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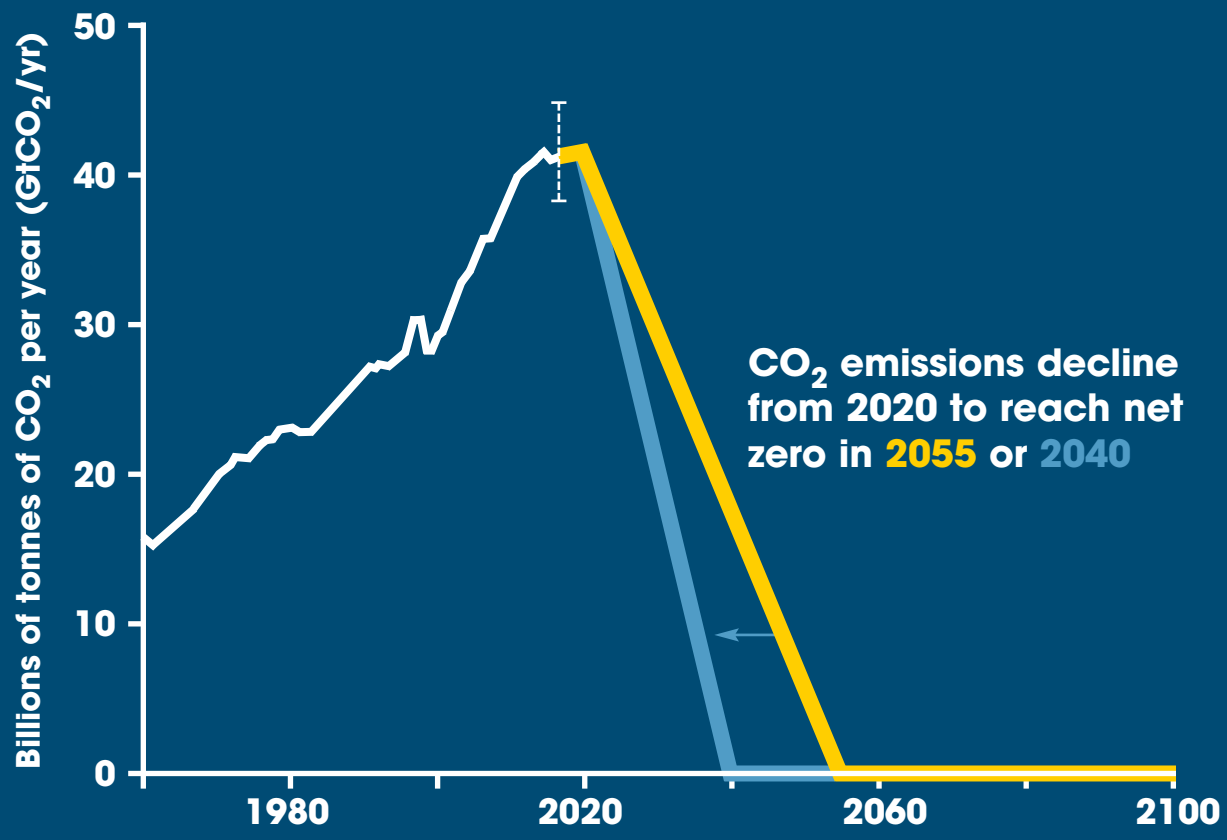
Rising to the Climate Crisis

A Guide for Local Authorities on Planning for Climate Change



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Cover diagram based on graph b), 'Stylized net global CO emission pathways' in Figure SPM.1, 'Cumulative emissions of CO_2 and future non-CO_2 radiative forcing determine the probability of limiting warming to 1.5°C', in V Masson-Delmotte *et al.*: *Global Warming of 1.5°C. An IPCC Special Report. Summary for Policymakers*. Intergovernmental Panel on Climate Change, Oct. 2018

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This is a living, web-based document. If reading a print-out version, please check the TCPA and RTPI websites for the latest revision. Annexes 3 and 4 are available from the TCPA and RTPI websites, at, respectively, ***https://www.tcpa.org.uk/planning-for-climate-change*** *and* ***https://www.rtpi.org.uk/knowledge/better-planning/better-planning-climate-change/***

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Forewords

The fate of future generations depends on our ability to take radical action to deal with climate change. The global impacts of increased temperatures and severe weather are stark and intensifying, and will have major negative impacts on communities across the UK. From sea level rise to heat waves, our society will be increasingly defined by our ability to get control of carbon dioxide emissions and build our resilience. We have known about the science of climate change for more than quarter of century, but action has been far too slow.

This guide represents not just technical advice, but a call to arms to put climate change at the heart of the planning process. It represents a unique collaboration between the UK's leading planning organisations in order to promote the health and wellbeing of existing communities and the long-term welfare of future generations.

Hugh Ellis
Interim Chief Executive, TCPA

Climate change is undoubtedly one of the greatest challenges faced by humanity. But we have the tools to respond effectively, and spatial planning is one of the most powerful. Indeed, despite the challenges facing the planning system, we have three crucial things on our side. First, the ambition to collaborate and respond to climate change is very much alive across the built environment sector. Second, emerging technologies are enhancing our potential to respond – and generating growth and jobs in the process. Third, we have strong legislation and policy at our disposal.

This guide brings these three forces together; it empowers local authorities to act on climate change, using spatial planning to bring together the expertise and ambition, technology, and legislation available to them. This is why I am delighted to endorse this guide, and why we will promote it widely to our 25,000 members and beyond. We have the tools – it is now up to us to act.

Victoria Hills
Chief Executive, RTPI

Who is this guide for?

This guide, prepared by the Town and Country Planning Association (TCPA) and the Royal Town Planning Institute (RTPI), is intended to help planners and politicians to tackle climate change and improve resilience. It is designed to inform the preparation of strategic and local development plans being prepared by local and combined authorities in England. The guide is aimed primarily at the local planning system in England, although the principles have wider applicability.

Why is this guide being published now?

Although the current National Planning Policy Framework contains strong policy on climate change, delivery on the ground through local plans has been relatively poor. Local plans in England are not dealing with carbon dioxide emissions reduction effectively, nor are they consistently delivering the adaptation actions necessary to secure the long-term resilience of local communities.

This inaction is due partly to a chronic lack of resources in English local government, which has contributed to a loss of skills on energy and climate change. But it is also related to the government's cancellation of both the zero-carbon commitment and the Code for Sustainable Homes, as well as the deregulation of planning through the expansion of permitted development, which has led to the conversion of buildings for residential use without effective planning controls.

In this context, action on climate change can seem hard to achieve. But there are clear opportunities to act now, and strong legal and policy requirement do remain in place. We can also embrace new, transformative, technological opportunities to reduce carbon dioxide emissions and deal with flood risk when making planning decisions.

What is required in this environment is the confidence to act, and the certainty to make best use of this existing policy, legislation, and technology. This is what this guide aims to provide.

The status of this guide

While the guide is not a government document, the approaches set out have been designed to support the policy outlined in the National Planning Policy Framework and online Planning Practice Guidance and in relevant law, including the 2008 Climate Change Act. The guide is a living document, partly because renewable energy and adaptation technologies are changing so fast, and partly because the planning system is under near-constant reform.

What this guide does not do

The guide cannot cover the full breadth of planning policy issues raised by climate change. Instead, it focuses on mitigation (particularly in relation to energy use and generation), adaptation, and resilience. It does not contain detailed material on important elements such as green infrastructure, biodiversity and food security, nor the detail of flood risk assessment. Some of this material – including flood risk assessment – is dealt with in the government's online Planning Practice Guidance resource. Related cross-sector guides on green infrastructure[iii] and sustainable construction[iv] provide useful and more detailed guidance on implementation. Similarly, while the guide refers to the relationship between planning and the Building Regulations, it is focused on the former.

