

CHAPTER 2 - DEVELOPMENT RATIONALE

Introduction	15
Global Climate Change	15
IPCC Special Report - Global Warming of 1.5 degrees, 2018	20
Climate Change in the UK	21
Regional Context	22
Climate Change Policy	23
International	23
The UK Response	24
The Ashford Borough Response	29
References	31

This page is intentionally blank



INTRODUCTION

2.1 This chapter sets out the wider international, national, regional and local context within which the East Stour Solar Farm is proposed. The merits of the various forms of renewable energy are also considered, along with the current and future energy generation mix of the UK.

2.2 The imperative need to reduce the carbon dependence of the economy is also discussed against the various alternative energy solutions.

Global Climate Change

2.3 It is internationally accepted that global warming and its association with climate change effects are a reality. Scientific opinion has converged on the appreciation that human activity, including the burning of fossil fuels, is rapidly changing the Earth's climate.

2.4 The Intergovernmental Panel on Climate Change (IPCC) was set up in 1988 by the World Meteorological Organisation and the United Nations Environment Programme to: 'assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human induced climate change, its potential impacts and options for adaptation and mitigation' (IPCC, 1998).

2.5 The IPCC is split into three working groups:

- Working Group 1: The Physical Basis of Climate Change;
- Working Group 2: Climate Change Impacts, Adaptation and Vulnerability; and
- Working Group 3: Mitigation.

2.6 Each Working Group is responsible for the publication of its own findings, and the IPCC are organised such that the Working Groups report their findings in order. Upon completion of each report an overarching 'synthesis' report is produced, which integrates the findings of the three groups.

2.7 The Working Groups publish in approximately 5-7 year cycles. The latest synthesis report provides the contribution of Working Group I (WGI) to the IPCC's Sixth Assessment Report, AR6, 'Climate Change 2021 The Physical Science Basis', and was published on 7th August 2021 (IPCC, 2021).

2.8 The findings of the Working Groups are clear and unequivocal, and as the IPCC assessments have progressed up to the present Assessment, the uncertainty levels have decreased.

Working Group 1: The Physical Basis of Climate Change

'It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.' (Paragraph A.1; IPCC, 2021)

2.9 It was reported by the IPCC in AR6 that each of the last four decades have been successively warmer than any decade that preceded it since 1850. Between 1850 and 2019 it is likely that humans have caused global surface temperature to increase by 1.07°C; a rate that is unprecedented in at least the last 2000 years.

2.10 Not only is the rate of change unprecedented but also the scale of recent changes is unlike anything previously seen:

- globally averaged precipitation over land has likely increased since 1950, with a faster rate of increase since the 1980s and human influence extremely likely to have contributed to the changes in near-surface ocean salinity;

- mid-latitude storm tracks have likely shifted poleward in both hemispheres since the 1980s;
- glaciers have retreated across the globe and this is very likely the result of human influence. It is also very likely that human activity has contributed to less snow cover since 1950 in the Northern Hemisphere and surface melting of the Greenland Ice Sheet over the last 20 years;
- it is virtually certain that the global upper ocean has warmed since the 1970s;
- the rate of change of global sea level rise has almost tripled between 1901-1971 and 2006-2018;
- climate zones have shifted poleward in both hemispheres, and the growing season has increased by up to two days per decade since the 1950s;
- it is virtually certain that hot extremes have become more frequent and more intense across most land regions since the 1950s, while cold extremes have become less frequent and less severe;

- marine heatwaves have approximately doubled in frequency since the 1980s;
- tropical cyclone occurrence has likely increased over the last four decades and the location of peak intensity has shifted northwards - patterns that are not explainable by internal variability; and
- human influence has likely increased the chance of compound extreme events since the 1950s. This includes increases in the frequency of concurrent heatwaves and droughts on the global scale (high confidence); fire weather in some regions of all inhabited continents (medium confidence); and compound flooding in some locations (medium confidence).

2.11 It is likely to very likely that human influence is a key driver for all of these effects.

2.12 AR6 reaffirms the conclusions of AR5 that at least net zero CO₂ and strong reductions in other greenhouse gas emissions are required in order to stabilise human-induced global warming. Five new possible

climate future scenarios have been considered across AR6 to explore the broader range of greenhouse gas, land use and air pollutant futures than addressed in AR5. These scenarios are illustrated in **Plate 2.1**.

- 2.13 SSP1-1.9 and SSP1-2.6 are scenarios that start in 2015 and have very low and low GHG emissions and CO₂ emissions declining to net zero around or after 2050, followed by varying levels of net negative CO₂ emissions.
- 2.14 SSP2-4.5 is the intermediate emissions scenario, and SSP3-7.0 and SSP5-8.5 are the high to very high greenhouse gas emissions scenarios.
- 2.15 As shown at **Plate 2.1**, compared to 1850-1900, global surface temperature averaged over 2081-2100 is very likely to be: 1.0-1.8°C higher under the very low greenhouse gas emissions scenario (SSP1-1.9); 2.1-3.5°C higher under the intermediate greenhouse gas emissions scenario (SSP2-4.5); and 3.3-5.7°C higher under the very high greenhouse gas emissions scenario (SSP5-8.5).

