rate of global mean sea-level rise was 5 mm per year, compared with 4 mm per year over the 10-year period 2007-2016. ²
- The amount of ice lost annually from the Antarctic ice sheet increased at least six-fold, from 40 Gt per year in 1979-1990 to 252 Gt per year in the years 2009-2017.²
- The first glacier in Iceland to melt as consequence of global heating did so in 2019.⁴

Evidence of exceptional weather patterns in the UK over the last five years, including periods of unusually cold, dry and wet weather, has led to an increased perception that we are already experiencing climate change in this country. This in turn has led to more of a focus on the need to adapt to climate change as well as to mitigate its impacts through the reduction of greenhouse gas emissions.

One hundred potential impacts of climate change in the UK were identified in a Climate Change Risk Assessment (CCRA) carried out in 2012⁵. The government agreed to update this assessment every five years with the latest version released in 2017. This identified the top six areas of inter-related climate change risks for the UK⁶:

- Flooding and coastal change risks to communities, businesses and infrastructure;
- Risks to health, well-being and productivity from high temperatures;
- Risk of shortages in the public water supply, and for agriculture, energy supply and industry;
- Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity;
- Risks to domestic and international food production and trade; and

² https://library.wmo.int/doc_num.php?explnum_id=5789

³ <https://public.wmo.int/en/media/press-release/greenhouse-gas-levels-atmosphere-reach-new-record>

⁴ <https://www.bbc.co.uk/news/world-europe-49345912>

⁵ Climate Change Risk Assessment Evidence Report 2012 -

http://randd.defra.gov.uk/Document.aspx?Document=10067_CCRAEvidenceReport16July2012.pdf

⁶ Climate Change Risk Assessment 2017 - <https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/introduction-to-the-ccra/>

- New and emerging pests and diseases, and invasive and non-invasive species, affecting people, plants and animals.

The CCRA evidence reports inform the National Adaptation Plans (NAPs), which have been created to reduce vulnerability to the impacts of climate change that are inevitable due to past and current greenhouse gas emissions. It establishes what government, businesses and society can do to become more climate ready, in response to the latest Climate Change Risk Assessment. The last NAP was published in 2018, covering the period up to 2023⁷.

National Adaptation Plan (NAP) 2018

The NAP stems from the Climate Change Act 2008⁸ which obliges government (including local authorities) to produce and review climate adaptation policies. The initial NAP - which was published in 2013 - established a strategy for adapting to the potential impacts of climate change highlighted in the Climate Change Risk assessment 2012.⁹ The latest programme has a greater degree of specificity: it includes a set of objectives, the CCRA risks addressed, actions with the organisations responsible for delivering them, timescales, and monitoring, whilst keeping to the original priorities of addressing the six areas of inter-related climate change risks in the CCRA.

⁷ National Adaptation Programme 2018 to 2023: <https://www.gov.uk/government/publications/climate-change-second-national-adaptation-programme-2018-to-2023>

⁸ <http://www.legislation.gov.uk/ukpga/2008/27/contents>

⁹ <https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-government-report>

2. The international and national context

2.1. International Context

Based on current pledges made by countries that have signed the Paris Climate Agreement, the planet is predicted to warm 2.9 degrees Celsius by 2100 compared to the present day. Only transformative structural change in human civilisation will be commensurate with meeting the challenge of limiting global temperature increase to 1.5 degrees Celsius; the target set by the IPCC to minimise risks to health, livelihoods, food security, water supply, human security, and economic growth.¹⁰

In response to the limited international political action to address climate change, a number of grassroots movements formed in 2018; *Extinction Rebellion*, *Youth Climate Strikes*, *UK Climate Emergency Network and Campaign against Climate Change*. These movements have received significant publicity and have applied pressure on governments to prioritise action to address the climate crisis. In addition, 11,000 scientists from 153 countries declared a climate emergency, in a letter published in 2019 in *Bioscience*. They state “*Despite 40 years of global climate negotiations, with few exceptions, we have generally conducted business as usual and have largely failed to address this predicament*”¹¹

2.2. Central government policy and greenhouse gas emission targets

Until recently the national target for the UK’s greenhouse gas emissions was an 80% reduction compared to the 1990 baseline to be achieved by 2050, a legally binding target established by the 2008 Climate Change Act. Intermediate targets had also been set with a 34% reduction to be achieved by 2020 and a 50% reduction by 2027. Progress to date has been significant with UK emissions [44% below 1990 levels in 2018](#).

However, in June 2019, following the advice of the CCC¹², the UK government pledged for the UK to become carbon neutral by 2050. Some of the significant step-change measures the CCC recommend to reach carbon neutrality in the UK, include:

- Carbon capture and storage to be implemented as a necessity
- Electric vehicle targets to be moved forward to 2035
- Clean energy to quadruple
- Rewilding 20,000 ha of land annually

Current initiatives to support progress towards these targets include:

¹⁰ <https://www.ipcc.ch/sr15/>

¹¹ <https://academic.oup.com/bioscience/advance-article/doi/10.1093/biosci/biz088/5610806>

¹² The Committee on Climate Change - www.theccc.org.uk

- Participation in the EU Emissions Trading Scheme, which covers energy-intensive industrial installations and the aviation industry.
- Supporting the increasing use of renewable energy generation at all scales, through monetary incentives such as the Smart Export Guarantee (SEG) and the Renewable Heat Incentive (RHI). The SEG has been introduced by the Department for Business, Energy and Industrial Strategy (BEIS) and came into force in January 2020 following the closure of the Feed in Tariffs (FITs) scheme to new applicants in March 2019.
- Limits placed upon the maximum allowable emissions from new buildings through changes to Part L of the Building Regulations.
- The installation of 'smart meters' to facilitate the monitoring of energy consumption.
- Salix finance for energy efficiency improvements by public sector organisations.
- Supporting the increasing use of biofuels for transport and electric vehicles.
- Action to reduce greenhouse gas emissions from agriculture, which are primarily nitrous oxide (from fertiliser use) and methane.
- Supporting rural communities across England wanting to set up renewable energy projects in their area through the Rural Community Energy Fund (RCEF).

The Committee on Climate Change provides independent advice to government on the implementation of the Climate Change Act 2008 and their website is a useful source of accessible data on UK emissions broken down by sector¹³.

2.3. The National Adaptation Programme

The NAP sets out what government and others are doing to become more 'climate ready'.

The current iteration of the National Adaptation Programme 2018 -2023¹⁴ was published in July 2018, and has condensed the six priority areas in the previous plan down to five:

- Natural Environment;
- Infrastructure;
- People and the Built Environment;
- Business and Industry.
- Local Government.

The adaptation section of this Northamptonshire Climate Change Strategy 2020-2023 will use these 5 NAP headings for the 'Adaptation' section and the Action Plan.

¹³ The Committee on Climate Change - www.theccc.org.uk

¹⁴ <https://www.gov.uk/government/publications/climate-change-second-national-adaptation-programme-2018-to-2023>

2.4. National initiatives

There are two national initiatives that partners in the county have participated in in the past – Climate UK and Climate Local.

Climate UK¹⁵ used to co-ordinate and promote local climate action across the UK, offering support to local authorities, businesses and communities to respond effectively to the challenges posed by climate change. It was a network consisting of all of the climate change partnerships across the UK through which Northamptonshire County Council (NCC) and other partners in the county formerly contributed. Previously Climate UK was further split into regional arrangements, with Climate East Midlands covering Northamptonshire. Whilst local authorities throughout the East Midlands still meet to discuss progress on regional climate action, Climate UK and the Climate East Midlands body (and other regional bodies) no longer exist.

Climate Local¹⁶ was an initiative promoted by the Local Government Association to support local authorities' efforts to reduce greenhouse gas emissions and to adapt to climate change. It built upon the Nottingham Declaration on Climate Change that many local authorities, including all of the Northamptonshire Local Authorities, have signed up to. Daventry District Council has been a signatory to Climate Local since December 2012 with Corby Borough Council becoming a signatory in June 2014. Although no longer operating as a distinct initiative the LGA still support local authorities in their effort to address climate change.

The NHS has announced the “For a greener NHS” programme recognising the major threat climate change poses to health and wellbeing. The programme aims at sharing ideas on how to reduce the impact on public health and the environment, save money and work towards net carbon zero.¹⁷

3. The local context

3.1. Changes to local strategies and commitments

The government recognised¹⁸ Northamptonshire Local Nature Partnership (LNP) was established to rationalise the number of existing ‘environment’ based groupings operating in the county and provide a coherent framework to ensure that the remaining groups can work effectively together. This has brought together the work of NCCOG, elements of the Local Flood Risk Operational Group, the Biodiversity Partnership and Local Wildlife Sites group.

The LNP coordinates management of the natural environment as a system and to embed its value in local decisions for the benefit of nature, people and the economy. It is a strategic partnership of a

¹⁵ For more information on Climate UK, visit their website - <http://www.climate-em.org.uk/about/climate-uk/>

¹⁶ For more details on Climate Local, see the Local Government Association website - <https://www.local.gov.uk/climate-local>

¹⁷ For a greener NHS: <https://www.england.nhs.uk/greenernhs/>

¹⁸ Information on the formation of LNP's through Defra's Natural Environment White Paper and Government's recognition of them, can be found here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/192580/local-nature-partnerships-overview120402.pdf

broad range of local organisations, businesses and people with the credibility to work with and influence other local strategic decision makers.

The Northamptonshire Climate Change Strategy continues to facilitate an increasing focus on planning for adaptation to climate change in the county. Planning officials in Northamptonshire (NCC, districts and boroughs and the Joint Planning Units (JPUs)) are aware of and are planning for the threats posed by climate change through inclusion of salient outcomes and policies in Local Plans. For example, the North Northamptonshire Joint Core Strategy (adopted July 2016) identifies 'Adaptability to future climate change' as one of ten desired outcomes to be achieved across the area by 2031 and sets out ten linked policies devised to achieve this¹⁹.