Notes

i **https://www.tcpa.org.uk/Handlers/Download.ashx?IDMF=7d92ec4c-09f7-4b21-9d22-b1aad77fd062**

ii **https://www.nao.org.uk/wp-content/uploads/2014/11/Impact-of-funding-reductions-on-local-authorities.pdf**

iii **https://www.tcpa.org.uk/Handlers/Download.ashx?IDMF=34c44ebf-e1be-4147-be7d-89aaf174c3ea**

iv **https://tools.breeam.com/filelibrary/BREEAM%20and%20Planning/Good_Practice_Guidance_-_Sustainable_Design_and_Construction.pdf**

Section 1
Introduction

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Climate change is now the greatest challenge facing our society. The scientific evidence of climate change is overwhelming and the global impacts of climate change will be severe. It is often seen as a long-term challenge, but, as the latest IPCC (Intergovernmental Panel on Climate Change) report[1] makes clear, the impacts are being experienced now, through unprecedented global trends and through more localised severe weather events. While climate change will have a lasting impact on people and wildlife, it will also define future economic progress. Only those places that can demonstrate climate resilience will be able to secure insurance and investment.

It had been assumed that to avoid climate change's worst impacts, it was vital to secure climate stabilisation at less than a 2ºC global temperature increase above pre-industrial levels. This is the foundation of the UN Paris Agreement on climate change.[2] However, the latest science indicates that 1.5ºC is a more realistic target to avoid these worst extremes. Even if we can stabilise temperatures at or below the 1.5ºC target there will still be significant impacts through severe weather incidents and sea level rise. Above all, the latest IPCC report illustrates the vital need to reduce climate change emissions now by transforming our energy systems.

Remarkably, we now have solutions to both the mitigation and adaptation challenges. A wide variety of engineering and technological solutions are available to build resilience and transform our energy supplies, creating new opportunities for a dynamic, low-carbon economy. The costs of such solutions have reduced dramatically in recent years. For example, the cost of onshore wind has fallen by 23% since 2010 and the cost of solar photovoltaic electricity has fallen by 73%.[3] Furthermore, many of the solutions, such as the delivery of green infrastructure, have multiple benefits in building resilience while also enhancing biodiversity and human health and wellbeing. As many other nations have discovered, action on climate change can be a driver for economic renewal and for new models of energy ownership that genuinely localise our economies.

The planning system can help to plan for this future, and it is also a vital gateway to gaining consent for new technologies. Spatial planning plays a central role

Notes

1 V Masson-Delmotte *et al.*: *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 Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty. Summary for Policymakers*. Intergovernmental Panel on Climate Change, Oct. 2018. **http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf**

2 *Paris Agreement*. United Nations, Dec. 2015. **http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf**

3 *Renewable Power Generation Costs in 2017*. International Renewable Energy Agency, 2018. **http://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Jan/IRENA_2017_Power_Costs_2018.pdf**


imacoconut/Thinkstock

in the transition to a low-carbon society, engaging communities and enabling environmentally-friendly choices in everything from energy to transport. Planning can do this by shaping new and existing developments in ways that reduce carbon dioxide emissions and positively build community resilience to problems such as extreme heat or flood risk.

1.1 Climate justice

Fairness and justice should be at the heart of planning for climate change, based on an acknowledgement that climate change affects those on the lowest incomes the worst. The Climate Just resource[4] provides a powerful way of mapping the relationship between social exclusion and the impacts of climate change, offering the opportunity to tailor policy to meet the needs of those likely to be most vulnerable to climate change.

1.2 Local action

While we need to work nationally and internationally to secure progress on addressing climate change, we must also galvanise local action. Local and combined authorities are at the cutting edge of the climate change challenge because they have responsibility for decisions that are vital to our collective future.

Many of the adverse impacts of climate change, such as extreme heat, flooding or water scarcity, will result in costs to businesses and householders, and solutions to the problems they pose need to be developed locally. Adaptation to the risks presented by climate change is key to future-proofing our existing communities and making sure that new developments maintain and enhance the health and wellbeing of local communities, as well as their competitiveness.

1.3 Planning for the fourth Industrial Revolution[5]

While the impacts of climate change are dynamic and change over time, so, too, will our technological responses. This applies equally to both soft and hard engineering solutions supporting the climate resilience of buildings and communities.

Notes

4 See the Climate Just webtool, at **http://www.climatejust.org.uk/**

5 That is, the interlocking impact of robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, 3D printing, and autonomous vehicles

Some solutions are beautifully simple in concept (such as using trees and other forms of green infrastructure to reduce urban temperatures) and, with careful design, bring multiple benefits for health and wellbeing.

On energy, solar and wind are now cheap enough that projects are coming forward without subsidies. Electric vehicles will become ever more commonplace, and new decentralised low-carbon technologies, including batteries, and advances in artificial intelligence are combining to form interconnected decentralised networks.

Together, these changes will have profound implications for development and how we plan and re-plan new and existing communities. While we cannot anticipate every aspect of these changes, planners should be alive the possibilities of new technology and adopt a flexible approach to innovation

Box 1
Key definitions in policy

The glossary to the National Planning Policy Framework sets out a number of useful definitions. Those relating to climate mitigation and adaptation in the NPPF's Annex 2, 'Glossary', are reproduced here for completeness:

- ***Climate change adaptation:*** Adjustments to natural or human systems in response to the actual or anticipated impacts of climate change, to mitigate harm or exploit beneficial opportunities.
- ***Climate change mitigation****:* Action to reduce the impact of human activity on the climate system, primarily through reducing greenhouse gas emissions.

1.4 The economic opportunity

Climate change is a major threat, but the approaches required to tackle it also offer major economic opportunities, with the potential for significant job creation.

In October 2017 the government published an ambitious Clean Growth Strategy,[6] setting out a powerful direction of travel using low-carbon technology to meet our carbon dioxide emissions reduction targets. It states:

> *'As a result of this technological innovation, new high value jobs, industries and companies have been created. And this is driving a new, technologically innovative, high growth and high value 'low carbon' sector of the UK economy. Not only are we rapidly decarbonising parts of the domestic economy, but thanks to our world leading expertise in technologies such as offshore wind, power electronics for low carbon vehicles and electric motors, and global leadership in green finance, we are successfully exporting goods and services around the world – for example, 1 in every 5 electric vehicles driven in Europe is made in the UK. This progress now means there are more than 430,000 jobs in low carbon businesses and their supply chains, employing people in locations right across the country.'*[7]

Seizing this new opportunity requires that local economic growth strategies recognise both the potential and the vital role that the planning system plays in delivering these new technologies and, ultimately, a new kind of green economy.[8]

1.5 The 2018 revised NPPF

The government published a revised National Planning Policy Framework (NPPF) in the summer of 2018, and this guide reflects the policy in the new NPPF. In terms of the implications of the revised NPPF for planning for climate change, there are four headline issues:

- The revised NPPF retains the key link between planning policy and the provisions of the Climate Change Act 2008. This means all local plans must set a carbon dioxide emissions reduction target and lay out clear ways of measuring progress on carbon dioxide emissions reduction.
- Guidance for viability testing has been rebalanced, creating more opportunity for policy that might address climate change.
- There is still real confusion about the scope of planning authorities to set ambitious targets beyond the Building Regulations on energy efficiency.
- There is nothing to stop local plans adopting requirements for on-site renewable energy generation.

Notes

6 *The Clean Growth Strategy: Leading the Way to a Low Carbon Future*. HM Government, Oct. 2017
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/651916/BEIS_The_Clean_Growth_online_12.10.17.pdf

7 *Clean Growth Strategy: Executive Summary*. HM Government, updated Apr. 2018.
https://www.gov.uk/government/publications/clean-growth-strategy/clean-growth-strategy-executive-summary

8 'Why does the green economy matter?'. Webpage. United Nations Environment Programme.
https://www.unenvironment.org/explore-topics/green-economy/why-does-green-economy-matter

Section 2
Background

Planning makes a major contribution to both mitigating and adapting to climate change, through decision-making on the location, scale, mix and character of development (as well as density and layout, including building orientation, massing and landscaping). Planning can do this over the long periods of time necessary to deal with impacts such as sea level rise.[9] This guide sets out how local planning authorities (LPAs) can help to shape places with greater resilience to the impacts of climate change. Increased resilience will reduce future costs both for businesses and for households.[10]

Local authorities have a responsibility to help to secure progress on meeting the UK's emissions reduction targets (see Box 2), both through direct influence on energy use and emissions (by, for instance, encouraging renewable energy and promoting low-carbon modes of travel) and by bringing others together and encouraging co-ordinated local action. A key part of any local authority strategy to encourage economic growth and improve energy security should be to help reduce the costs of buying in energy – by identifying renewable and local sources of energy, and also by reducing the amount of energy used.