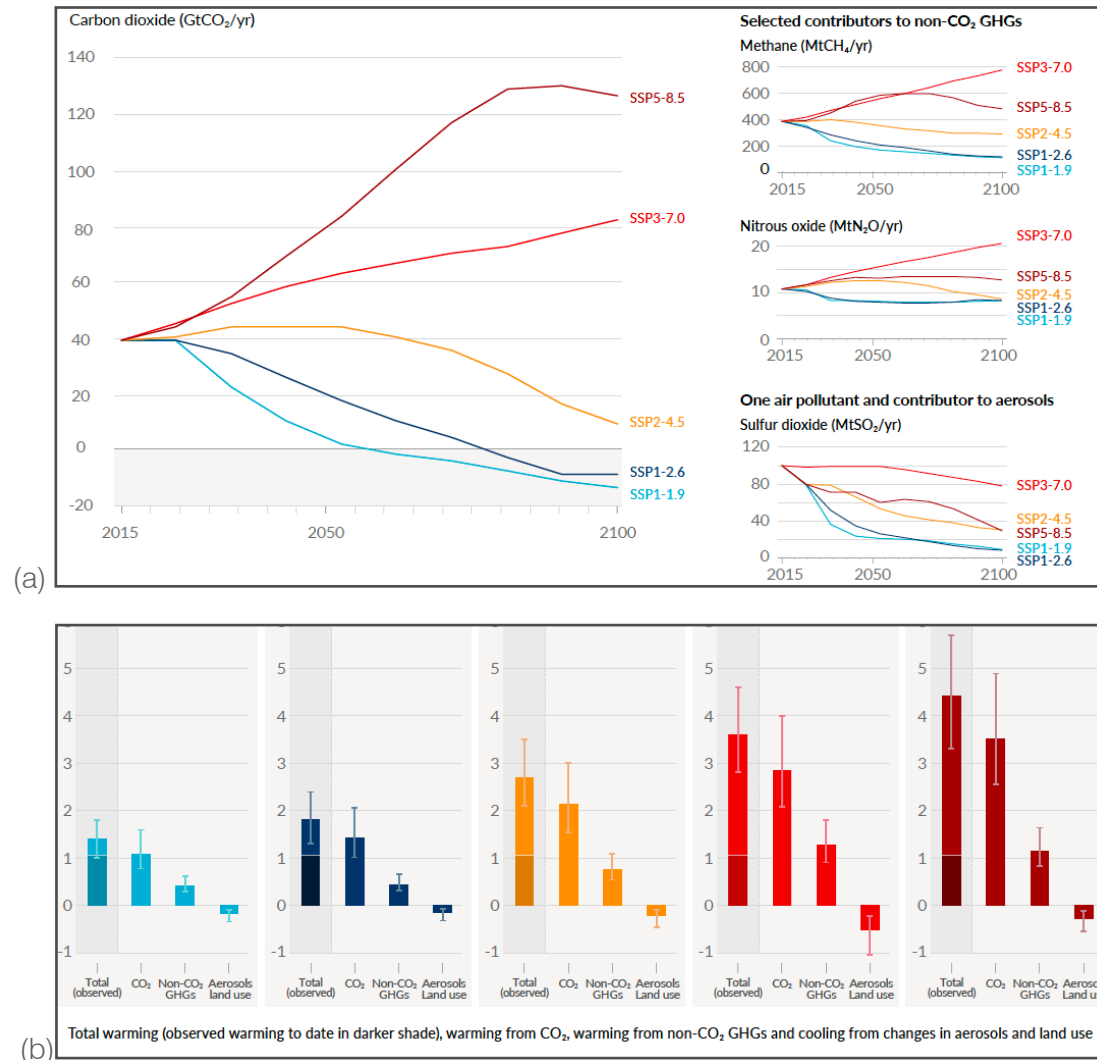


Plate 2.1 - (a) Future Annual Emissions of CO₂ (left) and of a Subset of Key Non-CO₂ Drivers (right) across Five Illustrative Scenarios; (b) Contribution to Global Surface Temperature Increase from Different Emissions, with a Dominant Role of CO₂ Emissions (IPCC, 2021)

2.16 As shown by **Plate 2.1 on page 17**, the scale of the challenge over the next two decades cannot be underestimated. However, this challenge must be achieved. Global warming must be limited to 1.5°C as soon as possible or the effects will become irreversible.

Working Group 2: Impacts, Adaptation and Vulnerability

2.17 The impacts of the greenhouse effect on global temperatures and global climates are now apparent. The consequences of increased temperatures on rising sea levels and decreases in the ice mass, snow precipitation and ice cover are regularly reported. Working Group 2 have found that evidence of climate change impacts is strongest and most comprehensive for natural systems. However, impacts on human systems have also been attributed to climate change (IPCC, 2014).

2.18 Changing precipitation, and melting snow and ice are affecting water resources (quality and quantity). Many terrestrial, freshwater and marine species have shifted their ranges, migration patterns and interactions

in response to climate change. It has also been found that negative impacts of climate change on crop yields have been more common than positive impacts. There has been increased heat related mortality and decreased cold related mortality in some regions as a result of warming, and local changes in temperature and rainfall have altered the distribution of some water borne illnesses and disease vectors.

2.19 Within the Fifth Assessment Report, Working Group 2 also considered evidence relating to the socio-economic impacts associated with climate change. They found that people who are socially, economically, culturally, politically, institutionally or otherwise marginalised are especially vulnerable to climate change and are also vulnerable to some adaptation and mitigation responses.

2.20 With a *very high confidence* level, Working Group 2 have found that impacts from climate related extremes (e.g. heat waves, droughts, floods, cyclones, wildfires) reveal *significant* vulnerability and exposure of some ecosystems and many human systems to current climate variability.

2.21 Impacts of such climate-related extremes include alteration of ecosystems, disruption of food production and water supply, damage to infrastructure and settlements, morbidity and mortality, and consequences for mental health and human well-being. For countries at all levels of development, these impacts are consistent with a significant lack of preparedness for current climate variability in some sectors.

2.22 For Europe, the key risks associated with climate change have been identified as:

- increased economic losses and people affected by flooding in river basins and coasts, driven by increasing urbanisation, increasing sea levels, coastal erosion and peak river discharges;
- increased water restrictions. Significant reduction in water availability from river abstraction and from groundwater resources, combined with increased water demand (e.g. for irrigation, energy and industry, domestic use) and with reduced water drainage and runoff as a result of increased

evaporative demand, particularly in southern Europe; and

- increased economic losses and people affected by extreme heat events: impacts on health and well-being, labour productivity, crop production, air quality, and increasing risk of wildfires in southern Europe and in the Russian boreal region.

2.23 It is reported that adaptation can prevent most of the projected damages associated with flooding. However, it is recognised that this will come at a high economic cost and will raise environmental and landscape concerns/objections.