Since April 2015, Local Planning Authorities have been required to consult Northamptonshire County Council as Lead Local Flood Authority (LLFA) on all major planning applications, with the LLFA reviewing the applications in relation to surface water drainage only. The LLFA is also required to provide technical advice on surface water drainage strategies, and on any designs put forward for new major developments.

The Northamptonshire Transportation Plan²⁰ establishes transport-related policies, objectives and aims pertaining to transport in the county, outlining the plans which are in place and how they are to be implemented. The Plan consists of a broad range of strategies covering a number of distinct policy areas, and includes the Northamptonshire Highway Air Quality Strategy²¹. The Plan recognises that the demand for travel within Northamptonshire is accelerating, in conjunction with significant population growth and major co-ordinated development of urban centres. This could mean that it takes 25% longer to make some journeys by 2021, for example between Daventry and Northampton, or between Kettering and Corby. Greater volumes of vehicles on the road, and the resulting elevated levels of congestion, can have a restrictive impact on economic development and prosperity by impinging upon the competitiveness of local businesses. The Plan therefore provides a reminder of the significant opportunities associated with climate change mitigation activities.

The Northampton Low Emissions Strategy, which was endorsed by Northampton Borough Council Cabinet on the 8th June 2017 for full endorsement, aims to influence policies and activities which support the reduction of emissions in the borough of Northampton, with a focus on improving air quality and reducing vehicle emissions. It is recognised that poor air quality can have significant implications on human health, as well as for biodiversity, habitats and ecosystems. As such, it is critical that stringent measures are taken to improve air quality within the borough, and one such action is the formalisation of Air Quality Management Areas (AQMAs). Seven AQMAs have been

¹⁹ North Northamptonshire Joint Core Strategy 2011-2031 - <http://www.nnjpu.org.uk/docs/Joint%20Core%20Strategy%202011-2031%20High%20Res%20version%20for%20website.pdf>

²⁰ The Northamptonshire Transportation Plan 2012 - <http://www3.northamptonshire.gov.uk/councilservices/northamptonshire-highways/transport-plans-and-policies/Pages/local-transport-plan.aspx>

²¹ The Northamptonshire Highway Air Quality Strategy - <http://www3.northamptonshire.gov.uk/councilservices/northamptonshire-highways/transport-plans-and-policies/Documents/Northamptonshire%20Highway%20Air%20Quality%20Strategy.pdf>

identified within Northampton²², due to the high levels of nitrogen oxide associated at each location. In each case, the most significant contributing factor is emissions from road traffic.

The South East Midlands Local Industrial Strategy²³ was published in June 2019. This was produced by SEMLEP in partnership with stakeholders in Northamptonshire and wider South East Midlands area. This strategy sets out specific interventions to address local productivity challenges, to realise innovation, further improve connectivity and create a balanced environment that provides opportunity for our businesses and enhances our vibrant, sustainable communities. The strategy identified opportunities for the area to take a leading role on the Future of Mobility and Clean Growth Grand Challenges, set out in the National Industrial Strategy, by utilising the wealth of relevant assets and expertise in the area, along with the space and willingness to test new technologies in a real-world setting. The strategy has set out various commitments related to climate change where SEMLEP will work with local organisations to support the necessary provision of low carbon energy, support business energy efficiency, support water supply and flood risk plans, support the implementation of the 25 Year Environment Plan and more.

More recently, following the IPCC reports, UK Parliament's declaration of a climate emergency in June 2019 and pressure from grass roots organisations, a number of local authorities in Northamptonshire have declared climate emergencies and committed to the target of becoming 'carbon neutral' by 2030 – twenty years earlier than the UK target of 2050. Those that have declared a climate emergency to date include Northamptonshire County Council, Northampton Borough Council, Daventry District Council, Corby Borough Council and Kettering Borough Council. Whilst this partnership Strategy continues to reflect the national target of supporting the UK to become carbon neutral by 2050, this does not preclude individual NCCOG partners setting and resourcing this even more challenging target.

3.2. Report on what has been achieved since 2017

The following is a summary of the high-level achievements:

- **The Climate Change Strategy Action Plan has been successfully delivered** each year over the past three years, with over 90% of actions within each year's Action Plans implemented as intended.
- **Former Local Area Agreement (LAA) targets for reduction in CO₂ emissions for the county have been exceeded.** Significant progress has been made with the reduction of emissions in Northamptonshire, with a 37.2% reduction in per capita emissions (former NI186) and a 28.8% reduction in total emissions recorded between 2005 and 2017 – and by 3.9% from 2016 to 2017. (Analysis of the latest available emissions data is included in [chapter 7](#) of this document and in Appendix 2).
- An update to the **Northamptonshire Local Flood Risk Management Strategy (LFRMS)** has been finalised and endorsed and approved by NCC Cabinet, which details the co-ordination and

²² Northampton Low Emissions Strategy - http://www.northampton.gov.uk/downloads/file/3802/air_quality_management_areas_agma_s_in_northampton

²³ SEMLEP Local Industrial Strategy - <https://www.semlep.com/industrial-strategy/>

management of local flood risk from surface water, ordinary watercourses and groundwater.

- Building on initial the **DEFRA Community Resilience Pathfinder Scheme**²⁴ which was completed in 2015 and provided support for 15 communities to improve their surface water flood resilience and the development and delivery of the **Northamptonshire County Council Flood Toolkit**²⁵, two further Pathfinder projects are underway:
 - The **Pathfinder II Project**²⁶, funded by the Anglian Northern Regional Flood and Coastal Committee, which facilitated community-led improvements in resilience and preparedness amongst 30 communities who were at risk of surface water flooding in Northamptonshire, and a **Pathfinder III project** focussing on 30 urban communities commenced in April 2019;
- NCC's Energy Management System, certified with the **ISO 50001:2011 Energy Management standard**, was independently audited in November 2016 and found to be compliant with the requirements of the standard, with no minor or major non-conformities observed.
- Over the past eight years, NCC has saved 86,000t CO₂e, including **significant investment in upgrading street** lighting throughout the county in order to reduce energy consumption and Co₂ emissions.
- National Energy Action, a national fuel poverty charity, have worked with organisations and local authorities through the Northants Warm Homes Partnership to develop a **Northants Community Directory**²⁷ which provides details of all agencies offering energy efficiency, fuel debt and other related support for vulnerable householders.
- '**Northamptonshire Energy Saving Service**' (known as NESS) is a 3 year project (2018 – 2021) helping address fuel poverty across Northamptonshire. £1.2million of funding was secured by NCC from National Grid's Warm Homes Fund. NESS is being delivered by Community Law Service in partnership with Citizens Advice Services Corby and Kettering, Care and Repair Northamptonshire, South Northants Volunteer Bureau and Northamptonshire County Council through Public Health. It will target 6000 Northamptonshire households over the 3 year Project and bring financial benefits to households in the region of £10m.
- **Northamptonshire Warm Homes Fund** – running from 2019-2022 the fund supports homes in fuel poverty to install central heating.
- **Northamptonshire ECO-flex** – this initiative has helped to support financially low-income homes to install insulation and energy efficient boilers.

²⁴ Defra Community Resilience Pathfinder Scheme - <https://www.gov.uk/government/publications/flood-resilience-community-pathfinder-scheme-prospectus>

²⁵ Northamptonshire Flood Toolkit - <https://www.floodtoolkit.com/>

²⁶ Pathfinder II Project - <https://www.floodtoolkit.com/pathfinder2/>

²⁷ Northants Warm Homes Partnership, Community Directory - <http://www.northantswarmhomes.com/files/2012/09/Copy-of-Northants-Community-Directory-WEB.xlsx>

- **Nenescape** – the Resilient River Project (restoring 7km of the River Nene) and Farming for the Future project (creating wetland enhancements on agricultural land) have significantly increased the resilience of the Nene Valley to climate change: increasing water storage and slowing flows.
- NCC, along with Nestlé, EA, and Anglian Water is participating in **Landscape Enterprise Networks (LENS)**, a project to brokerage payments for finite natural capital providers from key private and public sector beneficiaries.

3.3. East Midlands Regional Climate Change Partnership

NCC and other local authorities in the East Midlands previously met under the auspices of the publicly funded 'Climate East Midlands', however this body no longer exists. Nevertheless, the partners of this group still meet occasionally and actively participate in a regional climate change partnership to deliver action and share best practice.

3.4. Local climate change impact

The UK Climate Impact Programme, UKCIP, continues to disseminate information on the impacts of climate change based on the predicted changes in the climatic system in UKCP 18, which is the latest available source of climate predictions.

The Local Climate Impacts Profile (LCLIP) for Northamptonshire that is referred to in the 2010-2014 and 2014-2017 Northamptonshire Climate Change Strategies is also still applicable and has not been updated.

4. The impacts of climate change

For many of the years which have followed the era of extensive industrialisation within the UK, significant efforts have been made to quantify the likely impacts of human-induced climate change, at first within the scientific community only, but now across a number of disciplines. In 2012 the UK government produced a Climate Change Risk Assessment (CCRA) which identified one hundred potential impacts of climate change. A second iteration of the CCRA, published in 2017, identified the six most significant inter-related climate change risks or the UK, as detailed in [section 1.3](#) of this document.

As the Northamptonshire Climate Change Strategy and its annual Action Plans are informed by the NAP, which is in turn informed by the CCRA, it is pertinent to consider each of these risks and the potential impacts they carry for the county.

4.1. Flooding and coastal change risks to communities, businesses and infrastructure

Flooding already poses a severe threat to people, communities and buildings, and climate change is expected to increase the frequency, severity and extent of flooding.