Planning can also give local communities real opportunities to take action on climate change by encouraging community-based development and active participation in local and neighbourhood plan-making.

Box 2
UK emissions reduction targets

Through the 2008 Climate Change Act, the government has committed to:
- reduce emissions by at least 80% of 1990 levels by 2050; and
- contribute to global emissions reductions, to limit global temperature rise to as little as possible above 2°C.

To meet these targets, the government has set five-yearly carbon budgets, which currently run until 2032.

Budget	Carbon budget level, $MtCO_2e$*	Reduction below 1990 levels, %
First carbon budget (2008 to 2012)	3,018	25
Second carbon budget (2013 to 2017)	2,782	31
Third carbon budget (2018 to 2022)	2,544	37 by 2020
Fourth carbon budget (2023 to 2027	1,950	51 by 2025
Fifth carbon budget (2028 to 2032)	1,725	57 by 2030

* Metric tons of carbon dioxide equivalent

To meet future carbon budgets and the 80% target for 2050, the UK will need to reduce emissions by at least 3% a year from now on.

Notes

9 *Adapting to Climate Change in the UK: Measuring Progress*. Progress Report. Committee on Climate Change, Adaptation Sub-Committee, Jul. 2011. **https://www.theccc.org.uk/publication/adapting-to-climate-change-in-the-uk-measuring-progress-2nd-progress-report-2011/**

10 *Stern Review on the Economics of Climate Change*. Published as *The Economics of Climate Change*. The Stern Review. Cabinet Office/ HM Treasury, Oct. 2006 (Published by Cambridge University Press, 2007). **http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/sternreview_index.htm**

2.1 The impact of planning reform

It is important to recognise that the structures and policy that guide the English planning system have undergone radical change. This has involved major changes to planning legislation and to the operational principles of decision-making.

The main changes that have already reshaped planning for climate change are described in Sections 2.2 and 2.3 below, but two recent changes need to be kept in mind:

- The legal requirement to set out a local authority's strategic priorities was set out in the Neighbourhood Planning Act 2017. Whether local authorities are working on their own, or in co-operation with other authorities, these strategic plans will need to comply with the strategic priorities set out in paragraph 20 of the NPPF. These include planning for climate change.
- The expansion of permitted development, to include the conversion of buildings to residential use, has made the delivery of actions to secure mitigation and adaptation much more difficult. While the prior approval for permitted development process requires consideration of flood risk, there is no mechanism for a Merton-style energy or green infrastructure requirement (more information is given in the Planning and Energy Act 2008 sub-section of Section 2.2 below). Proposals to extend these powers to include demolition and rebuild will greatly reduce the ability of planning to deliver effective action on climate change.

Why is this relevant?
Local planning authorities are bound by the legal duty set out in Section 19 of the 2004 Planning and Compulsory Purchase Act, as amended by the 2008 Planning Act, to ensure that, taken as whole, plan policy contributes to the mitigation of, and adaptation to, climate change.[12] This powerful outcome-focused duty on local planning clearly signals the priority to be given to climate change in plan-making. In discharging this duty, local authorities should consider paragraph 149 of the NPPF and ensure that policies and decisions are in line with the objectives and provisions of the Climate Change Act 2008 (Section 1) (discussed below) and support the National Adaptation Programme. For the sake of clarity, this means that local plans should be able to demonstrate how policy contributes to the Climate Change Act target regime, and this, in turn, means understanding both the baseline carbon dioxide emissions and then the actions needed to reduce emissions over time – which, in turn, means that annual monitoring reports should contain ongoing assessments of carbon performance against the Climate Change Act target. ***The Section 19 duty is much more powerful in decision-making than the status of the NPPF, which is guidance, not statute. Where local plan policy which complies with the duty is challenged by objectors or a planning inspector on the grounds, for example, of viability, they must make clear how the plan would comply with the duty if the policy were to be removed. Whatever new policy may emerge, compliance with the legal duty on mitigation must logically mean compliance with the provisions of the target regime of the Climate Change Act.***

2.2 The legislative context

There is a mass of complex legislation which impacts on planning for climate change. The legislation set out in Sections 2.2.1-2.2.6 is listed in priority order for local planning.

2.2.1 Planning and Compulsory Purchase Act 2004 and the duty on mitigation and adaptation

The Planning and Compulsory Purchase Act 2004[11] sets out the structure of the local planning framework for England, including the duty on plan-making to mitigate and adapt to climate change.

2.2.2 Climate Change Act 2008

The Climate Change Act 2008[13] introduced a statutory target of reducing carbon dioxide emissions to at least 80% below 1990 levels by 2050, with interim targets, set through five-yearly carbon budgets, of 37% by 2020, 51% by 2025 and 57% by 2030. Government departments have prepared carbon budgets to indicate how greenhouse gas emissions will be reduced across the government estate and in sectors where departments take a policy lead. The Act also created a framework for climate change adaptation. The second national Climate Change Risk Assessment was published in January 2017,[14] and the second

Notes

11 Available at **http://www.legislation.gov.uk/ukpga/2004/5/pdfs/ukpga_20040005_en.pdf**

12 Section 19 of the 2004 Planning and Compulsory Purchase Act, as amended by Section 182 of the Planning Act 2008 (available at **https://www.legislation.gov.uk/ukpga/2008/29/section/182**), states: 'Development plan documents must (taken as a whole) include policies designed to secure that the development and use of land in the local planning authority's area contribute to the mitigation of, and adaptation to, climate change.'

13 Available at **http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf**

14 *UK Climate Change Risk Assessment 2017*. HM Government, Jan. 2017. **https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017**

National Adaptation Programme (NAP) was published in July 2018.[15] This addresses the risks affecting communities across England and sets out the government's ongoing investment and work to tackle these risks. The Climate Change Act set out a reporting power, requiring compulsory reporting of climate change impacts and adaptation plans for certain public bodies and organisations.[16] The Committee on Climate Change has produced guidance on the implementation of the Act.[17]

Why is this relevant?
The outputs from the Climate Change Act provide an evidence base that can be used in identifying priorities for action and appropriate adaptation measures.

2.2.3 Flood and Water Management Act 2010

The Flood and Water Management Act 2010[18] addresses the threats of flooding and water scarcity. Under the Flood Risk Regulations 2009,[19] the Environment Agency is responsible for managing flood risk from main rivers, the sea and reservoirs.

Why is this relevant?
Lead local flood authorities (LLFAs) are responsible for local sources of flood risk, in particular surface run-off, groundwater, and ordinary watercourses. LLFAs are statutory consultees on major development. Local authorities are responsible for ensuring that requirements for preliminary flood risk assessments are met.

2.2.4 Planning Act 2008

The Planning Act 2008[20] introduced a new planning regime for Nationally Significant Infrastructure Projects (NSIPs), including energy generation plants of capacity greater than 50 megawatts (50 MW). The government has produced National Policy Statements (NPSs) to guide decisions on such projects, applications for which are decided by the Planning Inspectorate. Alongside this regime, there is a duty (also introduced by the 2008 Act) on local development plans to include policies which ensure that they make a contribution to both climate mitigation and adaptation. ***It is important to note that in 2016 onshore wind installations above 50 MW were removed***[21] ***from the NSIP regime, and such applications are now dealt with by local planning authorities, based on the NPPF and associated Ministerial statements.***

Box 3
The Merton rule

The 'Merton rule' was a planning policy, developed by Merton Council in 2003, which required new developments to generate at least 10% of their energy needs from on-site renewable energy equipment, in order to help reduce annual carbon dioxide emissions in the built environment. The policy then spread out nationally, but with the expectation of the commitment to zero carbon in 2016 the policy was considered redundant.