2.24 By way of recent example, there have been a number of devastating floods across the UK in recent years. In December 2013, when floods hit large parts of southern England, it emerged afterwards that one of the villages flooded in the south-east had previously refused the offer of a flood defence due to aesthetic impacts on the village (Guardian, 2013).

2.25 More recently during the floods across Shropshire, Worcestershire

and Yorkshire in February 2020, flood barriers holding back the River Severn at Ironbridge buckled as river levels nearby peaked at 6.0m. It was reported that *'permanent flood defences are not a feasible option in a place like Ironbridge - its special historic and scientific significance means that temporary barriers are a better alternative'* (BBC News, 2020). The temporary defences were pushed back 2.0m by flood water. Again, this highlights an adaptation issue which will likely be encountered more regularly in coming years - the balance between the protection of important assets and communities against the need for permanent flood defences and their associated impacts.

2.26 Conversely, adaptation methods to address water restrictions and losses associated with extreme heat events largely require the adoption of a different approach to current practices. This includes the use of more water efficient technologies, adaptation of dwellings, and (pertinent to this project) reductions in emissions to improve air quality.

Working Group 3: Mitigation of Climate Change

2.27 Despite attempts to mitigate climate change, so far greenhouse gas emissions have continued to increase at an accelerated pace. Working Group 3 considered energy supply, transport, buildings, industrial processes, agriculture, forestry and spatial planning. Their report concluded that all sectors need to substantially reduce greenhouse gas emissions if we are to limit global warming to 2 degrees Celsius.

2.28 The reason for the accelerated increase in emissions is largely put down to increased use of fossil fuels in the energy and industry sectors. This is of particular concern for emerging economies who produce consumer goods for established economies.

2.29 The *'do nothing'* scenario would result in 4 degrees of global warming by the end of this century.

2.30 To prevent this, emissions need to be halved by 2050, and further after that. If emissions are not falling by 2030 it is twice as likely that we will not achieve this goal (IPCC, 2014). As

a result, the IPCC are recommending a substantial increase in low carbon energy prior to 2030, amongst other measures in different sectors. To achieve this, an increase in renewable energy supply is required, along with increases in nuclear energy and technological advances in large scale carbon capture and storage.

2.31 Whilst these measures are absolutely essential to limit global warming, they remain ambitious. The current baseline scenarios are expecting the emissions associated with energy supply to double or even treble by 2050. To achieve the reductions necessary, the low carbon electricity sector needs to increase from 30% of demand worldwide to 80% by 2050 (IPCC, 2014).

IPCC Special Report - Global Warming of 1.5 degrees, 2018

2.32 In between the usual 5-7 year cycle of IPCC Synthesis studies, the IPCC were invited by the United Nations Convention on Climate Change to produce a special report on the impacts of global warming of 1.5 degrees above pre-industrial levels, contained in the Decision of the 21st

Conference of Parties of the United Nations Framework Convention on Climate Change to adopt the Paris Agreement.

2.33 The IPCC reported that:

'Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate (high confidence)' (IPCC, 2018).

2.34 Of most alarm, it was reported that since Kyoto, global carbon dioxide emissions have continued to rise. If this trend continues, then a 1.5°C rise will occur before 2040.

2.35 In the short space of three years between the Special Report and publishing of the IPCC's Working Group I (WGI) contribution to the Sixth Assessment Report (AR6) (Climate Change 2021), the situation is more certain:

- *'climate change is already affecting every inhabited region of the world, be this through hot extremes, heavy rain or drought'*;

- *'global surface temperature will continue to increase until at least the mid-century under all emissions scenarios considered. Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO₂ and other greenhouse gas emissions occur in the coming decades'*;
- *'with every increment of global warming, changes get larger in regional mean temperature, precipitation and soil moisture'*;
- *'projected changes in extremes are larger in frequency and intensity with every additional increment of global warming'*; and
- *'continued global warming is projected to further intensify the global water cycle, including its variability, global monsoon precipitation and the severity of wet and dry events'*.

2.36 However, the IPCC also report that reaching and sustaining net zero global anthropogenic CO₂ emissions as well as reducing non-CO₂ emissions would halt anthropogenic global warming on multi-decadal timescales in the short term. In the longer term, there is a need to go further and not only sustain net zero emissions

but establish net negative CO₂ emissions. This is to prevent further warming from feedback loops caused by the initial warming event (such as the release of methane caused by the melting of Arctic permafrost), and to reverse ocean acidification and minimise sea level rise.

2.37 Internationally, the Special Report has attracted a great deal of attention, particularly by the younger generation inspired by youth campaigner Greta Thunberg. This in turn has led to declarations of Climate Emergencies by nations, including the UK, and local authorities.

Climate Change in the UK

2.38 An annual UK weather and climate report entitled 'State of the UK Climate' is produced every July by the Met Office and published by the Royal Meteorological Society. The latest, published in July 2021 (Kendon, et al., 2021), found that:

'Year 2020 was third warmest, fifth wettest and eight sunniest on record for the UK. No other year has fallen in the top-10 for all three variables for the UK.'

2.39 The State of the UK Climate report also found:

- *2020 was the third warmest year for the UK in a series from 1884;*
- *all the top 10 warmest years for the UK in the series from 1884 have occurred since 2002;*
- *2020 was the seventh consecutive year where the number of air and ground frosts was below the 1981–2010 average;*
- *heating degree days in 2020 were fifth lowest, and cooling and growing degree days equal-ninth/eighth highest, respectively for the UK in series from 1960;*
- *2020 was the UK's fifth wettest year in a series from 1862. 2020 also included the fifth wettest winter [and] the fifth driest spring;*
- *widespread and substantial snow events have occurred in 2018, 2013, 2010 and 2009, but their number and severity have generally declined since the 1960s; and*
- *2020 was the eighth sunniest year for the UK in a series from 1919, with 109% of the 1981–2010*

average and 113% of 1961–1990 average sunshine hours.