A temperature increase of 2°C, which is now considered to be a modest climate change projection, could result in as much as a 40% increase in the number of residential properties in the UK exposed to frequent flooding (1 in 75 years average) by the 2080s, with a rise of 4°C potentially resulting in as much as a 93% increase in the number of residential properties exposed to frequent flooding²⁸.

In Northamptonshire, large swathes of agricultural land and heavily urbanised town centres provide the ideal conditions for surface water flooding. Indeed, surface water flooding is the greatest source of flood risk posed to Northamptonshire's residents, with almost 57,000 residential properties already predicted to be at risk without taking into account future climate change²⁹. With a rapid speed of onset, surface water flooding can be difficult to respond to, particularly if pre-emptive measures have not been taken to mitigate its risk³⁰.

The economic damages associated with flooding can be severe, impacting upon built infrastructure, business competitiveness and agricultural productivity. Equally, there is evidence to suggest that, for individuals, the stress of experiencing flooding can continue for a long time after the flood water has receded³¹. From a mental health perspective, this can be most pronounced in the two years which follow the incident³². Dangerous pathogens carried by flood water can cause illness and disease, the

²⁸ Climate Change Risk Assessment 2017: Projections of future flood risk in the UK <https://www.theccc.org.uk/wp-content/uploads/2015/10/CCRA-Future-Flooding-Main-Report-Final-06Oct2015.pdf.pdf>

²⁹ Northamptonshire Local Flood Risk Management Strategy <https://www.floodtoolkit.com/wp-content/uploads/2016/11/Northamptonshire-LFRMS-Report-Final-November-2016.pdf>

³⁰ For more information on how to prepare for a flood, visit the Flood Toolkit - <https://www.floodtoolkit.com/emergency/preparation/>

³¹ The Effects of Flooding on Mental Health. Health Protection Agency, 2011.

³² Alderman, K., Turner, L.R., & Tong, S. (2012). Floods and human health: A systematic review. *Environment International*, 47, 37-47.

trauma of losing possessions which may have a sentimental value, and the smell and dampness which can take months to erase from homes are all factors which could contribute to the prevalence of poor mental health amongst individuals who have experienced flooding.

There is a great deal of partnership work being undertaken throughout the county in response to these risks, which is detailed in the Northamptonshire LFRMS and associated Action Plan³³.

4.2. Risks to health, well-being and productivity from high temperatures

Future changes in climate are likely to result in both changes to mean temperatures and increased weather variability. Ensuring that the risks to health, well-being and productivity associated with these changes are appropriately accounted for in policy is of paramount importance, but at present there are few comprehensive policies in place to adapt existing homes and other buildings to high temperatures, manage the urban heat island effect or safeguard new homes.

Older people are particularly vulnerable to the detrimental health impacts associated with high temperatures, and in the UK the proportion of the population aged over 75 is projected to increase from 8% in 2015 to 18% by 2085, and this is likely to exert increased pressure on the health and care systems. In Northamptonshire, latest figures from 2017 show that the number of individuals aged 65 and over was 131,425 totalling 17.73% of the county's population. This is an increase of 12% from 2014³⁴. The percentage of residents aged 85 and over has grown a little less than the national average, 4.7% in Northamptonshire compared to a national average of 6%. Long term Office of National Statistics projections estimate the county's population of individuals aged 65 and over to increase to around 147,100 in 2022, to 166,600 in 2027 and 217,500 by 2041.

The proportion of older people in the county is therefore growing, and careful consideration needs to be given to how to mitigate the risk of this population being adversely affected by warmer temperatures. For instance, there is a risk that insulating homes to improve thermal efficiency could result in overheating.

The average number of hot days per year is increasing, as is the chance of severe heat waves. Past events provide evidence that extreme temperatures can significantly inhibit production and well-being: in July 2016, with temperatures in London of over 30°C, a surge of health problems and transport disruptions were reported, and the media even reported increased levels of violence³⁵.

These impacts are particularly pronounced in urban centres, and therefore it is essential that measures are taken to minimise the adverse effects of high temperatures for people of all ages. Incorporating green infrastructure into urban design is a way to lessen the urban heat island effect,

³³ See the 'Statutory and Project Documents' section of the Flood Library for the latest versions of the LFRMS and Action Plan - <https://www.floodtoolkit.com/pdf-library/>

³⁴ Northamptonshire County Council Older Peoples JSNA
<https://www.northamptonshire.gov.uk/councilservices/health/health-and-wellbeing-board/northamptonshire-jsna/Documents/Older%20Peoples%20JSNA%20-%20Updated%20Dec%202019.pdf>

³⁵ Heat waves, productivity, and the urban economy: What are the costs?
<http://www.lse.ac.uk/GranthamInstitute/news/heat-waves-productivity-and-the-urban-economy-what-are-the-costs/>

and thus urban temperatures, and planning policy is a critical component of the mechanism through which this can be achieved.

In response to these risks, the North Northamptonshire Joint Core Strategy³⁶ has adopted a number of policies to influence development over the coming decades. Policy 9 – Sustainable Buildings, sets out that *“The layout and design of sites, buildings and associated landscapes should...Maximise the use of passive solar design to address heating and cooling...”*. Furthermore Section 3 ‘The Green Infrastructure Framework’ identifies special policy areas which, amongst other aspects, will be a focus for promoting climate change mitigation, and also highlights that green infrastructure *“supports healthier lifestyles, manages flood water, improves air quality and helps to mitigate the effects of climate change”*. Policies 19, 20 and 21 further expand on these areas and set out how green infrastructure will be delivered in North Northamptonshire.

4.3. Risk of shortages in the public water supply, and for agriculture, energy supply and industry

Climate change will result in changes to the way that water circulates through the water cycle, and this, coupled with significant population growth, is likely to place a great degree of stress on the availability of water in the future.

This presents a risk to the UK economy, with the availability of water for irrigation likely to become a serious limiting factor to agricultural production, and the requirements of freshwater use for cooling in energy generation expected to rise significantly. The public water supply will also be impacted, and the ecology of rivers and lakes may alter in response to reduced water availability, particularly during the summer months, which could have a devastating effect on biodiversity as well as detracting from the amenity value of these environments.

At present, action is primarily targeted at reducing demand, and water companies, abstractors and governments have worked together to attempt to elicit a change in water consumption behaviour. Adapting to a changing climate necessitates a shift in the way we live our lives, and it is not yet clear how dependent this shift is on the availability of water. Thus, action is needed to conserve water now given the uncertainty of its availability in the future.

In June 2017, the Environment Agency published a document entitled, ‘Drought response: our framework for England’³⁷. Although this document provides a high-level national response, implementation is underway at a regional and local level, through co-ordination with water and sewerage companies, as well as other groups such as the National Farmers Union and the Country Land and Business Association.

³⁶ North Northamptonshire Joint Core Strategy - <http://www.nnjpu.org.uk/publications/docdetail.asp?docid=1573>

³⁷ Environment Agency ‘Drought response: our framework for England’, June 2017 - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/625006/LIT_10104.pdf

An infrastructure assessment report is being prepared for the central area growth board by AECOM, which will cover Northamptonshire. Water infrastructure requirements which factor in climate change projections will be a crucial part of this report.

4.4. Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity

Many ecosystems have already begun to adjust and adapt to the impacts of climate change, but it is likely that their capacity to do so in the future will be significantly constrained by the increasing pressures of habitat loss and fragmentation, pollution, over-exploitation of resources and the spread of invasive species.

A key risk to natural capital associated with a changing climate is the deterioration of productive agricultural land. Higher levels of soil aridity, coupled with reduced water availability for irrigation, is likely to significantly impact upon crop yields and farming versatility. Thus hampering the agricultural output of UK farms and threatening national food security.

Loss of habitat and the corresponding breakdown of ecosystems, in terrestrial, freshwater, coastal and marine environments, can not only result in the depletion of species populations and thus biodiversity, but also the ability for natural carbon storage, which will become increasingly critical as levels of carbon dioxide in the atmosphere continue to rise.

Responding to these identified risks, in Northamptonshire through the Nene Valley Nature Improvement Area (NIA) project, a study was undertaken to map, and place a value on, natural capital and ecosystem services in the Nene Valley³⁸. It highlighted that natural capital and the ecosystem services these provide, are valued at £109 million annually across the Nene Valley NIA and £300 million across the wider Nene Valley.

Further leading edge work is currently in progress on Habitat Opportunity Mapping, to identify areas where habitat creation could enhance natural capital and ecosystem services throughout Northamptonshire, in order to improve air quality, reduce flood risk and better water quality. The GIS maps identify potential areas for the expansion of key habitats, covering three broad habitat types (broadleaved and mixed woodland, semi-natural grassland, wet grassland and wetland), to reduce surface water runoff, reduce soil erosion and improve water quality, ameliorate air pollution, and increase access to natural greenspace. The maps are to be used to assist with the development of green infrastructure strategies and for agri-environment scheme targeting, natural flood risk management and catchment sensitive farming schemes, health and wellbeing initiatives, and UK Woodland Carbon Code projects, and as an important step towards informing the development of a natural capital investment plan for the area.

The development of such a Natural Capital Investment Plan, is being progressed with funding from Defra, via a collaboration between five Local Nature Partnership (including Northamptonshire) covering the South East Midlands area. This Plan will help to influence development throughout this

³⁸ Valuation of ecosystem services in the Nene Valley NIA - <http://www.nenevalleynia.org/project/ecosystem-services/> Mapping natural capital and ecosystem services in the Nene Valley - <http://www.naturalcapitalsolutions.co.uk/previous-projects/case-study-2/>

sub-region, identifying areas where an investment in natural capital could greatly enhance the delivery of numerous ecosystem services.