After the cancellation of zero-carbon policy, the Merton rule approach remains a powerful way to drive energy-positive or zero-carbon development.

Why is this relevant?
Local planning authorities need to apply aspects of the NPS series to issues such as renewable energy applications. This guide sets out below how LPAs should discharge the duty on local plans to deal with climate change.

2.2.5 Planning and Energy Act 2008

The Planning and Energy Act 2008[22] sets out powers for local authorities to require a proportion of the energy need related to new development to be sourced in the locality of the development, through renewable or low-carbon generation. This enables what is known as a Merton-style approach (see Box 3 on the previuos page) which can be used to develop zero-carbon policy.

Notes

15 *The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting: Making the Country Resilient to a Changing Climate*. Department for Environment, Food and Rural Affairs, Jul. 2018. **https://www.gov.uk/government/publications/climate-change-second-national-adaptation-programme-2018-to-2023**

16 The second round of climate change adaptation progress reports are available at **https://www.gov.uk/government/collections/climate-change-adaptation-reporting-second-round-reports**

17 See the Climate Change Committee's 'UK regulations: the Climate Change Act' webpage, at **https://www.theccc.org.uk/tackling-climate-change/the-legal-landscape/the-climate-change-act/**

18 Available at **http://www.legislation.gov.uk/ukpga/2010/29/pdfs/ukpga_20100029_en.pdf**

19 *Environmental Protection: The Flood Risk Regulations 2009*. Statutory Instrument 2009 No. 3042. TSO, 2009. **http://www.legislation.gov.uk/uksi/2009/3042/contents/made**

20 Available at **http://www.legislation.gov.uk/ukpga/2008/29/pdfs/ukpga_20080029_en.pdf**

21 *Explanatory Memorandum to the Infrastructure Planning (Onshore Wind Generating Stations) Order 2016*. Statutory Instrument 2016 No. 306. TSO, 2016. **https://www.legislation.gov.uk/uksi/2016/306/pdfs/uksiem_20160306_en.pdf**

22 Available at **http://www.legislation.gov.uk/ukpga/2008/21/pdfs/ukpga_20080021_en.pdf**


Maaike Bunschoten-Bolh/Thinkstock

The focus of such policy can be broader than a site so as to enable area-based solutions such as district heating. It also enabled local authorities to require standards for energy efficiency in new buildings beyond those in the Building Regulations. However, in 2015 the energy efficiency requirements were repealed, to effectively make the Building Regulations the sole authority regarding energy efficiency standards for residential development, and leaving local authorities no longer able to set their own energy efficiency standards. However, while the power was removed in principle, the government has not yet produced a commencement date for repealing these powers, which therefore remain in place. This means that planning authorities can set such standards, subject to the limitations set out in this guide.

Why is this relevant?
The Act allows local authorities and communities to reap the benefits of local renewable energy generation and supports the adoption of Merton-style renewable energy requirements, provided they are consistent with national policy. National policy is the 2015 Written Ministerial Statement, which allows LPAs to set Code for Sustainable Homes level 4 energy standards.[23]

2.2.6 Neighbourhood Planning Act 2017

The Neighbourhood Planning Act 2017[24] strengthens the powers of neighbourhood plans, but also creates a new legal duty on local planning authorities to set out their strategic priorities. The government has now indicated that these priorities should be expressed in a strategic plan. This plan is focused on high-level strategic issues set out in the NPPF, and these issues include action on climate change (see paragraph 20 of the NPPF).

Why is this relevant?
The Act provides an opportunity to deal with longer-term energy planning and adaptation issues at a strategic scale, which can provide a more efficient way of managing housing and energy needs. It allows for effective catchment-scale planning for flood risk and landscape-scale planning for green infrastructure. The major risk is that following the 2018 NPPF's removal of the policy presumption for a local plan, some local authorities may choose not to prepare one and so will lose the detailed policy necessary to deliver effective adaptation and mitigation.

Notes

23 See D Browne: 'LAs and energy efficiency standards'. *Public Law Today*, 6 Apr. 2018. **http://publiclawtoday.co.uk/housing/property/380-property-features/38092-las-and-energy-efficiency-standards**; and *Driving Sustainability in New Homes: A Resource for Local Authorities*. Version 1.2. UK Green Building Council, Sept. 2018. **https://www.ukgbc.org/wp-content/uploads/2018/09/Driving-sustainability-in-new-homes-UKGBC-resource-Sept-2018-1.pdf**

24 Available at **http://www.legislation.gov.uk/ukpga/2017/20/pdfs/ukpga_20170020_en.pdf**


Anastasia Nikologianni

2.3 The policy context – key documents

2.3.1 The National Planning Policy Framework

The NPPF[25] sets out the key national planning priorities for England. It is non-statutory guidance and is a material consideration in plan-making and development management decisions. The NPPF, revised in July 2018, is accompanied by online Planning Practice Guidance.

Paragraph 148 of the NPPF underlines that tackling climate change is central to the economic, social and environmental dimensions of sustainable development. The NPPF (in paragraph 149 and accompanying footnote 48) expects LPAs to adopt proactive strategies to mitigate and adapt to climate change, in line with the Climate Change Act 2008 and Section 19 of the 2004 Planning and Compulsory Purchase Act. This has the effect of making the objective of an 80% reduction in carbon dioxide emissions by 2050 clearly relevant to the discharge of the duty on planning authorities to shape policy which reduces carbon dioxide emissions.

As a result, planning authorities will need a clear grasp of their carbon profile, and their policy should support 'radical' reductions in carbon dioxide emissions.

While the presumption in favour of development is a key objective of the NPPF, the presumption in favour does not apply to development in areas subject to flood risk or coastal erosion, where polices in the NPPF suggest that development should be restricted. Further information is given in Sections 4.4 and 5 of this guide.

NPPF core planning principles

Paragraph 8 of the NPPF makes clear that 'mitigating and adapting to climate change' is a core planning objective. To be in conformity with the NPPF, local plans should reflect this principle, ensuring that planning policy clearly and comprehensively deals with climate change mitigation and adaptation. The NPPF also highlights climate change as a key part of strategic planning policy which local authorities are legally obliged to set out in their local plans (see paragraph 20 and footnote 12 of the NPPF).

Note

25 *National Planning Policy Framework*. Cm 9680. Ministry of Housing, Communities and Local Government, Jul. 2018. **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf**

The importance of proportionate evidence
The NPPF supports the need for objective and proportionate evidence bases for plan-making, which underpins the approach established in Section 4.2 of this guide. In relation to both carbon dioxide emissions and key adaptation data, it may be useful to share approaches across local authority boundaries as part of the wider commitment to fulfil the duty to co-operate. The NPPF stresses the importance of viability testing; this is dealt with in more detail in Section 4.2.1.

Mitigation and renewable energy
The NPPF sets out a positive vision of local plans securing 'radical reductions in greenhouse gas emissions' (paragraph 148). Footnote 48 in paragraph 149 of the NPPF makes clear that decisions should be taken in line with the 2008 Climate Change Act, which requires an 80% reduction of carbon dioxide emissions by 2050. Since compliance with national law and policy is central to the soundness test of local plans, compliance with the Climate Change Act is a clear obligation on both the Planning Inspectorate and LPAs.

This also provides an opportunity to support innovative approaches on matters that can contribute to radically reducing carbon dioxide emissions, such as energy systems and building standards. Paragraph 150 of the NPPF makes clear that this can be achieved by shaping the location and design of development, supporting energy efficiency in existing buildings, and setting local requirements for building sustainably, so long as they are in line with national standards. The NPPF, for the first time, identifies the risks from overheating.