2.40 **Plate 2.2 on page 22**, produced by the University of Reading (Hawkins, 2020) and using UK Met Office Data illustrates the average annual UK temperature since 1884. Blues represent cool average temperatures, and reds represent warm average temperatures. The increase in average annual temperature is abundantly clear.

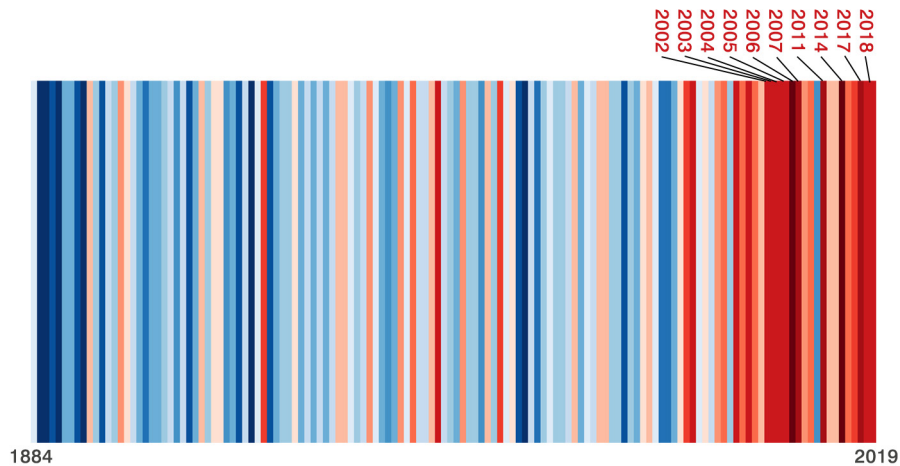


Plate 2.2 - UK Annual Temperature (Hawkins, 2020)

Regional Context

- 2.41 The East Stour Solar Farm is located within the County of Kent, in the south-east of England.
- 2.42 A number of climate change studies have been undertaken in the south-east of England, including 'The Climate Change Risk and Impact Assessment for Kent and Medway' (CCRIA), which was produced in 2019.
- 2.43 The report is based on the Met Office's UK Climate Projections (UKCP) for

the south-east, and was developed as a county-level version of the 2017 UK Climate Change Risk Assessment. It describes *'the changes Kent might face, and the potential risks to Kent's society, economy and environment'*.

- 2.44 The report warns of warmer, wetter winters and hotter, drier summers and predicts that by 2080:
 - *'summers are likely to be hotter by around 5°C to 6°C;*
 - *winters are likely to be warmer by around 3°C to 4°C;*

- *summer rainfall is likely to decrease by 30% to 50%;*
- *winter rainfall is likely to increase by 20% to 30%; and*
- *sea level rise is likely to increase by 0.8m'.*

2.45 According to the report:

'The impacts of climate change are likely to be felt acutely in Kent with its long, strategically important coastline, large number of properties at risk of flooding and warm summers compared with the rest of the United Kingdom. It is imperative that the impacts of climate change are considered alongside other drivers of change including economic fluctuations, population growth and demographic shifts.'

2.46 The CCRIA report describes seven priority climate change risks that are likely to have the most significant impacts within the counties of Kent and Medway. Those are:

- *risks to health, wellbeing, productivity and infrastructure from high temperatures - Kent is the warmest part of the UK;*
- *flooding and coastal change risks to communities, businesses and infrastructure - There are currently*

88 000 properties in Kent at risk of flooding, and the risk is projected to worsen with increased winter rainfall and increased frequency and severity of intense rainfall events throughout the year;

- *risk of storm events / intense rainfall and sea level rise impacting productivity and transport infrastructure;*
- *risks of shortages in the public water supply and for agriculture, energy generation and industry - Kent is an area of water stress and has experienced numerous drought events since the 1970s;*
- *overheating, flooding, drought and coastal change risks for natural capital (including changes to biodiversity, loss of habitat, increased erosion);*
- *soil erosion and slope destabilisation as a result of flooding and drought impacting infrastructure, natural environment and productivity; and*
- *risk of new and emerging pests and diseases and invasive non-native species affecting people and biodiversity.*

2.47 Kent County Council's concern for the future and willingness to act are evident, and a 'Kent-wide adaptation programme to build the county's resilience to climate change' is planned for the next few years.

2.48 Kent County Council and a number of Kent districts (including Swale, Maidstone, Gravesham and Canterbury) declared a Climate Emergency in 2019.

2.49 Ashford Borough Council have not taken that step yet. Instead, they have made a commitment to become carbon neutral by 2030. In May 2021 the Council's cabinet approved the draft Carbon Neutral Action Plan, in which they pledge to achieve carbon neutrality within the council's own estate and operations by 2030. The report acknowledges that achieving carbon neutrality across the borough by 2030 may prove challenging, but the Council remains committed to achieve this as soon as possible.

2.50 'Increasing local energy generation through renewable energy sources' is one of the actions identified by Ashford Borough Council as a means to reducing their carbon footprint.

2.51 This is discussed from **Paragraph 2.98 on page 29.**

CLIMATE CHANGE POLICY

International

2.52 Against the backdrop of evidence of global warming induced climate change, in 1992 the United Nations (UN) concluded that the impact of climate change was so serious that it was necessary for member nations to agree to a reduction in greenhouse gases. The United Nations Convention on Climate Change took place at the Rio Earth Summit. Following detailed cross-nation dialogue a treaty was agreed. The treaty came into effect in 1994.

2.53 The Kyoto Protocol was drawn up in 1997 to implement the UN Convention on Climate Change. Industrialised nations made the commitment to reduce their emissions of greenhouse gases by an average of 5.2% of 1990 levels during the period 2008-2012.

2.54 To reach a legally binding status, the Kyoto Protocol required the commitment of enough nations to account for at least 55% of the 1990 levels of greenhouse gas emissions. With the Russian government's

assent to the Agreement in 2004, the Kyoto Protocol was ratified in 2005 and became legally binding on those signatory nations. Countries accounting for over 63% of global CO₂ emissions have now signed to the agreement, binding 192 Countries plus the European Community as a regional member to the protocol.