DEFRA and the Environment Agency are also working with a number of stakeholders, including Local Nature Partnerships, to deliver a Local Natural Capital Plan for the Ox-Cam Arc. This will look at assessing the Natural Capital throughout the region, improving habitat condition, and implementing some totemic landscape scale projects. Project areas under consideration in Northamptonshire include: the Nene Valley Nature Improvement Area, Yardley Whittlewood Ridge and the Rockingham Forest. These include initiatives related to natural flood management and introduction of catchment land advisors.

Together this work helps to highlight the importance and value of natural capital, in terms of health and wellbeing, economic prosperity and biodiversity, to Northamptonshire and the wider South East Midlands area, as well as the need to address the impacts climate change and future development pressures could have on the ecosystem services they provide.

4.5. Risks to domestic and international food production and trade

Although a changing climate may present opportunities to increase domestic food production, the condition of soils and availability of water, both of which are already impacted by climate change, are likely to be limiting factors to realising these opportunities.

Parts of southern, eastern and central England have already been identified as likely to become unviable for some farming activities due to the intensive water requirements of these activities. The forecasted trend of wetter winters is also likely to exacerbate the problems of soil compaction and erosion, which can severely impact upon agricultural productivity.

Climate change is likely to shift the balance of food production between regions, both internationally and nationally. These changes will influence markets, trade and domestic prices, and the impacts of which are likely to disproportionately affect farmers and lower income households.

A national initiative Landscape Enterprise Networks (LENS) is now active in the County supported by NCC and Anglian Water: a project to brokerage payments to natural capital providers (eg. landowners) from key private and public sector beneficiaries, for which securing better water quality and supply will be an aim.

4.6. New and emerging pests and diseases, and invasive and non-invasive species, affecting people, plants and animals.

There is broad agreement within the scientific community that pests and invasive non-native species may increase in number and range in a warmer, wetter atmosphere, and that there is a significant chance of an increase in the prevalence of pathogens that are already present in the UK, as well as new pathogens arriving from overseas.

However, projections of the impact of climate change on human diseases are uncertain, as it is not clear precisely what conditions are likely to prevail in an altered UK climate. As such, surveillance and monitoring of species and pathogens that are likely to pose the biggest challenge in the changing climate should be prioritised.

The Northamptonshire Local Nature Partnership monitors progress being made by partners on several natural environment priorities in the county. Priority 2 focuses on the need to 'promote co-ordinated address and management of specifically threatened habitats or species'.

There are a great many threats from invasive species and emerging diseases both nationally and in Northamptonshire. Two specific examples reported to the Northamptonshire Local Nature Partnership include the spread of Ash tree die-back (Chalara), with Woodland Trust volunteers carefully monitoring the situation and delivering 'Tree Disease Recovery Packs' where loss is occurring; and the recent identification of the invasive 'Killer Shrimp' (*Dikerothrips villosus*) in Pitsford Reservoir, which is being responded to through the draft of an action plan by River Nene Regional Park, in partnership with Anglian Water and the Environment Agency. This draft plan aims to raise awareness of the threat of this species and promote soft and hard mitigation actions that can be implemented to slow the spread.

5. Aims and objectives for future action

The Climate Change Strategy recognises the need to establish key aims that will direct efforts to tackle climate change and its impacts within Northamptonshire over the next three years. Broadly, these aims can be grouped under the following three objectives, which constitute distinct focus and review areas within this Climate Change Strategy:

1. [Raise awareness of the issues of climate change](#);
2. [Reduce emissions of greenhouse gases](#); and
3. [Plan and adapt to the impacts of climate change](#).

The aims associated with these objectives are identified below, with further information on progress against the objectives provided in chapters 6, 7, and 8.

Progress against these aims and objectives will be measured and monitored through the Annual Action Plan and NCCOG quarterly meetings.

5.1. Raise awareness of the issues of climate change

Key aims within this objective include:

- **Communications and advertising** – engage public and stakeholder organisations through online and social media communications and household leaflets, to help reduce emissions and energy usage as well as assist adaptation to climate change.
- **Events and Workshops** – develop and deliver events to raise awareness of the issues of climate change and sustainability to the public, organisations and partners, to help support behaviour change action.
- **Education in schools** – work with schools to increase awareness of the issues of climate change especially related to waste, energy and adaptation.

5.2. Reduce emissions of greenhouse gases

Key aims within this objective include:

- **Improve Home Energy Efficiency** – advise on any funding opportunities available to install energy saving measures, such as insulation and boiler replacements, as well as fuel switching and collective tariff schemes which may help homeowners to reduce their energy bills.
- **Improve Resource Efficiency in the Business, Commercial and Voluntary Sectors** – seek opportunities to develop business support programmes which target the proliferation of resource efficiency measures and activities.
- **Improve Resource Efficiency in the Public Sector** – utilise existing funding programmes to develop and deliver resource efficiency projects and explore opportunities for local authorities to undertake holistic resource management, ethical investment, and sustainable procurement, focusing on energy, waste and water.

- **Reduce Energy Use and Emissions from Transport** – initiate and lead the way on a modal shift to sustainable travel and low carbon fuel infrastructure.
- **Encourage Sustainable New Development and Land Use** – capture climate change considerations within local plans and policies and encourage land development which promotes sustainability.
- **Minimise Waste** – identify and support opportunities to reduce emissions by reducing, reusing and recycling waste.
- **Increase Low and Zero Carbon Energy Use** – work with organisations in all sectors to implement low and zero carbon energy measures, with a focus on renewables and investment in carbon off-setting.

5.3. Plan and adapt to the impacts of climate change

Key aims within this objective include:

- **Local Government and Public Services** – embed ‘planning to adapt’ activities into public sector processes, practices and policies.
- **Business, Industry and Commerce** - identify the businesses that are most sensitive to the impacts of climate change and work with them to help them take adaptive action.
- **Built Environment and Infrastructure** – ensure that policies are effective in encouraging sustainable construction and development, and maximise opportunities for ‘greening’ the county through green infrastructure initiatives and activities.
- **Natural Environment, Agriculture and Forestry** – implement natural initiatives which help to adapt to and minimise the impacts of climate change, as well as preserving and enhancing existing natural assets – to include tree planting to off-set carbon emissions.
- **Healthy and Resilient Communities** – enhance the awareness and preparedness of individuals and communities to the effects of climate change and its mitigation.

6. Raise awareness of the issues of climate change

The need to raise awareness on climate change cuts across every area of the Northamptonshire Climate Change Strategy and for this reason it has been maintained as a distinct focus area.

Raising awareness and understanding of the issues of climate change, can help highlight the impact individual action can have and what people can do on an individual and community level.

A number of events and workshops have been held in the county with the aim of raising awareness of the issues of climate change and sustainability. Examples of these have included:

A Northamptonshire Local Nature Partnership conference is usually held annually to outline the key themes and priorities of the LNP and highlight the natural environment projects being delivered in the county.

A series of engagement events were carried out through the Defra Community Resilience Pathfinder Scheme to raise awareness of the impacts of flooding and flood risk to 15 communities in Northamptonshire. These have continued with Pathfinder 2 and 3.

A number of workshops on climate change and soil management were delivered to farmers and landowners by the National Farmers Union, Climate UK and NCC.

Over the next three years, there is also the opportunity to raise awareness to landlords of properties (in the domestic and non-domestic sectors) that are not energy efficient, that there is now legislation in place which is likely to require them to carry out improvements. For example, since 2016, domestic private rented sector tenants have been able to request consent from their landlord to install energy efficiency improvement measures in the property they rent and the landlord is now unable to unreasonably refuse consent, providing the tenant is able to secure suitable funding for the requested improvements. Furthermore, since 2018, all private rented properties will be required to be brought up to a minimum energy efficiency standard rating, likely to be set at EPC rating “E”. This legislation will support the achievement of carbon reduction targets as well as reducing energy costs for tenants.

7. Reduce emissions of greenhouse gases

7.1. Trends in emissions data

Local authority carbon dioxide emissions are published annually by government³⁹, with the latest available data relating to 2017 together with revised figures for each year since 2005. Note that two sets of these figures are published – a full data set and a reduced set showing only emissions within the scope of influence of local authorities. It is data from the latter that is quoted below since these correspond to the former NI186 data (per capita CO₂ emissions in the Local Authority area) that was used for the original strategy. The main difference between these is that transport emissions are much lower in the latter set, due to the inclusion of motorways (through Daventry, South Northamptonshire and to a much lesser extent, Northampton), as well as diesel railways.

Figure 1 below shows the percentage breakdown of the CO₂ emissions by sector in Northamptonshire in 2005 and 2017. This highlights that in 2017, Northamptonshire's transport sector produced the greatest proportion of the county's CO₂ emissions at 43%, whereas in 2005 it was the industry and commercial sector, with 38%. Since 2005 the domestic sector has seen a 3% decrease in the proportion of CO₂ emissions in the county, and the industry and commercial sector an 8% proportional decrease.

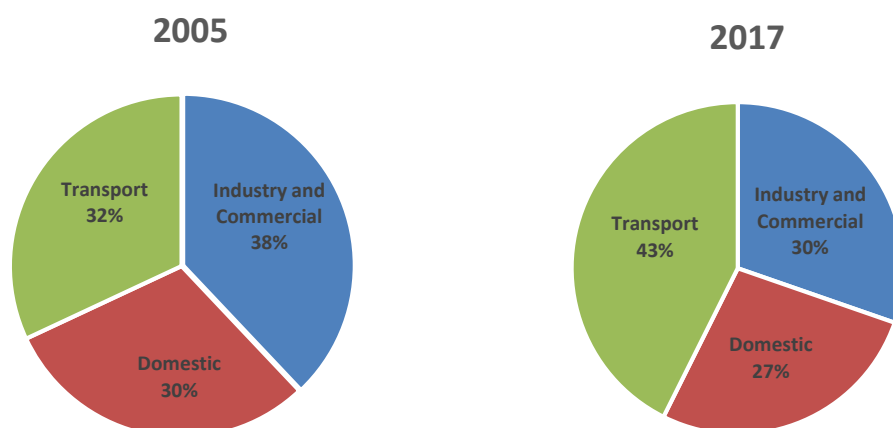


Figure 1: CO₂ emissions by sector in Northamptonshire

The consumption figures between 2005 and 2017 as presented in Figure 2 show that the overall trend is a gradual reduction in the domestic and industry and commercial sectors, whilst transport after a promising trend of diminishing carbon emissions between 2005 and 2013, has seen a year on year increase since then, with 2017 emissions levels almost equivalent to those in 2005, in line with national trends. In this regard, reducing carbon emissions from the transport sector is a key priority area of focus both nationally and locally, one which is heavily influenced by central government policy.