In planning for renewable energy, local authorities are encouraged to take a positive approach by identifying suitable areas for renewable energy generation and its supporting infrastructure, and by maximising the opportunities for community-led and decentralised energy production (paragraphs 151 and 152).

Adaptation
Paragraph 149 of the NPPF states that:

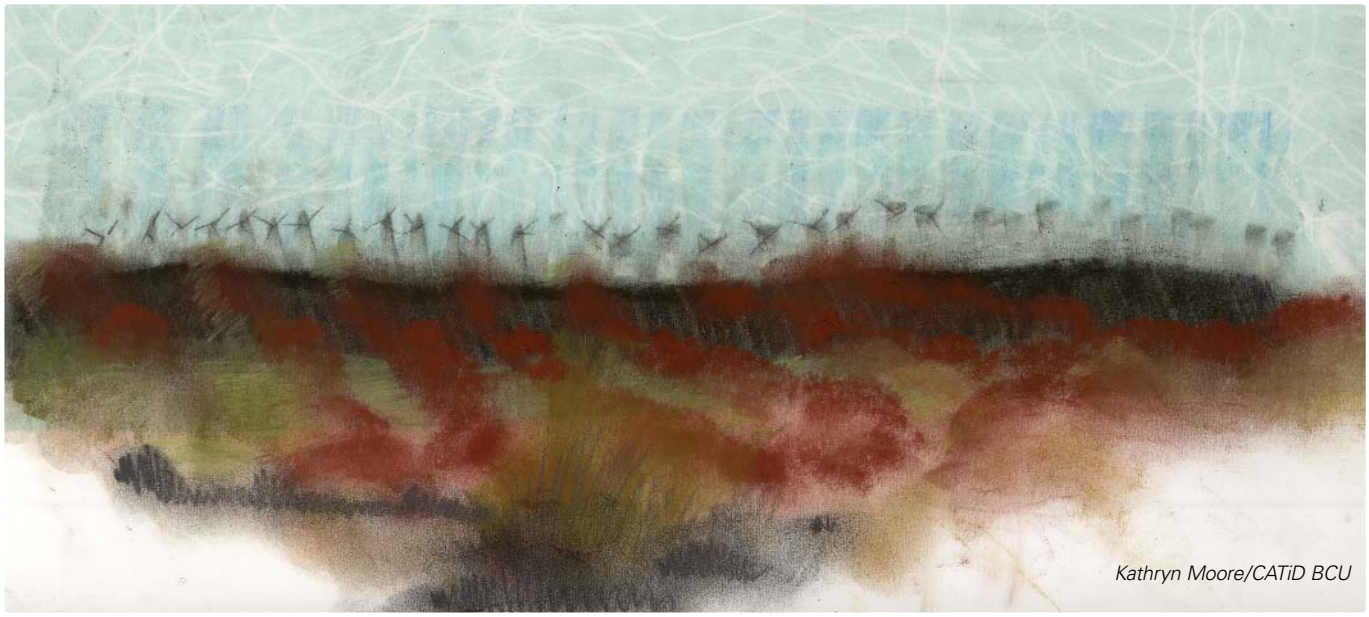
> *'Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.'*

Taken as a whole, the NPPF requires local planning authorities to have a holistic understanding of climate adaptation, ranging from flood risk to increased temperatures and heat stress. Local plans should play a full part in building community resilience to a changing climate.

The NPPF addresses several adaptation-related policy issues – in particular Section 9 emphasises the need to encourage sustainable transport modes and locate development with a view to reducing the need to travel.

The impact of the NPPF and Planning Practice Guidance viability test on climate change policy
The 2018 NPPF and revised Planning Practice Guidance have made significant changes to the 'viability test' which is applied to plan policy and particular applications.

The detail of how this affects climate policy is set out in Section 4.2.1 of this guide.



Kathryn Moore/CATiD BCU


moodboard/Thinkstock

2.3.2 Planning Practice Guidance

The Planning Practice Guidance online resource provides vital additional and detailed guidance on aspects of the NPPF. Planning Practice Guidance is periodically updated to include interpretations of various Ministerial Statements relevant to planning. The 'Climate change' section of Planning Practice Guidance has not yet been revised to reflect the new policy in the NPPF.

The most significant part with respect to climate change is the guidance on planning for onshore wind, which repeats the tests introduced in 2015, stating that local planning authorities should grant planning permission only if a proposed wind turbine is in an area identified as suitable for wind energy development in a local or neighbourhood plan, and if, following consultation, it can demonstrated that the planning impacts identified by affected local communities have been fully addressed and that the proposal therefore has their backing. Whether a proposal has the backing of the affected local community is a planning judgement for the local planning authority, and the courts have ruled that 'addressed' does not mean 'resolved' or 'eliminated'.[26]

It is also important to note that plans can allocate areas as suitable for wind turbines and do not have to follow the more onerous route of allocating actual sites, as is sometimes mistakenly assumed.

The critical sections of Planning Practice Guidance are on:

- ***climate change*** – note, however, that this guidance was last revised in 2014 and does not take account of government cancellation of the zero-carbon commitment;
- ***renewable and low-carbon energy*** – planning for onshore wind, photovoltaics, heat networks, etc.; and
- ***flood risk and coastal change***, setting out the approach to the sequential test and exception test and providing detailed guidance – this guidance has been updated to include the latest Environment Agency 'flood risk assessments: climate change allowances'.[27]

2.3.3 Other climate-change-related government policy

Also in place is a significant amount of other policy that has an impact on planning and the policies that underpin plan-making and development management.

Tables 1 and 2, set out on pages 15 and 16 of this guide, summarise the various considerations relevant to climate change that local plans need to comply with, and further details on other climate-related government policy are provided in Annex 1.

Notes

26 *Holder, R (on the application of) v Gedling Borough Council & Ors*. Court of Appeal – Civil Division, 16 Feb. 2018. Case No.: C1/2016/4728. [2018] EWCA Civ 214

27 See the Environment Agency's 'Flood risk assessments: climate change allowances' webpage, at **https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances**

Table 1
Overview of the mitigation compliance framework for local plans

Plan stage	Law	NPPF (2018)	Planning Practice Guidance	Guidance from statutory bodies
Evidence-gathering	Section 19 of the Planning and Compulsory Purchase Act 2004 (PCPA 2004); Climate Change Act 2008	Paragraphs 31 and 156, but no specific reference to carbon	'Climate change' section 'Renewable and low carbon energy' section 'Viability' section	N/A
Engagement	PCPA 2004; Localism Act 2011	Paragraph 16	'Local plans' section 'Plan-making' section	N/A
Policy formulation	Section 19 of the PCPA 2004; Climate Change Act 2008	Paragraphs 20, 148-169	'Climate change' section 'Renewable and low carbon energy' section 'Viability' section	N/A
Policy testing	Section 19 of the PCPA 2004; Climate Change Act 2008	Paragraphs 35-37 (on soundness)	'Climate change' section 'Renewable and low carbon energy' section 'Viability' section	Planning Inspectorate local plan examination procedure
Policy outcomes	Section 19 of the PCPA 2004; Climate Change Act 2008	Paragraphs 20, 148-169	'Climate change' section 'Renewable and low carbon energy' section	N/A
Decision-making		Paragraphs 38-58		N/A
Monitoring and review			'Plan-making' section	N/A

The Planning Practice Guidance online resource should be checked for the latest updates – **https://www.gov.uk/government/collections/planning-practice-guidance**