- 2.55 If any of the Countries failed to meet their 2012 target, then the Protocol legally required them to make up the difference during the second commitment period after 2012 plus an additional 30% reduction penalty. All countries that participated in the first commitment period met their obligations.
- 2.56 Since Kyoto, the member states have regularly met to discuss progress at the Conference of the Parties (COP).
- 2.57 The second commitment period was negotiated in December 2012 at COP18 in Doha. Not all of the industrialised parties of the first commitment period committed to the second. However, the actions of the EU, Australia and Norway in committing to the second period ensured that the Kyoto Agreement remains in force. Of significance, COP18 also agreed to

provide developing countries with the assurance of funds to repair the 'loss and damage from climate change' (UNFCCC, 2012).

- 2.58 As of October 2020, 147 states have accepted the Doha Amendment. For the amendment to come into force, it needs to be accepted by 144 states. As such, the Amendment entered into force on 31st December 2020.
- 2.59 Negotiations for the post-2020 period resulted in the adoption of the Paris Agreement, which is a separate UN instrument rather than an amendment of Kyoto

The Paris Agreement

- 2.60 The Paris Agreement is arguably the most significant UN Framework Convention on Climate Change agreement since Kyoto.
- 2.61 It was negotiated by 196 states at COP21 near Paris and adopted on 12th December 2015. All UNFCCC members have signed the agreement and 189 have become party to it.
- 2.62 In line with the IPCC Special Report discussed from **Paragraph 2.32 on page 20**, the long-term temperature goal of the Paris Agreement is to limit

the global average temperature rise to 'well below 2 degrees Celsius above pre-industrial levels; and to pursue efforts to limit the increase to 1.5 degrees Celsius'.

- 2.63 The operational details of the Paris Agreement were agreed at COP24, Poland in 2018.

COP26 Summit

- 2.64 The 26th UN Climate Change Conference of the Parties (COP) summit took place in Glasgow from 31st October to 12th November 2021.

- 2.65 The UK Government in summarising the event (UK.GOV, 2021) states:

The outcome includes a series of actions that all Parties are expected to take to accelerate their efforts. This includes:

- *A stronger commitment to limit global temperature rises to 1.5 degrees, and greater acknowledgement of the latest science which reflects the urgent need to take action during this critical decade.*
- *The text includes 'phase-down of unabated coal power' and*

'inefficient fossil fuel subsidies', as well as 'mid-century net zero'. This language has never been included in UN text before.

- Parties are expected to revisit their 2030 emission reduction targets in 2022 and, where necessary, strengthen them to bring them in line with the Paris Agreement temperature goal.

The UK Response

2.66 The United Kingdom were at the forefront of climate change policy with the production of the first IPCC report and the formation of the UN Convention on Climate Change. At the beginning of Labour's term in Government from 1997, the 12% emissions reduction target required by the EU was extended by the Government to a national 20% emissions reduction by 2012. This was later reinforced through the announcement of the aspiration to reduce CO₂ levels by 60% of their 1990 levels by 2050.

Climate Change Act 2008

2.67 The Climate Change Act 2008 sets a legal duty on the Secretary of State to

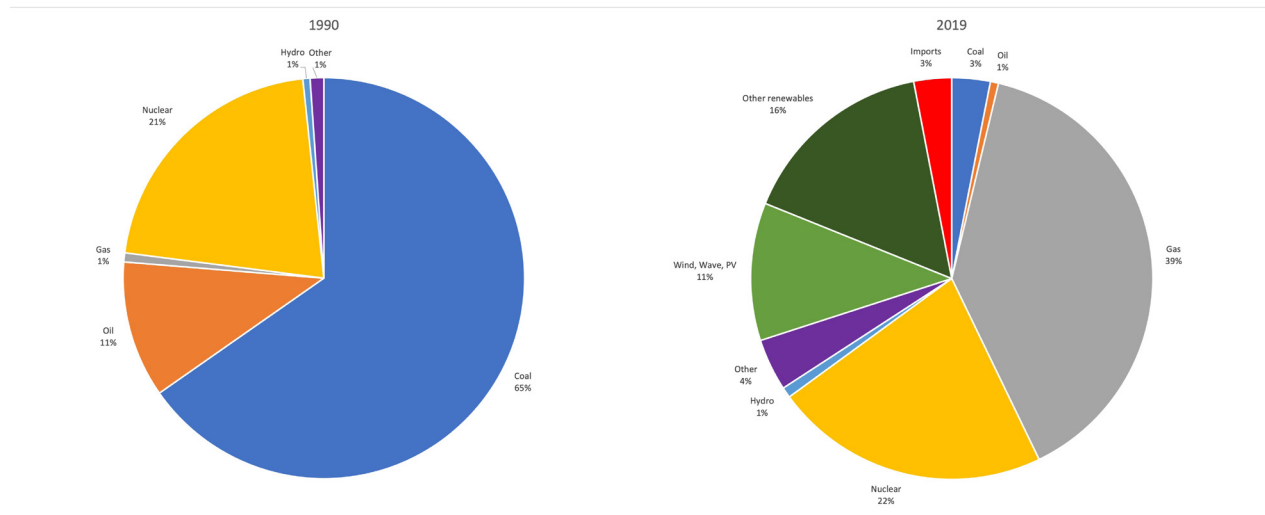


Plate 2.3 - 1990 Electricity Fuel Mix compared to 2019 Electricity Fuel Mix

(Source: Digest of UK Energy Statistics (DTI, 2000)(BEIS, 2020a)

reduce greenhouse gas emissions by 2050.

2.68 At the time of Royal Assent, the Act set the target for greenhouse gas emissions to be 80% lower than 1990 levels by 2050. The Act also set an interim target of a 34% reduction by 2020.

2.69 Through the Climate Change Act, the UK has made significant progress in the electricity sector. This is illustrated in **Plate 2.3** which compares the most

recent fuel mix data (2019) to that of 1990.