³⁹ Local Authority carbon dioxide emissions data 2005 – 2017 - <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2017>

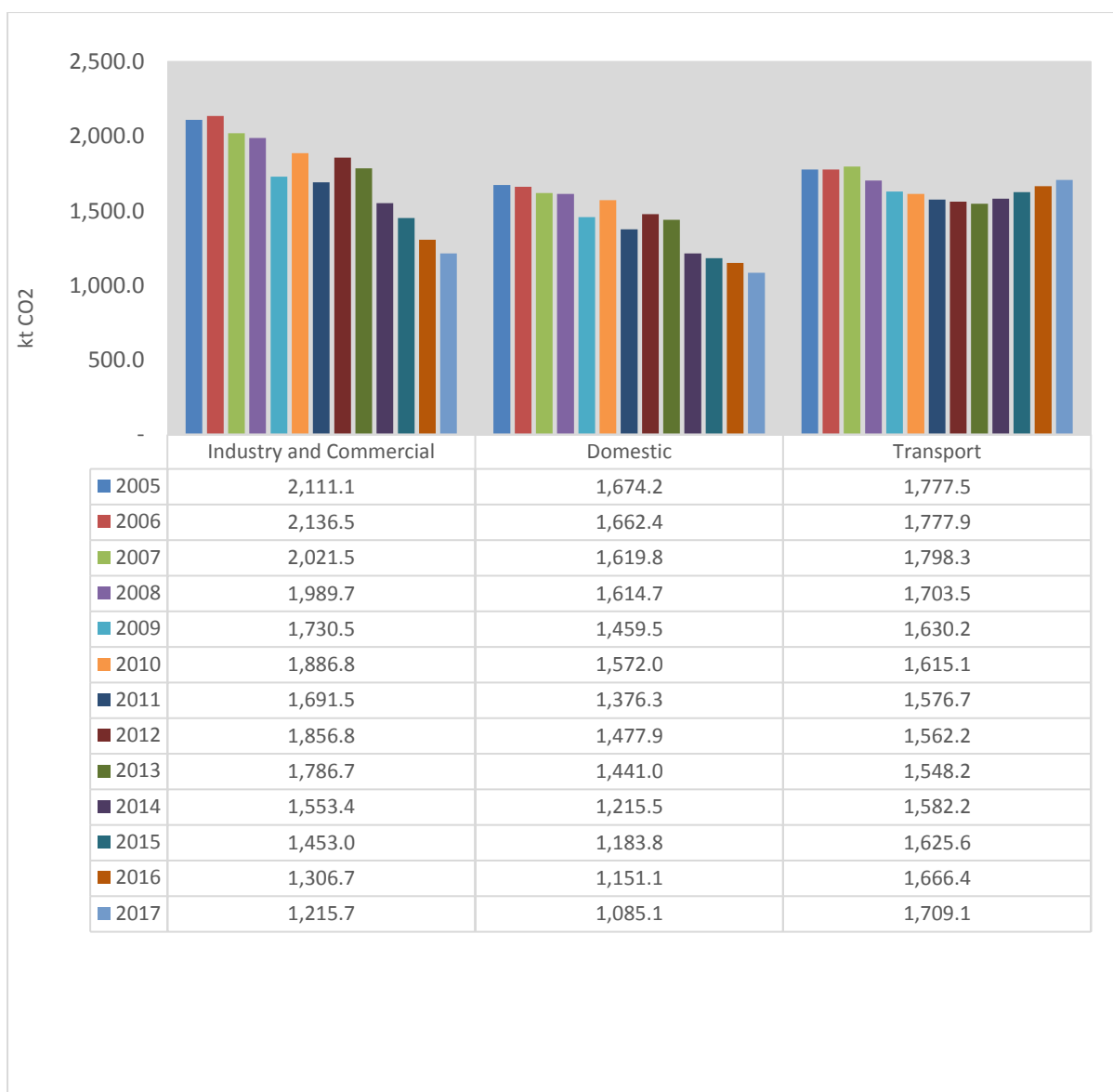


Figure 2: CO₂ emission trend per sector in Northamptonshire

Therefore overall emissions have fallen in all sectors since 2005, but at a slower rate in the transport sector (a reduction of only 8.3% compared to 30.6% in both the domestic and industry and commercial sectors). Overall the reduction in total emissions for Northamptonshire is 28.8%, as detailed in Table 2.

Year	Northamptonshire			England
	Total emissions (kt CO ₂ p.a.)	Population (thousands)	Per capita emissions (t)	Per capita emissions (t)
2005	5,627.4	654.5	8.6	7.2
2006	5,628.4	663.6	8.5	7.1
2007	5,490.6	672.1	8.2	6.9
2008	5,360.9	678.2	7.9	6.7
2009	4,857.1	683.5	7.1	6.1
2010	5,120.6	688.0	7.4	6.3

2011	4,682.7	694.0	6.7	5.7
2012	4,937.6	700.6	7.0	5.9
2013	4,798.3	706.4	6.8	5.7
2014	4,424.7	714.4	6.2	5.0
2015	4,304.3	723.0	6.0	4.8
2016	4,124.3	732.5	5.6	4.7
2017	4,009.9	741.2	5.4	4.5
Percentage reduction	-28.8%	13.3%	-37.2%	-37.5%

Table 1: Total CO₂ emissions and per capita Northamptonshire vs. England

The figures in Table 1 show that the per capita emissions in Northamptonshire have decreased by 37.2% over this twelve year period with a 28.8% decrease in total emissions. For England as a whole, there has been a similar decrease in the per capita emissions from 7.2 to 4.5 tonnes per year (a decrease of 37.5%). Northamptonshire is thus slightly above the national average in terms of per capita emissions.

Whilst the percentage decrease trends in the emissions for the county have been similar to those for England as a whole, there have been significant differences between the decreases in the local authority areas within the county. Table 2 summarises the total emission reductions in each district and borough, as well as Northamptonshire as a whole.

Local Authority area	2005 emissions (kt CO₂)	2017 emissions (kt CO₂)	Percentage reduction
Corby	695.1	452.9	35%
Daventry	808.2	582.8	24%
East Northamptonshire	653.7	497.4	22%
Kettering	745.9	615.4	17%
Northampton	1,398.3	897.1	37%
South Northamptonshire	737.7	565.0	23%
Wellingborough	588.4	399.2	31%
Northamptonshire	5,627.4	4,009.9	28.8%

Table 2: Total emissions by local authority area

These figures indicate that there have been greater percentage reductions in Northampton and Corby in particular and lower reductions in East Northamptonshire and Kettering. However, these differences appear to be primarily due to the respective changes in the Industry and Commercial sector in these areas, which probably reflect changes in economic activity levels, over a period affected by economic recession, rather than investment in measures designed to achieve an overall reductions in emissions.

When the emissions for each local authority area are expressed as per capita (see Table 3 below), a slightly different pattern emerges due to differing rates of population growth, with Corby closely followed by Northampton experiencing the greatest percentage reductions of 49% and 45% respectively.

Local Authority area	2005 per capita emissions (t)	2017 per capita emissions (t)	Percentage reduction
Corby	12.8	6.5	49%
Daventry	10.7	7.1	30%
East Northamptonshire	8.0	5.3	32%
Kettering	8.6	6.1	28%
Northampton	7.1	4.0	45%
South Northamptonshire	8.7	6.2	28%
Wellingborough	8.0	5.1	35%
Northamptonshire	8.6	5.4	37%

Table 3: Per capita emissions by local authority area

The 2017-20 iteration of the Climate Change Strategy compared emission data trends from 2014-2017 using publicly available data provided by government. Since the publication of the 2017-20 Strategy, government has released new data which has updated all of the previously provided data. Therefore, for the purposes of this Strategy, total and per capita emissions data by local authority area between 2016 and 2017 has been compared to review progress made towards reducing emissions based on the most up to date and publicly accessible data.

Local Authority area	2016 emissions (kt CO ₂)	2017 emissions (kt CO ₂)	Percentage reduction
Corby	467.8	452.9	3%
Daventry	587.5	582.8	1%
East Northamptonshire	513.3	497.4	3%
Kettering	626.8	615.4	2%
Northampton	935.7	897.1	4%
South Northamptonshire	579.3	565.0	2%
Wellingborough	413.9	399.2	4%
Northamptonshire	4,124.3	4,009.9	3%

Table 4: Total emissions by local authority area (2016 – 2017 comparison)

Local Authority area	2016 per capita emissions (t)	2017 per capita emissions (t)	Percentage reduction
Corby	6.8	6.5	5%
Daventry	7.2	7.1	3%
East Northamptonshire	5.6	5.3	5%
Kettering	6.3	6.1	3%
Northampton	4.2	4.0	5%
South Northamptonshire	6.4	6.2	4%
Wellingborough	5.3	5.1	4%
Northamptonshire	5.6	5.4	3.6%

Table 5: Per capita emissions by local authority area (2016 – 2017 comparison)

Table 5 demonstrates that between 2016 and 2017, per capita emissions at the county level were overall reduced by 3.6%, a significant reduction which surpasses the 1.5% per annum reduction target prescribed by the 2017-2020 Climate Change Strategy.