Table 2
Overview of the adaptation compliance framework for local plans

Plan stage	Law	NPPF (2018)	Planning Practice Guidance	Guidance from statutory bodies
Evidence-gathering	Section 19 of the Planning and Compulsory Purchase Act 2004 (PCPA 2004); Climate Change Act 2008; Water Management Act 2010	Paragraphs 148-169, particularly paragraph 149 (footnote 48)	'Climate change' section 'Flood risk and coastal change' section' Water supply, wastewater and water quality' section 'Viability' section	National Adaptation Programme; Environment Agency (EA) climate change flood allowances;[a] UK Climate Impacts Programme (UKCP18)[b]
Engagement	PCPA 2004; Localism Act 2011	Paragraphs 16, 24-27	'Local plans' section 'Plan-making' section	
Policy formulation	Section 19 of the of PCPA 2004; Climate Change Act 2008; Planning and Energy Act 2008	Paragraphs 20 (strategic planning principles), 148-169, 57 (on plan-making and viability)	'Climate change' section 'Flood risk and coastal change' section 'Water supply, wastewater and water quality' section 'Viability' section	
Policy testing	Section 19 of the PCPA 2004; Climate Change Act 2008; Planning and Energy Act 2008	Paragraphs 35-37 (on soundness)		
Policy outcomes	Section 19 of the PCPA 2004; Climate Change Act 2008	Paragraphs 20, 148-169	'Climate change' section 'Flood risk and coastal change' section 'Water supply, wastewater and water quality' section	
Decision-making	(Section 19 of the PCPA 2004 applies only to plan-making, not to development management decisions)	Paragraphs 38-58	'Flood risk and coastal change' section	
Monitoring and review			'Plan-making' section	

a See the Environment Agency's 'Flood risk assessments: climate change allowances' webpage, at **https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances**
b See the Met Office's UK Climate Projections website, at https://www.metoffice.gov.uk/research/collaboration/ukcp

The Planning Practice Guidance online resource should be checked for the latest updates – **https://www.gov.uk/government/collections/planning-practice-guidance**

Institutions and bodies with a role in local planning for climate change

2.4 The importance of embedding climate change in local plan-making

Effective local and strategic plans can help to deliver a range of key solutions to climate change issues, and can also help local communities to reap the economic, environmental and social benefits of such action over the long term. The NPPF reinforces the importance of the legal basis of the local plan-led system and the need for a strong and proportionate evidence base, including the need to test the viability of policy. Planning Practice Guidance sets out useful sources of evidence, including national data on local carbon dioxide emissions. Section 4 of this guide sets out a logical set of steps, from evidence-gathering to suggested policy approaches, for both mitigation and adaptation, and provides an indication of the key sources of evidence and of how future patterns of spatial development can be designed to maximise opportunities – through, for example, the use of decentralised renewable energy systems and reducing the need to travel (see the London Plan case study in Annex 2).

New developments should take the full range of mitigation and adaptation factors into account. For example, good site selection at the plan-making stage is crucial. This is why Section 4 of this guide sets out criteria which can be used to assess suitability when allocating sites, considering, for example, the type of building and the intensity of use.

Climate change is a strategic priority of the NPPF. Action on climate change should be an integral part of the culture of plan-making and should be embedded and integrated into policy preparation. Only by treating climate issues as central to policy formulation will a local authority have effectively discharged its duty under the 2004 Planning and Compulsory Purchase Act.

Climate change effects can have devastating consequences, as seen in the floods in Gloucestershire in 2007, in Cumbria in 2009, and in Leeds, York, Calderdale and Carlisle in 2015. Local planning authorities can consider the likely impacts of climate change and, using the available evidence, both plan for these impacts when considering new development and develop adaptation options for existing areas.

The key evidence sources for adaptation are laid out in Section 4.2 below, and Section 4.4 presents a proposed planning approach to adapting to a changing climate. A separate guide to planning for green infrastructure, produced by the TCPA and The Wildlife Trusts, provides more detailed advice.[28]

2.5 The importance of political and community leadership

Effective action on climate change requires strong political leadership. It is also vital that communities are at the heart of local policy debate so that local knowledge can shape decision-making[29] (see the Gwithian and Gwinear Neighbourhood Plan case study in Annex 2). In communicating the challenge posed by climate change, there is a risk that we may underestimate the multiple benefits that effective action can bring to communities. For example, reducing carbon dioxide emissions can result in the community ownership of energy supply, with direct benefits to consumers and the local economy.

Many of the initiatives that can be taken to address climate change are simply 'win-win' actions for communities, and help to shape low-carbon resilient places with high-quality design and access to the natural environment.

2.6 Neighbourhood planning

The government has put increased emphasis on the value of the neighbourhood planning process as a way for communities to express their aspirations for future development. Two issues have arisen in the existing practice of neighbourhood planning:

- To date, most neighbourhood plans have not included policy on climate change mitigation, and there is feedback that some that have tried have encountered difficulties in navigating the viability test and the perceived limitations on policy for energy efficiency and building fabric. However, there are some examples of neighbourhood plans which have tried to address climate change and energy considerations and demonstrate the huge potential of neighbourhood planning to add to, and reinforce, climate change policy at a local level (see the Wirksworth Neighbourhood Plan case study in Annex 2).
- In the 2018 redrafted NPPF, increased reliance has been placed on neighbourhood plans to fill gaps that could be left by the end of the policy requirement for detailed local plans. In this context, it is important to recognise that local authorities have no control over the contents of neighbourhood plans, apart from checking the lawfulness of what is included. It cannot be assumed that many of the detailed actions necessary to achieve carbon dioxide emissions reduction and community resilience will be taken up by neighbourhood plans.[30] Furthermore, LPAs will need to check compliance with the legal duties on climate change before a neighbourhood plan is adopted.

None of this should detract from the positive opportunity that neighbourhood plans present for dialogue with communities on climate change. CSE (the Centre for Sustainable Energy) has produced useful guidance on how communities can make the most of the renewable energy opportunity.[31] The Environment Agency has contributed to the development of a neighbourhood planning toolkit, which will be published by the end of 2018 on the Locality website[32] and will provide advice to neighbourhood planning groups about the statutory consultees and how they can make plans resilient to the impacts of climate change. The Landscape Institute also has produced information on design and green infrastructure for neighbourhood plans.[33]

Notes

28 *Planning for a Healthy Environment – Good Practice Guidance for Green Infrastructure and Biodiversity*. TCPA and The Wildlife Trusts. TCPA, Jul. 2012. **https://www.tcpa.org.uk/Handlers/Download.ashx?IDMF=34c44ebf-e1be-4147-be7d-89aaf174c3ea**

29 See the Centre for Sustainable Energy's 'Future Energy Landscapes – community consultation method' webpage, on a new approach to local energy planning, at **https://www.cse.org.uk/projects/view/1315**

30 Guidance primarily aimed at planners but also useful for communities can be found on the communityplanning.net 'Resilient communities' webpages, at **http://www.communityplanning.net/resilientcommunities/introduction.php**

31 *Low-Carbon Neighbourhood Planning: A Guide to Creating Happier, Healthier, Greener Communities*. Jan. 2018; *How Green Is My Plan?* (two versions – 'Urban & suburban' and 'Rural') (undated); and *How to Identify Suitable Areas for Onshore Wind Development in Your Neighbourhood Plan*. Guidance Note (undated). Centre for Sustainable Energy. All available at **https://www.cse.org.uk/projects/view/1343**

32 This will be a Locality document (see **https://locality.org.uk/**), with contributions from the Environment Agency, Natural England, Historic England and the Forestry Commission

33 *Neighbourhood Planning*. Technical Information Note 04/2016. Landscape Institute, Apr.2016. **https://www.landscapeinstitute.org/wp-content/uploads/2016/09/NeighbourhoodplanningTIN04_16.pdf**

Section 3
Barriers to effective local plan action

While there is a strong evidential case for planning for climate change, there are some controversial issues which can be barriers to effective action.

3.1 Climate adaptation – more than just about planning for flooding

Because of its visible impact, flood risk is often the top priority of any adaptation strategy; but planning for flood risk is not always carried out with sufficient grasp of the long-term risks, nor of the opportunities to design resilient places. However, successful adaptation policy involves much more than simply addressing flood risk and has to take account of a range of severe and complex climate impacts. Even if global climate stabilisation can be achieved at no more than a 2ºC global temperature change compared with pre-industrial levels (an optimistic assumption), there will be a dramatic increase in severe weather incidents – from heat waves to flooding and major changes in rainfall that will have a major impact on water supply. Dealing with this reality requires holistic planning over the long term based on an understanding of how such changes will interact and affect people's health and wellbeing. Building climate resilience requires an inter-organisational, inter-departmental local response in which the local plan can be an integrating aspect. Above all, climate adaptation must be understood as the main priority for long-term planning to secure climate resilience, and must be accepted as equally as important as meeting housing need.