2.70 This illustrates the significant decline of coal fired generation and the increase of renewable generation from near zero to 24% (10% wind, wave and PV; 14% thermal including waste). It also demonstrates an increased reliance on natural gas generation from 1% to 38%.

2.71 The success of the power sector is largely due to binding targets set

through a mechanism called the Renewables Obligation (requiring 10% of generation to be from renewables by 2010, 15% by 2015 and then 30% by 2020) and later Feed-in Tariffs and Contracts for Difference.

2.72 The Climate Change Act is managed through a series of rolling five year carbon budgets and associated interim targets. The Fifth Carbon Budget was passed in 2016. This recommended that annual emissions be limited to an average of 57% below 1990 levels by 2032.

2.73 The carbon budget is established by the Climate Change Committee, an independent body formed under the Climate Change Act to advise the UK and devolved Governments and Parliaments on tackling and preparing for Climate Change. The advice is considered by Parliament and, if accepted, the resultant targets are adopted.

2.74 The carbon budget is formed through careful consideration of cross-sector emissions including power, buildings, industry, transport, agriculture, land use, forestry, waste and fluorinated gases.

2.75 For the 2015 budget the Committee produced a specific power sector report entitled 'Sectoral Scenarios for the Fifth Carbon Budget' (October 2015). This report found:

- up to 200TWh of new generation will be needed in the 2020s to replace generation from retiring coal and nuclear capacity and to meet increases in energy demand during this time. The 2020s are a crucial decade for the power sector;
- low carbon generation is likely to be cost-competitive and can be delivered without subsidy. This is true even when these projects face the full cost of intermittency; and
- low carbon options *'represent good value investments for a society committed to climate targets and are included in our scenarios: onshore wind and ground mounted solar from the first half of the decade and nuclear, offshore wind and potentially carbon capture and storage in the second half of the decade'*.

Net Zero

2.76 On 27th June 2019, the Government formally amended the target within the Climate Change Act as follows:

'It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline.'

2.77 The United Kingdom is the first member of the G7 group of industrialised nations to legislate for net zero emissions.

2.78 To put into context the challenge of meeting Net Zero, the Climate Change Committee report that the UK emissions were 44% below 1990 levels in 2018. The first (2008-2012) and the second (2013-2017) carbon budgets were met and the UK is on track to meet the third (2018-2022) carbon budget. However, the Country is not on track to meet the fourth, which covers the period 2023 to 2027.

2.79 The Committee report that:

'Meeting future carbon budgets and the UK's 2050 target to reduce emissions by at least 100% of 1990 levels will require reducing domestic emissions by at least 3% of 2018 emissions, that

- is 50% higher than under the UK's previous 2050 target and 30% higher than achieved on average since 1990. This is an indication of how substantial the step up in action must be to cut emissions in every sector' (CCC, 2019a).*
- 2.80 In their advice to Government on implementing a 100% net zero target, in May 2019 the Committee published '*Net Zero - The UK's contribution to stopping global warming*' (CCC, 2019b).
- 2.81 This report recognises the foundations that are in place to deliver the previous 80% reduction target and describes the '*technically feasible but highly challenging*' '*further ambitions*' that must be achieved to reach 100% or Net Zero.
- 2.82 All sectors must play a role and it is recognised that societal changes addressing our habits and the way that we do things need to collectively happen to achieve Net Zero. These measures include:
- resource and energy efficiency;
 - societal choices to less carbon intensive activities, such as
- reduction in the consumption of meat;
 - extensive electrification, particularly of transport and heating, supported by a major expansion of renewable and low carbon power generation;
 - development of a hydrogen economy;
 - Carbon Capture and Storage; and
 - better land use with more emphasis on carbon sequestration and biomass production.
- 2.83 The measures above require a doubling of electricity demand, with all power produced from low-carbon sources.
- 2.84 To set the path to Net Zero, the Climate Change Committee published '*Policies for the Sixth Carbon Budget and Net Zero*' in December 2020 (CCC, 2020). The Committee state that this Sixth Budget is '*the most comprehensive advice we have ever produced*'. The Sixth Budget became law under the Carbon Budget Order 2021 on 24th June 2021, in advance of the UK hosting the 26th Climate Conference, COP26.
- 2.85 As well as the most comprehensive, it is also their most ambitious. The recommended pathway requires a 78% reduction in UK territorial emissions between 1990 and 2035 – bringing forward the UK's previous 80% target by almost 15 years. Indeed, this meets the 'highest possible ambition' scenario of the Paris Agreement.
- 2.86 To set the economic context for the Sixth Carbon Budget, the Committee highlight how the economic and social context for climate action has changed in important ways since the UK set the 2050 Net Zero target. The COVID-19 pandemic has significantly changed the economic backdrop in the UK and globally. Employment, GDP and business investment have all fallen, despite record low interest rates. The Committee state that increasing investment in green jobs could support the UK's recovery.
- 2.87 This is in line with the Prime Minister's 10 Point Green Plan (HM Government, 2020), which amongst other things seeks to increase sustainable generation, and accelerate the shift to electric vehicles, green public transport and green buildings.

2.88 The Sixth Carbon Budget requires action across four key areas:

- Reducing demand for carbon-intensive activities (shifting diets away from meat and dairy; reducing waste; slower growth in flights and travel demand; improved efficiency of buildings, vehicles and industry);
- Take up of low-carbon solutions (by the early 2030s all new cars and vans and all boiler replacements in homes and other buildings must be low carbon – largely electric; by 2040s all HGVs are to be electric or hydrogen powered);
- Expand low carbon energy supplies (low carbon electricity is now cheaper than high-carbon; electricity demand rises 50% to 2035, doubling or even trebling by 2050; low carbon hydrogen scales up); and
- Land (and removals) (planting of 440 000ha of mixed woodland; 260 000ha of agricultural land shifts to bioenergy production, including short rotation forestry; peatland restored and low carbon farming adopted. By 2035

bioenergy, using UK biomass, with Carbon Capture Storage will deliver removals of CO₂ at scale).