A table providing full details of the breakdown of total and per capita emissions by local authority area and by sector is provided in Appendix 2.

7.2. Other local achievements in climate change mitigation

NCC has successfully implemented an energy management system which has been certified with the ISO50001:2011 standard and is the first local authority to have received the certification. The system ensures a documented and auditable approach to energy management is undertaken by the authority, and that measures are taken to continually improve the energy performance of all functions and operations.

It is through the implementation of the energy management system that reductions in NCC's carbon footprint are effectively recorded, reported and monitored. In 2009/10 NCC's carbon footprint was calculated to be 106,625tCO₂; and in 2018/19 it was estimated as 29,425tCO₂, a reduction of 72.4%. This was achieved through capital energy efficiency investment, property rationalisation and effective management of energy systems.

Additional achievements include reduced energy bills for NCC and schools as a result of an energy procurement risk management strategy; solar PV installations for schools, fire stations and libraries; the provision of Ultra Low Emission Vehicles (ULEVs) for Waste and Adult Social Care services and the upgrade of the street lighting stock of fittings to LED. For the latter, the street lighting electricity consumption related emissions dropped from 12 tCO₂ in 2009/10 to 4 tCO₂ in 2018/19, a reduction of 67.7%.

The INTERREG IVB Project ZECOS was completed in 2015. The project facilitated a high volume of schools being educated in recycling and energy efficiency, the identification of champion schools within three communities (Oundle, Braunston and Crick and Long Buckby), and the installation of biomass boilers within four schools: Yelvertoft Primary School, Crick Primary School, The Gateway School and Oundle CE Primary School.

The Northants Warm Homes Partnership (NWHP)⁴⁰ has co-ordinated a number of fuel poverty projects including:

'Big Switch Daventry' – Using collective purchasing power to secure better deals on gas and electricity tariffs for householders. More than 4,000 households in the District have signed up since its launch in December 2014 and over 1,600 householders have successfully switched energy provider.

'Switch, Save, Smile' – Households in East Northamptonshire Council are encouraged to sign up to the project to receive guidance on switching energy suppliers and to register for collective switching.

'Climate Friendly Communities' – Providing help and advice to communities seeking to integrate climate friendly practices into the use of buildings, with the overall aim of reducing the community's carbon footprint.

⁴⁰ Northants Warm Homes Partnership - <http://www.northantswarmhomes.com/>

NWHP has also overseen Northamptonshire's involvement in the Community Action Partnership (CAP) programme, an initiative delivered by National Energy Action (NEA) and British Gas in partnership with local authorities in eight key geographical areas. As part of the programme, one hundred 'energy champions' have been recruited in Northampton, Corby, Kettering and Daventry to help people in the community to become more energy efficient and to reduce the cost of household energy bills. The Northamptonshire Fire and Rescue Service have also received front-line training which has educated crews on the ways in which they can identify people who are in fuel poverty.

A further output of the Northamptonshire CAP programme is the creation of the Northants Community Directory⁴¹, a resource which details the agencies offering energy efficiency, fuel debt and other related support to vulnerable householders. The Directory serves as a mechanism through which support workers and front-line staff across the county are able to provide more streamlined and efficient referral services.

Implementation of the Northamptonshire Transportation Plan has ensured that more focus is given to achieving carbon reduction through modal shifts, with an increased emphasis placed upon sustainable travel.

E-Car Club had established four E-Car Club Hubs within Northamptonshire with electric vehicles, available for public use, provided at each. The four Hubs were located at: Campbell Square, Northampton; Guildhall Road, Northampton; Berrywood Hospital, Northampton; and St Mary's Hospital, Kettering. The E-car club was acquired by Europcar which unfortunately decided to cease the scheme in Northamptonshire.

Northamptonshire Waste Partnership (NWP) has implemented a Waste Strategy and Action Plan which seeks to help reduce CO₂ by reducing, reusing and recycling waste.

Chelveston Renewable Energy Park is another example of a local initiative supporting the climate change agenda. Based in East Northamptonshire, the Park is a 750-acre (300ha) scheme which currently generates a combined output around 80MW of renewable energy. The renewable energy includes wind and solar, following an £80m investment by the owners (Chelveston Renewable Energy Ltd). Planning permission has been obtained for an anaerobic digestion plant on the former airfield with a generating capacity of 1 - 5MW. Planning permission was also granted for a bio-fuel proposal with a generating capacity of 6MW. The next phase of the development has commenced with the construction of on-site battery storage, with further investment planned. The energy park currently generates enough power to supply in excess of 10,000 homes.

KierWSP, who run the Northamptonshire Highways contract, has implemented a Sustainability Action Plan. The key performance indicator for this is the reduction in carbon footprint based on fuel (including red diesel), electricity, gas (where available), water (excluding Towcester) and waste to landfill. Latest figures report an overall 47.9% reduction since 2008/09.

⁴¹ Northants Community Directory - <http://www.northantswarmhomes.com/files/2012/09/Copy-of-Northants-Community-Directory-WEB.xlsx>

7.3. Implications of national emissions targets over 2020 – 2023

It is proposed that any emissions targets set for Northamptonshire should again be set in line with national targets. The government has yet to set out detailed interim targets for greenhouse gas emissions based on the net-zero scenario, but the Committee on Climate Change suggests cutting annual CO₂ emissions by around 93% from 1990 levels – which is 13% more than the requirement in the 2008 Climate Change Act.

Most of the target can only be reached by producing energy via non-carbon means. This will require extra CO₂ to be captured or extracted from the atmosphere (“engineered removals”) to counteract residual CO₂ emissions which might be expensive or impossible to eliminate, such as from international aviation, and to compensate for remaining emissions of non-CO₂ greenhouse gases - especially from farming - which are costly to eliminate. Such CO₂ extraction methods include planting trees (afforestation) and direct air capture.

For Northamptonshire to match national government ambitions of achieving carbon neutrality by 2050 - a 121 kt/year reduction of CO₂ emissions is required in the 33 years from 2017 (the most recent year for which greenhouse gas emission data is available with emissions totalling 4009.8 kt CO₂) to 2050. Precluding any carbon capture measures - **this equates to an overall annual 3% reduction in emissions**. The required sectorial reductions in carbon emissions are;

- 52 kt/year for the Transport sector,
- 36.3 kt/year for the Industry & Commercial sector, and
- 32.7 kt/year for the Domestic sector.

The actions associated with this Climate Change Strategy will support the uptake of measures which contribute towards the achievement of these national targets.

8. Plan and adapt to the impacts of climate change

8.1. Built Environment and Infrastructure

Significant growth is planned across Northamptonshire in the coming decade, with over 60,000 houses and associated infrastructure planned to be built by 2031. The National Infrastructure Commission also suggested the construction of 1 million new properties across the Ox-Cam Arc, to help support increased growth and development in this area to 2050⁴². As such there is a vital need to focus on and plan to adapt and mitigate against these substantial pressures and reduce their climate impacts.

The Local Plan documents of the county's planning authorities have been, or are in the process of being, reviewed to ensure policies are in place to encourage sustainable construction and adaptation. Surface water management plans for new developments have also been reviewed.

District and borough authorities are developing Green Infrastructure Plans as part of their evidence bases to inform their Part 2 Local Plans, which will help guide future infrastructure needs.

A number of Green Infrastructure projects have been implemented across the county. These include the implementation of Sustainable Drainage Systems (SuDS) as part of NCC's role as the LLFA for Northamptonshire; working with KierWSP (the contractor working in partnership with the County Council) to maintain and improve the highways infrastructure; working with borough and district councils to increase the number of street trees in the county; and exploring opportunities for large scale woodland creation in planned sustainable urban extensions.

8.2. Healthy and Resilient Communities

The **Green Leaders** was a three year project funded via Big Lottery Fund and delivered by Groundwork Northamptonshire, which aims to recruit 50 young adults between 14-19 years old each year, to raise awareness of climate change issues and preparedness to impacts, in their local communities.

An update to the **Northamptonshire Local Flood Risk Management Strategy** was endorsed and approved by NCC Cabinet in November 2016 and covers the period until 2021, at which point the Strategy will be updated. An action plan is also updated and monitored annually detailing how local flood risk is being managed across the County.

Surface Water Management Plans⁴³ (SWMP) are now complete for all district and borough councils in Northamptonshire

⁴² MHCLG : The Oxford to Cambridge Arc
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/799993/OxCam_Arc_Ambition.pdf

⁴³ See the 'Statutory and Project Documents' section of the Flood Library for the SWMPs -
<https://www.floodtoolkit.com/pdf-library/>

A **Groundwater Flood Risk Study for Northamptonshire**⁴⁴ was completed in 2016 and serves to improve understanding of the risk from groundwater flooding in the county and as a result three groundwater monitoring systems have been installed in Boughton, Helmdon and Corby, which will collect data until 2021 to inform whether a county-wide groundwater alert system could be developed.

A process and formal protocol for the reporting and investigation of flooding incidents is in use and regularly exercised.

Northamptonshire County Council participated in three **Pathfinder Projects**, funded by DEFRA, as one of thirteen local authorities exploring the ways in which communities can be supported to improve their flood resilience. The Northamptonshire Pathfinder Project set out to provide information about community flood resilience through an online toolkit detailing ‘how to’ information on the actions residents, businesses and communities can take to improve their flood resilience. The Northamptonshire County Council Flood Toolkit is now live and publicly accessible: <https://www.floodtoolkit.com/>.

Northamptonshire County Council have also secured funding to carry out a **Property Flood Resilience Pathfinder** project across the Ox-Cam Arc, which will help support the uptake of Property Flood Resilience measures in communities and businesses.