3.2 Making the most of opportunities for strategic co-operation

Nearly all aspects of climate change will require work that must be carried out across local authority boundaries, on landscape,[34] travel-to-work areas or river catchment area scale. The Localism Act 2011 introduced the duty to co-operate, which requires local planning authorities to co-operate strategically on plan-making issues that cross administrative borders. The 2017 Neighbourhood Planning Act created a legal obligation on LPAs to set out their strategic priorities. The NPPF outlines a number of strategic priorities that should be included in the local plan and to which the duty to co-operate particularly applies. These strategic priorities include climate change mitigation and adaptation (in paragraph 20).

The revised 2018 NPPF requires 'statements of common ground' (see paragraph 27) to demonstrate that the duty to co-operate has been fulfilled. These statements could provide a vital framework for dealing with strategic aspects of climate change. The complex patterns of devolution in England, with combined authorities and joint strategic plans (such as that for the West of England), should provide opportunities for a clear policy narrative on mitigation and adaptation. A strategic approach could reflect the importance of watershed management/river basin management and landscape-scale issues, and could work closely with key sub-regional partnerships such as Local Enterprise Partnerships, Local Nature Partnerships and strategic transport bodies such as Transport for the North, as well as key private sector organisations such as water companies.

3.3 Making the most of opportunities offered by new energy technologies

The trajectory of the deployment and costs of solar photovoltaics (PV) in the UK, and globally, is one that has surpassed expectations. As little as a decade ago, few people were talking seriously about PV. Since then, growth has been exponential, with a doubling of

Note

34 *Green Infrastructure: An Integrated Approach to Land Use*. Position Statement. Landscape Institute, Mar. 2013. https://www.landscapeinstitute.org/wp-content/uploads/2016/03/Green-Infrastructure_an-integrated-approach-to-land-use.pdf


davidmariuz/Thinkstock

deployment globally every two years and costs dropping by around a quarter for each of these doublings.[35] Were this rate of growth to continue to 2030, then the entire global energy demand could be met from solar alone!

Solar PV, along with onshore wind, is now cheaper over its lifetime than new-build coal and nuclear generation, and close to being comparable with gas.[36]

The utility of solar energy (and indeed other variable renewable energy sources such as wind) is also improving as the costs of battery energy storage drop (prices have declined by nearly 80% since 2010[37]), enabling solar power availability to better match demand and address concerns about intermittency.

Set against the relentless rise of solar PV globally, the UK's deployment has been more mixed. From 2010 to the end of 2016 there was massive growth in capacity, from close to zero to nearly 12,000 MW.[38] Following the government's decision to cut financial support for solar farms in July 2015 and with restrictions on domestic installations, deployment has dropped, with less than 1,000 MW deployed in 2017.

More positively, the first signs that deployment costs have dropped sufficiently for the industry to develop without subsidies are emerging, with several schemes (such as Clayhill Farm in Buckinghamshire[39]) having been completed and an estimated further capacity of over 3,000 MW in the planning process.[40] However, major challenges remain. Currently, no new generation capacity (fossil fuel or renewable) can be built without reliance on some form of subsidy, but solar and onshore wind are the only two power sources that are currently excluded from available support mechanisms. The government has indicated that this may change, encouraged by the industry and the Committee on Climate Change, but, until it does, solar remains reliant on securing private supply agreements with large end-users, for example large companies or local authorities.

Notes

35 *New Energy Outlook 2017*. Bloomberg New Energy Finance, 2017. **https://about.bnef.com/new-energy-outlook/**

36 *Electricity Generation Costs*. Department for Business, Energy and Industrial Strategy, Nov. 2016. **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/566567/BEIS_Electricity_Generation_Cost_Report.pdf**

37 *New Energy Outlook 2017*. Bloomberg New Energy Finance, 2017. **https://about.bnef.com/new-energy-outlook/**

38 *Solar Photovoltaics Deployment*. National Statistics. Department for Business, Energy and Industrial Strategy, May 2014, updated Apr. 2018. **https://www.gov.uk/government/statistics/solar-photovoltaics-deployment**

39 L Stoker: 'Inside Clay Hill, the UK's first subsidy-free solar farm'. *Solar Power Portal*, 27 Sept. 2017. **https://www.solarpowerportal.co.uk/blogs/inside_clay_hill_the_uks_first_subsidy_free_solar_farm**

40 F Colville: 'UK post-subsidy solar sites revealed as pipeline exceeds 3.5 GW'. *Solar Power Portal*, 6 Sept. 2017. **https://www.solarpowerportal.co.uk/blogs/uk_post_subsidy_solar_sites_revealed_as_pipeline_exceeds_3.5gw**

Looking ahead to the next decade, solar costs will continue to drop and, combined with wind, electric vehicles, batteries and other technologies, solar power generation will be able to meet an increasing proportion of our energy needs. At the same time, because fossil-fuelled power will always be subject to variable fuel costs it will become relatively less competitive. Consequently solar and other renewable technologies will only become more attractive, and the planning system will have an important role to play in managing their deployment.

3.4 What local planning can do on energy performance following the cancellation of the zero-carbon homes commitment

In 2011, the coalition government made a commitment to deliver the zero-carbon homes policy by 2016. In 2015, the Housing Standards Review reported, and the government announced a number of changes to the building regulation framework, including new optional technical standards on accessibility, water, waste, security and space that may be adopted by a local authority through its local plan. It was silent on energy efficiency standards in anticipation of the then forthcoming 2016 zero-carbon homes policy.

A Written Ministerial Statement soon followed, in which provision in relation to energy performance was made as follows:

> *'For the specific issue of energy performance, local planning authorities will continue to be able to set and apply policies in their Local Plans which require compliance with energy performance standards that exceed the energy requirements of Building Regulations until commencement of amendments to the Planning and Energy Act 2008 in the Deregulation Bill.'* [41]

These specific amendments to the 2008 Planning and Energy Act were intended to remove the ability of LPAs to require energy performance standards for new homes higher than those set in the Building Regulations and were to be enacted at the same time that the government introduced higher energy performance requirements in 2016, through the Building Regulations. The performance increase was expected to be equivalent to a 19% improvement from the target emission rate of the 2013 edition of the 2010 Building Regulations (Part L) and was also the standard referenced within the aforementioned Written Ministerial Statement (i.e. equivalent to Code for Sustainable Homes level 4 energy criteria). However, the government's Productivity Plan subsequently stated that:

> *'The government does not intend to proceed with the zero carbon Allowable Solutions carbon offsetting scheme, or the proposed 2016 increase in on-site*

Note

41 *Planning Update*. HCWS488. Written Statement by the Secretary of State for Communities and Local Government, Mar. 2015. https://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2015-03-25/HCWS488/

Box 4

Government statements supporting local-authority-set energy efficiency standards

During the passage of the Neighbourhood Planning Bill through the House of Lords on 6 February 2017,[i] Baroness Parminter asked in relation to carbon dioxide emissions reductions:

'… can the Minister confirm that the Government will not prevent local councils requiring higher building standards? There is some lack of clarity about whether local authorities can carry on insisting in their local plans on higher standards. … Will the Government confirm that they will not prevent local authorities including a requirement for higher building standards?'

To which Lord Bourne replied:

'The noble Baroness asked specifically whether local authorities are able to set higher standards than the national ones, and I can confirm that they are able to do just that.'