2.89 The Sixth Carbon Budget ties in with the Energy White Paper (December 2020), the Government Response to the Future Homes Standard (January 2021) (MHCLG, 2021a) and the 10 Point Green Plan. With all new cars and vans to be fully electric from 2030 and heating in new homes to be non-fossil from 2025, electricity demand is set to increase from c. 300TWh today, to 360TWh in 2030, 460TWh in 2035 and 610TWh in 2050. In addition to this, to produce hydrogen for transport, an additional 120TWh is required in 2050.

2.90 Renewable energy and battery storage (to manage variability) are key components of this drive. The Climate Change Committee's Net Zero scenario expects 80% of electricity to be supplied by renewable energy, of which wind will contribute 125GW and solar 85GW. Whilst the offshore resource will provide a significant portion of this, the Energy White Paper states that:

'Onshore wind and solar will be key building blocks of the future generation

mix, along with offshore wind. We will need sustained growth in the capacity of these sectors in the next decade to ensure that we are on a pathway that allows us to meet net zero emissions in all demand scenarios'.

2.91 Most recently the Government published their 'Net Zero Strategy: Build Back Greener' (DBEIS, 2021), which is aimed at following a path over the next three decades to avoid catastrophic climate change. The Government see the present challenge to meet Net Zero by 2050 as offering opportunity for a green industrial revolution. For power this means a fully decarbonised power system, including more solar energy.

2.92 The Net Zero Strategy also provides policies in relation to decarbonising industry, heat and buildings, transport, natural resources, waste and fluorinated gases, and greenhouse gas removals.

2.93 The top two commitments for power in the strategy are:

- *take action so that by 2035, all our electricity will come from low carbon sources, subject to security of supply, bringing forward*

the government's commitment to a fully decarbonised power system by 15 years; and

- *accelerate deployment of low-cost renewable generation, such as wind and solar through the Contracts for Difference scheme by undertaking a review of the frequency of the CfD auctions.*

2.94 The Net Zero Strategy highlights that 'solar and wind power are now cheaper than new coal and gas power plants in two-thirds of the world'. It is also acknowledged that following the path to Net Zero will provide a significant number of jobs and economic benefit for consumers and the country.

Renewable Energy Planning Policies

2.95 The Planning Statement submitted in support of the application discusses the planning policy position in detail. However, it is important to note that policy in relation to renewable energy is derived in the context of the identified need to decarbonise the energy system.

2.96 The National Planning Policy Framework (NPPF) (MHCLG, 2021b) provides the current legal basis and

guidance for determining planning applications. Paragraph 158 of the NPPF advises that local planning authorities should:

'a) not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and

b) approve the application if its impacts are (or can be made) acceptable⁵⁴. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should also expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas'.

(Note: Footnote 54 does not apply to solar projects and so is not considered further in this Chapter).

2.97 In other words, against the backdrop identified in this chapter, the need for renewable and low carbon energy is established.

The Ashford Borough Response

2.98 As stated in **Paragraph 2.49 on page 23**, Ashford Borough Council is yet to formally declare a Climate Emergency. However, its strategies and policies do reflect the threat of Climate Change and the need to take action at a local and regional level.

2.99 Ashford Borough Council has pledged to become carbon neutral by 2030 and is currently developing a Carbon Neutral Strategy to set out the actions required to achieve that ambition. The draft 'Ashford to Zero Plan: Our route to net zero carbon emissions' (2021) is currently under consultation.

2.100 The proposed action plan has eight priorities, two of which are directly relevant to renewable energy generation projects:

- *Priority 2 - Ensure the council's decision making processes, including those as the Local Planning Authority, strategic documents, plans and procedures contribute to reducing carbon emissions and increasing local resilience to climate change; and*

- *Priority 3 - Reduce reliance on fossil fuels for energy generation by increasing renewable energy generation and consumption.*

2.101 Expanding on the need for renewable energy, the draft report states that:

'Decarbonisation of energy production is necessary to meet our carbon neutral ambitions. The demand for energy from renewable and low carbon sources will increase as we use more electricity to heat our homes and power vehicles (...)

The majority of the energy we use is supplied from outside the borough, we can increase demand and therefore supply by purchasing energy from suppliers using renewable sources. In addition local renewable energy production reduces reliance on major energy suppliers and creates local income which can benefit local communities.'

2.102 In order to achieve this, Ashford Borough Council has set out two objectives:

- *increase number of sites suitable for renewable energy generation; and*
- *increase local renewable energy generation.*

2.103 Ashford Borough also falls within the remit of Kent County Council's climate change action. Their Environment Strategy (2016) and accompanying Implementation Action Plan (2017) outline the need for 'additional low carbon and appropriate renewable energy infrastructure' within the County.

Renewable Energy Planning Policies

2.104 The current Ashford Local Plan was adopted in February 2019. Its most relevant renewable energy policy is **ENV10 - Renewable and Low Carbon Energy**, which states that:

'Planning applications for proposals to generate energy from renewable and low carbon sources will be permitted provided that:

a) The development, either individually or cumulatively does not result in significant adverse impacts on the landscape, natural assets or historic assets, having special regard to nationally recognised designations and their setting, such as AONBs, Conservation Areas and Listed Buildings;

b) The development does not generate an unacceptable level of traffic or loss of amenity to nearby residents (visual impact, noise, disturbance, odour);

c) Provision is made for the decommissioning of the infrastructure once operation has ceased, including the restoration of the site to its previous use; and

d) Evidence is provided to demonstrate effective engagement with the local community and local authority.

A statement should be submitted alongside any planning application illustrating how the proposal complies with the criteria above and any mitigation measures necessary and be informed by a Landscape and Visual Impact Assessment'.

2.105 Ashford Borough Council has published guidance relating to small and large scale solar energy development. Their Renewable Energy Planning Guidance Note 2 - The Development of Large Scale (>50kW) Solar PV Arrays (2012) sets out the decision-making process followed when determining solar energy applications.