The impact of climate change on health also needs to be considered. In particular, extreme weather conditions such as heat waves, severe cold snaps and flooding present challenges to the delivery of health services as well as introducing new risks to health. The NHS funded Sustainable Development Unit works to promote sustainability across the public health and social care system. They have developed a toolkit – “Under the Weather - Adapting to a changing climate”⁴⁵ – to support Health and Wellbeing boards, and others, and ensure organisations and communities are prepared for the impacts of climate change.

8.3. Natural Environment, Agriculture and Forestry

The Nene Valley Nature Improvement Area (NIA) has created and restored 115 hectares of wildflower meadows, enhanced 4km of river through improvement to water quality and river habitats, and improved public access to the area which attracts 2.4 million visitors a year. A Business Plan for the NIA has been created, which covers 2015-2020⁴⁶.

An annual **Northamptonshire Tree Planting Scheme**, delivered in conjunction with the Woodland Trust, has resulted in over **250,000 trees being planted in schools, communities and farms** across Northamptonshire since 2012.

⁴⁴ See the ‘Statutory and Project Documents’ section of the Flood Library for the Groundwater Study - <https://www.floodtoolkit.com/pdf-library/>

⁴⁵ Under the Weather – Adapting to a changing climate - <http://www.sduhealth.org.uk/areas-of-focus/community-resilience.aspx>

⁴⁶ <https://www.wildlifebcn.org/sites/default/files/2019-01/Nene%20Valley%20NIA%202015-20%20Business%20Plan.pdf>

The **Yardley Whittlewood Ridge project** has engaged with over 250 landowners in an attempt to enhance ancient woodland habitats in the region with tree packs being delivered to over 40% of the landowners engaged.

There has also been the continued **development of the Guidance on Highway Tree Planting**, helping to encourage tree planting on new and existing developments, as well as a trial of a slow/low growing climate resilient grass seed mix for the county verges to help reduce maintenance costs and help in adapting to a changing climate. This trial was completed in 2016 and seed mix sent to Development Control to be used as the standard mix for the future.

Biodiversity in the county has improved, with the percentage of Local Wildlife Sites in positive management up to **43% in 2017/18**; from 22% in 2008/9.

The **Biodiversity Action Plan 2015 – 2020**⁴⁷ has now been published on the planning section of the NCC website. This document sets out the highest priorities for action to conserve Northamptonshire’s most threatened and declining habitats and species.

Numerous **Wildflower Projects** have been initiated by Daventry District Council since 2014, providing a total of 135 community groups with various mixes of wildflower seeds to improve biodiversity in their local community.

The **Nene Catchment Partnership**⁴⁸ (between Natural England, the Environment Agency and River Nene Regional Park) has been running since 2009 with the aim of promoting Catchment Sensitive Farming. This is land management that minimises pollution of watercourses through an arrangement of measures such as appropriate management of the use of fertilisers and pesticides and promoting good soil structure and rain infiltration.

8.4. Business, Industry and Commerce

Business and supply chain resilience is high on the agenda of many of the partners involved in the Climate Change Strategy.

The **Greater South East Energy Hub** is an excellent source of technical support regarding energy efficiency, or the Renewable Heat Incentive scheme.

SEMLEP also keeps a list of regularly updated business energy funding and networking opportunities on its website⁴⁹.

8.5. Local Government and Public Services

‘Planning to adapt’ activities will continue to be embedded into public sector processes, practices and policies.

⁴⁷ Biodiversity Action Plan 2015-2020 - <http://www3.northamptonshire.gov.uk/councilservices/environment-and-planning/planning/planning-policy/archaeology-biodiversity-and-landscape/Pages/biodiversity.aspx>

⁴⁸ River Nene Regional Park, Catchment Sensitive Farming - <http://www.riverneneregionalpark.org/projects/catchment-sensitive-farming-csf/>

⁴⁹ <https://www.semlep.com/energy/>

9. Implementation of the Climate Change Strategy

The Climate Change Strategy will continue to be implemented by NCCOG in association with a range of partners as relevant for each activity. In addition there are a number of groups that focus on specific areas of the Strategy (e.g. NCCOG, Northants Warm Homes, Northamptonshire Local Nature Partnership and many others) to ensure that the actions are taken forward and that objectives and targets are met.

Each year, the Strategy will be supported by an annual Action Plan that covers each area of the Strategy and provides additional information about what will be done, the measures that will be used to track progress, and the targets that have been set. The actions, which will follow the headings used in the Strategy, will highlight the 'lead organisation' for each activity and be funded/resourced appropriately.

These annual Action Plans will provide the framework for monitoring and capturing the various activities being undertaken to tackle the causes and effects of climate change. They will be actively monitored at the quarterly NCCOG meetings with progress on actions assessed using a RAG rating.

The Action Plan will be reviewed at the end of each financial year and a further Action Plan will be developed for the following year. Targets will also be reviewed regularly to ensure that they are consistent with the evolving science and any changes to related national or regional strategies.

This Climate Change Strategy covers the period 2020-23. Following this period, the Strategy will be reviewed to report on whether the objectives have been met, and to highlight any and all achievements over those three years. A refresh to this Strategy for 2023 will then be considered in light of any legislation changes, and national, regional and local priorities and in light of the formation of the two new Unitary authorities for Northamptonshire.

Appendices

Appendix 1 – Northamptonshire Climate Change Officer Group (NCCOG) – Membership

Appendix 2 – Summary of emissions by Local Authority area

Appendix 1 – Northamptonshire Climate Change Officer Group (NCCOG) Current Membership

- Northamptonshire County Council
- Corby Borough Council
- Daventry District Council
- East Northamptonshire Council
- Kettering Borough Council
- Northampton Borough Council
- South Northamptonshire Council
- Borough Council of Wellingborough
- Northamptonshire Police
- Northamptonshire General Hospital
- University of Northampton
- SEMLEP
- Groundwork Trust
- Northamptonshire ACRE
- North Northants Joint Planning and Delivery Unit
- West Northants Joint Planning Unit
- Northamptonshire Waste Partnership
- Northants Warm Homes Partnership
- Northamptonshire Highways (KierWSP)
- Electric Corby
- Environment Agency
- Northampton Partnership Homes

Appendix 2 – Summary of emissions by Local Authority area (within scope of Local Authority influence)

Local Authority Area	Year	Industry and Commercial Total (kt CO ₂)	Domestic Total (kt CO ₂)	Transport Total (kt CO ₂)	Grand Total Emissions (kt CO ₂)	Population ('000s)	Industry and Commercial Per Capita (t)	Domestic Per Capita (t)	Transport Per Capita (t)	Grand Total Per Capita Emissions (t)
Corby	2005	462.0	138.7	94.3	695.1	54.5	8.5	2.5	1.7	12.8
	2006	458.8	138.2	92.7	689.6	55.4	8.3	2.5	1.7	12.4
	2007	440.0	134.4	92.8	667.1	56.8	7.7	2.4	1.6	11.7
	2008	423.7	134.2	88.4	646.3	57.9	7.3	2.3	1.5	11.2
	2009	364.9	122.3	85.8	573.0	59.0	6.2	2.1	1.5	9.7
	2010	412.2	133.0	85.7	630.9	60.1	6.9	2.2	1.4	10.5
	2011	357.2	117.0	84.0	558.1	61.6	5.8	1.9	1.4	9.1
	2012	385.8	124.9	82.5	593.3	63.1	6.1	2.0	1.3	9.4
	2013	385.9	123.3	82.4	591.6	64.2	6.0	1.9	1.3	9.2
	2014	328.6	103.6	85.2	517.4	65.4	5.0	1.6	1.3	7.9
	2015	297.5	102.4	87.2	487.2	66.9	4.5	1.5	1.3	7.3
	2016	280.7	101.3	85.7	467.8	68.3	4.1	1.5	1.2	6.8
	2017	269.7	98.3	84.9	452.9	69.5	3.9	1.4	1.2	6.5
Percentage change		-41.6%	-29.1%	-10%	-34.8%	27.5%	-54.1%	-44%	-29.41%	-49.2%
Daventry	2005	287.6	205.5	315.1	808.2	75.7	3.8	2.7	4.2	10.7
	2006	288.6	205.5	316.3	810.3	76.5	3.8	2.7	4.1	10.6
	2007	271.8	199.5	323.9	795.2	77.0	3.5	2.6	4.2	10.3
	2008	262.4	199.5	300.5	762.3	77.1	3.4	2.6	3.9	9.9
	2009	241.7	180.9	285.4	708.0	77.7	3.1	2.3	3.7	9.1
	2010	265.8	194.5	284.3	744.6	77.7	3.4	2.5	3.7	9.6
	2011	240.6	169.8	283.5	693.9	78.1	3.1	2.2	3.6	8.9
	2012	240.8	182.2	282.6	705.7	78.3	3.1	2.3	3.6	9.0
	2013	230.8	176.0	277.2	683.9	78.6	2.9	2.2	3.5	8.7
	2014	195.9	146.3	281.7	623.9	79.0	2.5	1.9	3.6	7.9
	2015	196.4	140.3	283.8	620.6	80.0	2.5	1.8	3.5	7.8
	2016	171.5	140.4	275.6	587.5	81.1	2.2	1.8	3.2	7.2
	2017	151.0	131.8	300.1	582.8	82.6	1.8	1.6	3.7	7.1
Percentage change		-47.4%	-35.9%	-4.8%	-27.9%	9.1%	-52.6%	-40.7%	-11.9%	-33.6%

Local Authority Area	Year	Industry and Commercial Total (kt CO ₂)	Domestic Total (kt CO ₂)	Transport Total (kt CO ₂)	Grand Total Emissions (kt CO ₂)	Population ('000s)	Industry and Commercial Per Capita (t)	Domestic Per Capita (t)	Transport Per Capita (t)	Grand Total Per Capita Emissions (t)
East Northamptonshire	2005	168.1	213.0	272.6	653.7	81.9	2.1	2.6	3.3	8.0
	2006	172.5	213.4	269.2	655.1	83.3	2.1	2.6	3.2	7.9
	2007	162.3	209.0	271.7	642.9	84.8	1.9	2.5	3.2	7.6
	2008	156.4	207.5	258.6	622.5	85.6	1.8	2.4	3.0	7.3
	2009	139.5	188.5	248.0	576.0	85.9	1.6	2.2	2.9	6.7
	2010	153.3	204.6	243.1	601.0	86.3	1.8	2.4	2.8	7.0
	2011	137.3	177.6	238.4	553.3	86.9	1.6	2.0	2.7	6.4
	2012	145.0	192.0	238.3	575.3	87.4	1.7	2.2	2.7	6.6
	2013	132.5	185.7	235.6	553.8	88.0	1.5	2.1	2.7	6.3
	2014	136.8	155.4	239.5	531.7	88.9	1.5	1.7	2.7	6.0
	2015	168.2	150.0	247.6	565.8	89.7	1.9	1.7	2.8	6.3
	2016	116.4	149.2	247.8	513.3	91.4	1.3	1.6	2.7	5.6
	2017	105.0	138.9	253.5	497.4	93.1	1.1	1.5	2.7	5.3
Percentage change		-37.5%	-34.8%	-7%	-23.9%	13.7%	-47.6%	-42.3.7%	-18.2%	-33.8%
Kettering	2005	221.8	223.7	300.4	745.9	86.6	2.6	2.6	3.5	8.6
	2006	241.2	223.0	308.3	772.5	88.0	2.7	2.5	3.5	8.8
	2007	222.0	216.9	314.2	753.1	89.9	2.5	2.4	3.5	8.4
	2008	222.1	217.0	298.4	737.5	91.2	2.4	2.4	3.3	8.1
	2009	193.1	195.6	277.6	666.2	92.1	2.1	2.1	3.0	7.2
	2010	239.2	212.0	280.4	731.6	92.9	2.6	2.3	3.0	7.9
	2011	219.5	184.9	274.4	678.8	93.8	2.3	2.0	2.9	7.2
	2012	232.4	199.4	270.9	702.7	94.8	2.5	2.1	2.9	7.4
	2013	234.6	194.1	269.4	698.1	95.8	2.4	2.0	2.8	7.3
	2014	199.7	161.8	277.4	638.9	96.9	2.1	1.7	2.9	6.6
	2015	191.2	157.9	286.1	635.2	97.7	2.0	1.6	2.9	6.5
	2016	180.8	156.9	289.1	626.8	98.9	1.8	1.6	2.9	6.3
2017	172.6	148.2	294.6	615.4	100.3	1.7	1.5	2.9	6.1	
Percentage change		-22.2%	-33.7%	-1.9%	-17.5%	15.8%	-34.6%	-42.3%	-17.1%	-29%

Local Authority Area	Year	Industry and Commercial Total (kt CO ₂)	Domestic Total (kt CO ₂)	Transport Total (kt CO ₂)	Grand Total Emissions (kt CO ₂)	Population ('000s)	Industry and Commercial Per Capita (t)	Domestic Per Capita (t)	Transport Per Capita (t)	Grand Total Per Capita Emissions (t)
Northampton	2005	585.5	490.2	322.6	1,398.3	196.8	3.0	2.5	1.6	7.1
	2006	578.0	481.9	321.0	1,380.9	200.4	2.9	2.4	1.6	6.9
	2007	546.5	469.1	320.8	1,336.4	203.0	2.7	2.3	1.6	6.6
	2008	547.2	469.7	308.6	1,325.5	205.6	2.7	2.3	1.5	6.4
	2009	448.8	418.1	296.3	1,163.3	207.9	2.2	2.0	1.4	5.6
	2010	466.6	450.7	292.2	1,209.5	210.1	2.2	2.1	1.4	5.8
	2011	424.6	392.8	283.2	1,100.6	212.5	2.0	1.8	1.3	5.2
	2012	487.0	424.8	279.7	1,191.4	214.6	2.3	2.0	1.3	5.6
	2013	445.8	413.0	277.7	1,136.4	216.7	2.1	1.9	1.3	5.2
	2014	397.5	342.6	286.1	1,026.3	219.5	1.8	1.6	1.3	4.7
	2015	332.0	332.0	289.8	953.8	222.5	1.5	1.5	1.3	4.3
	2016	294.4	325.7	315.5	935.7	224.5	1.3	1.5	1.4	4.2
	2017	273.6	307.6	315.9	897.1	225.7	1.2	1.4	1.4	4.0
Percentage change		-53.3%	-37.2%	-2.1%	-35.8%	14.7%	-60%	-44%	-12.5%	-43.7%
South Northamptonshire	2005	220.1	225.6	292.1	737.7	84.9	2.6	2.7	3.4	8.7
	2006	217.3	226.6	289.2	733.1	85.5	2.5	2.6	3.4	8.6
	2007	203.9	222.6	293.2	719.7	85.9	2.4	2.6	3.4	8.4
	2008	204.5	222.7	279.6	706.8	85.8	2.4	2.6	3.3	8.2
	2009	189.1	199.7	264.4	653.2	85.7	2.2	2.3	3.1	7.6
	2010	195.1	216.0	261.6	672.7	85.6	2.3	2.5	3.1	7.9
	2011	177.0	189.6	257.6	624.2	85.4	2.1	2.2	3.0	7.3
	2012	198.0	203.2	257.6	658.8	86.4	2.3	2.4	3.0	7.6
	2013	189.8	197.3	255.3	642.3	87.2	2.2	2.3	2.9	7.4
	2014	190.7	166.2	260.5	617.4	88.2	2.2	1.9	3.0	7.0
	2015	167.1	159.5	270.0	596.6	89.1	1.9	1.8	3.0	6.7
	2016	137.0	156.6	285.7	579.3	89.9	1.5	1.8	3.1	6.4
	2017	128.2	145.7	291.1	565.0	91.1	1.4	1.6	3.2	6.2
Percentage change		-41.8%	-35.4%	-0.4%	-23.4%	7.3%	-46.1%	-40.7%	-5.9%	-28.7%

Local Authority Area	Year	Industry and Commercial Total (kt CO ₂)	Domestic Total (kt CO ₂)	Transport Total (kt CO ₂)	Grand Total Emissions (kt CO ₂)	Population ('000s)	Industry and Commercial Per Capita (t)	Domestic Per Capita (t)	Transport Per Capita (t)	Grand Total Per Capita Emissions (t)
Wellingborough	2005	223.2	180.8	184.4	588.4	74.0	3.0	2.4	2.5	8.0
	2006	226.2	178.4	182.3	586.9	74.5	3.0	2.4	2.4	7.9
	2007	219.4	173.2	183.4	576.1	74.7	2.9	2.3	2.5	7.7
	2008	211.7	173.2	175.1	560.1	75.1	2.8	2.3	2.3	7.5
	2009	187.7	155.0	174.7	517.4	75.1	2.5	2.1	2.3	6.9
	2010	192.6	166.3	171.6	530.5	75.2	2.6	2.2	2.3	7.1
	2011	164.8	144.7	164.2	473.7	75.6	2.2	1.9	2.2	6.3
	2012	190.1	156.6	163.7	510.4	76.1	2.5	2.1	2.2	6.7
	2013	179.9	151.7	160.5	492.1	76.0	2.4	2.0	2.1	6.5
	2014	179.4	126.2	163.5	469.2	76.4	2.3	1.7	2.1	6.1
	2015	152.5	122.8	169.8	445.1	77.2	2.0	1.6	2.2	5.8
	2016	125.8	121.0	167.0	413.9	78.4	1.7	1.5	2.1	5.3
	2017	115.6	114.6	169.0	399.2	78.9	1.5	1.5	2.1	5.1
Percentage change		-48.2%	-36.6%	-8.3%	-32.1%	6.6%	-50%	-37.5%	-16%	-36.2%
Northamptonshire Total	2005	2,168.3	1,677.5	1,781.6	5,627.4	654.5	3.3	2.6	2.7	8.6
	2006	2,182.5	1,666.9	1,779.0	5,628.4	663.6	3.3	2.5	2.7	8.5
	2007	2,065.9	1,624.6	1,800.1	5,490.6	672.1	3.1	2.4	2.7	8.2
	2008	2,027.9	1,623.8	1,709.3	5,360.9	678.2	3.0	2.4	2.5	7.9
	2009	1,764.7	1,460.1	1,632.3	4,857.1	683.5	2.6	2.1	2.4	7.1
	2010	1,924.7	1,577.1	1,618.8	5,120.6	688.0	2.8	2.3	2.4	7.4
	2011	1,721.1	1,376.5	1,585.2	4,682.7	694.0	2.5	2.0	2.3	6.7
	2012	1,879.1	1,483.0	1,575.4	4,937.6	700.6	2.7	2.1	2.2	7.0
	2013	1,799.3	1,441.0	1,558.1	4,798.3	706.4	2.5	2.0	2.2	6.8
	2014	1,628.7	1,202.1	1,594.0	4,424.7	714.4	2.3	1.7	2.2	6.2
	2015	1,504.9	1,164.8	1,634.5	4,304.3	723.0	2.1	1.6	2.3	6.0
	2016	1306.7	1151.1	1666.4	4124.3	732.5	1.8	1.5	2.3	5.6
2017	1215.7	1085	1709.1	4009.8	741.2	1.6	1.5	2.3	5.4	
Percentage change		-44%	-35.3%	-4%	-28.8%	13.2%	-51.5%	-42.3%	-14.8%	-37.2%