- 2.106 The report presents the planning application process, outlines the typical elements of solar farms, and discusses the assessments, constraints and mitigation/enhancement strategies to be considered by solar energy developers.
- 2.107 A complete discussion of the relevant planning policies to the proposed development, at National and Local level, is contained in the Planning Statement submitted alongside this Environmental Statement.

REFERENCES

Aecom, 2017, Renewable Energy for Kent - Baseline Carbon Emissions and Projected Domestic Electricity and Gas Demand, Kent County Council, UK

Ashford Borough Council, 2013, Renewable Energy Planning Guidance Note 2: The Development of Large Scale (>50kW) Solar PV Arrays, Ashford Borough Council, UK

Ashford Borough Council, 2019, Ashford Local Plan 2030, Ashford Borough Council, UK

Ashford Borough Council, 2021, Ashford to Zero Plan - Our Route to Net Zero Carbon Emissions (Consultation Draft), Ashford Borough Council, UK

BBC News, 2013, UN climate report: Key findings, dated 27 September 2013, retrieved from <https://www.bbc.co.uk/news/science-environment-24282150>

BBC News, 2020, England floods: Ten days 'of difficult conditions' expected, dated 27 February 2020, retrieved from <https://www.bbc.co.uk/news/uk-england-51653246>

Committee on Climate Change (CCC), 2015a, The Fifth Carbon Budget, HMSO, UK

Committee on Climate Change (CCC), 2015b, Sectoral Scenarios for the Fifth Carbon Budget Technical report, HMSO, UK

Committee on Climate Change (CCC), 2019a, Reducing UK Emissions, 2019 Progress Report to Parliament, HMSO, UK

Committee on Climate Change (CCC), 2019b, Net Zero - The UK's contribution to stopping global warming, HMSO, UK

Committee on Climate Change (CCC), 2020, Policies for the Sixth Carbon Budget and Net Zero, HMSO, UK

Department for Business, Energy and Industrial Strategy (BEIS), 2020a, Digest of UK Energy Statistics, HMSO, UK

Department for Business, Energy and Industrial Strategy (BEIS), 2020b, Energy White Paper, HMSO, UK

Department for Business, Energy and Industrial Strategy (BEIS), 2021, Net Zero Strategy: Build Back Greener, HMSO, UK

Department for Trade and Industry (DTI), 2000, Digest of UK Energy Statistics, HMSO, UK

Guardian, 2013, David Cameron confronted by angry residents of flooded village, dated 27 December 2013, retrieved from <http://www.theguardian.com/uk-news/2013/dec/27/david-cameron-confronted-residents-flooded-village>

Hawkins, 2020, <https://showyourstripes.info>, University of Reading, UK

HM Government, 2008, The Climate Change Act, 2008, HMSO, UK

HM Government, 2020, The 10-Point Plan for a Green Industrial Revolution, HMSO, UK

HM Government, 2019, Amendment to the Climate Change Act, 2019, HMSO, UK

IPCC Working Group 1, 2001, IPCC Third Assessment Report: Climate Change 2001 – The Scientific Basis: Contribution of Working Group One to the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), [Houghton J T, Ding Y, Griggs D J, Noguer M, van der Linden P J, Xiaosu D (Eds.)] Cambridge University Press, UK

IPCC Working Group 2, 2001, IPCC Third Assessment Report: Climate Change 2001 – Impacts, Adaptation and Vulnerability: Contribution of Working Group Two to the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), [McCarthy J J, Canziani OF, Leary N A, Dokken D J, White K S (Eds.)], Cambridge University Press, UK

IPCC, 2007a, Climate Change 2007: Synthesis Report, Summary for Policymakers, Cambridge University Press, UK

IPCC, 2007b, Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on

Climate Change [Solomon S, Qin D, Manning M, Chen Z, Marquis M, Averyt K, Tignor M and Miller MB, (eds.)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp

IPCC, 2007c, Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, [Parry M L, Canziani O F, Palutikof J P, van der Linden P J and Hanson C E, (Eds.)], Cambridge University Press, Cambridge, UK

IPCC, 2013, Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

IPCC, 2014a, Summary for Policymakers, In: Climate Change 2014, Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann,

J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

IPCC, 2014b, Summary for policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32

IPCC, 2018, Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T.

Maycock, M. Tignor, and T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp

IPCC, 2021, Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press (in press)

JBA Consulting, 2020, Climate Change Risk and Impact Assessment for Kent and Medway, Kent County Council, UK

Kendon, McCarthy, Jevrejeva, Matthews, Sparks, Garforth, Met Office, 2020 State of the UK Climate 2019, Royal Meteorological Society, UK

Kent County Council, 2016, Kent Environment Strategy: A Strategy for Environment, Health and Economy, Kent County Council, UK

Kent County Council, 2017, Kent Environment Strategy: A Strategy for Environment, Health and Economy - Implementation Plan, Kent County Council, UK

Ministry for Housing, Communities and Local Government (MHCLG), 2021a, [The Future Homes Standard](#), HMSO, UK

Ministry for Housing, Communities and Local Government (MHCLG), 2021b, [National Planning Policy Framework](#), HMSO, UK

Thunberg, Greta, 2019, [Speech to UN Climate Conference, New York](#), dated 24 September 2019, retrieved from <https://www.bbc.co.uk/newsround/49801041>

United Nations Framework Convention on Climate Change (UNFCCC), 2012, [The Doha Climate Gateway](#), retrieved from http://unfccc.int/key_steps/doha_climate_gateway/items/7389.php

United Nations Framework Convention on Climate Change (UNFCCC), 2009, [Copenhagen Climate Change Conference - December 2009, The Copenhagen Accord](#), retrieved from http://unfccc.int/meetings/cop_15/items/5257.php

UK GOV COP 26, 2021, COP 26: [The Negotiations Explained](#), retrieved from <https://ukcop26.org/wp-content/uploads/2021/11/COP26-Negotiations-Explained.pdf>