Subsequently, the draft revised NPPF consultation document gave the following signal:

'The Clean Growth Strategy sets out the Government's plans for consulting on energy performance standards in Building Regulations later this year. Local authorities can play an important role in improving the energy performance of buildings, in line with the ambitions of the Clean Growth Strategy, and this will be considered further as the Government develops its consultation proposals.' [ii]

It then specifically asked for feedback on whether paragraph 149b (relating to building standards) needed further amendment to reflect the ambitions in the Clean Growth Strategy to reduce greenhouse gas emissions from buildings. Furthermore, a 19% energy improvement standard (equivalent to Code for Sustainable Homes level 4) was adopted in Ipswich last year and by Brighton in 2016, while Havant and Cambridge City are targeting this standard in their emerging plans. Milton Keynes is pushing for a 19% improvement on the target emissions rate (regulatory minimum), plus a 20% Merton-type rule on top for renewables – this is yet to be adopted.

i House of Lords Grand Committee Debate of the Neighbourhood Planning Bill. *House of Lords Hansard*, 6 Feb. 2017, Vol. 778, cols 358-60. **https://hansard.parliament.uk/Lords/2017-02-06/debates/76AF5263-A938-4851-929D-8CAE765C56B8/NeighbourhoodPlanningBill**

ii *National Planning Policy Framework: Consultation Proposals*. Ministry of Housing, Communities and Local Government, Mar. 2018. p.22. **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685288/NPPF_Consultation.pdf**

Note: The policy position on energy performance is 'fluid' and this information will be updated when the government clarifies the position.

energy efficiency standards, ***but will keep energy efficiency standards under review, recognising that existing measures to increase energy efficiency of new buildings should be allowed time to become established.'*** [42] [Emphasis added]

This cancellation, or perhaps more accurately suspension, of the zero-carbon homes agenda has since created a great deal of confusion and uncertainty. However, at the time of writing, the amendments to the Planning and Energy Act 2008 ***have not been enacted, and the powers afforded to LPAs through the Act to set energy efficiency standards in new homes still exist***. LPAs have the power to adopt such standards where they are compliant with other national policy. This is not a loophole, but is believed to be a deliberate act of government, as the intent to deliver on zero-carbon homes has always remained (albeit the original policy mechanisms have been wound down and the current state of play is set to be reviewed). Several recent government statements support this, as set out in Box 4.

Consequently, both the TCPA and the RTPI (and other stakeholders) believe that LPAs are able to set standards above the building regulatory minimum. ***A 19% reduction in carbon dioxide emissions on the regulatory minimum is a sound 'standard' for LPAs to aim for*** (provided there is an evidence base to support viability, etc.). All these policies apply to new dwellings only. There are no limits on standards across the non-domestic sector (schools, healthcare, retail, industrial offices, etc.) and for 'place' (besides those typical to planning). The UKGBC, in association with Core Cities UK, has produced a 'live' resource pack[43] that is designed to help local authorities drive up the sustainability of new homes. The core content is a 'Policy Playbook' which focuses on energy and carbon, mitigating overheating risk, and the cross-cutting issue of assuring performance.

Notes

42 *Fixing the Foundations: Creating a More Prosperous Nation*. Cm 9098. Productivity Plan. HM Treasury, Jul. 2015. **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/443897/Productivity_Plan_print.pdf**

43 See the UK Green Building Council's 'Sustainability Standards in New Homes' project webpage, at **https://www.ukgbc.org/ukgbc-work/sustainability-standards-new-homes/**

Section 4
Local planning approaches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The following guidance represents a comprehensive package of measures which create a pathway from setting objectives to evidence-gathering and specific mitigation and adaptation policies. The measures build upon and amplify the approach set out in the NPPF and Planning Practice Guidance.

4.1 Overarching climate change objectives in local planning

Plan-making and development management can fully support the transition to a low-carbon future in a changing climate. Local communities are empowered to:

- Shape places to help secure radical cuts in greenhouse gas emissions. This requires the location and layout of new development to be planned to:
  - deliver the highest viable energy efficiency, including the use of decentralised energy;
  - reduce the need to travel, particularly by private car; and
  - secure the highest possible share of trips made by sustainable travel.
- Actively support and help to drive the delivery of renewable and low-carbon energy generation and grid infrastructure.
- Shape places and secure new development to minimise vulnerability and provide resilience to impacts arising from climate change, in ways consistent with cutting greenhouse gas emissions.
- Ensure that there are real opportunities to take positive action on climate change by encouraging community-led initiatives such as the promotion of decentralised renewable energy use or securing land for local food sourcing.
- Increase sustainable transport use and local transport solutions.

It is worth emphasising that these policies simultaneously achieve other social objectives. For example, safe cycling options are good for enhancing human health and the mobility of young people, and local food sourcing can provide an opportunity for the kind of community engagement that the localism and health agendas are seeking to foster.

4.2 The evidence base for plan-making

There has been concern that the evidence for local plan-making can be overly complex. In practice, such evidence should be effective and proportionate. Some elements of climate change evidence are clearly available through strategic flood risk assessments or through national data on carbon dioxide emissions and heat networks. Some emerging tools, such as the Climate Just mapping resource,[44] can help to consolidate map-based data on risks and vulnerabilities to illustrate the impacts on communities and communicate them to wider audiences.[45] On other aspects, such as the risk of future heat stress, the evidence is less clear and may require the commission of specific new resources. Partnering or joint commissioning with universities can be a cost-effective way to access high-quality data and secure research evidence.

It is important to recognise that evidence on climate change is dynamic. For example, risk and vulnerability will change over time in relation to flood plains or sea level rise.

4.2.1 Evidence on viability

Many of the polices set out in this guide can yield tangible and long-term cost savings to individuals and to the insurance industry, as well as real gains to the economy through investment in renewable energy. The 2012 NPPF definition of development viability for plan-making set out a regime skewed in favour of landowners, which made the delivery of action on climate change more difficult. The 2108 NPPF and Planning Practice Guidance set out a significant shift to give local authorities a stronger hand in negotiating viability and securing ambitious local plan policy. The key guidance is set out in the 'Viability' section of Planning Practice Guidance.

Paragraph 002 of Planning Practice Guidance makes clear that:

> *'It is the responsibility of site promoters to engage in plan making, take into account any costs including their own profit expectations and risks, and ensure that proposals for development are policy compliant. The price paid for land is not a relevant justification for failing to accord with relevant policies in the plan.'*

This guidance brings an added measure of certainty to viability assessments both through greater openness and by setting out the key inputs for land valuation, including the use of existing-use value plus a premium for landowners. Room for challenge continues to exist in what this 'plus' factor should be, but the work of a number of local authorities and the impact of recent case law have demonstrated that ambitious local plan policy can be defended as long as it is evidenced and reasonable.

Evidence on viability should be transparent and accessible to all parts of the community, so that local aspirations can be accurately judged against development values over the long term. This means insisting on open-book accounting and adopting the approach of the London Mayor and some London boroughs. Some policy, such as requiring renewable energy from new development, has a positive economic benefit by generating long-term income streams and so should not be recorded as a cost in residual valuations. At the time of writing, CSE and other partners are developing mechanisms to enable the obligations for renewable energy requirements to be vested in community- and municipally-owned energy providers, using Section 106 powers in the same way that they are already used for the provision or maintenance of green infrastructure. The results of this research will be added to this guide once they are published.

Where there are challenges to climate change policy based on viability during the examination of plans, LPAs must ensure that they have discharged their legal duty under Section 19 of the 2004 Planning and Compulsory Purchase Act to include policy which deals with mitigation and adaptation. Decision-makers, including the Planning Inspectorate, should take into account the fact that statute has much greater weight than the policy content of the NPPF.

4.2.2 Good practice on evidence-gathering for local plans

It is recommended that local authorities should take the following action in evidence-gathering for their local development plans:

- ***Joint working across local planning authority boundaries can be the most robust and cost-efficient way to prepare the evidence base for plan-making:*** In preparing the evidence base for plan-making, and in the context of the duty to co-operate, the most robust and cost-effective evidence base on wider-than-local issues might be provided by joint working across local planning authority boundaries. Combined authorities have formal structures to achieve this co-operation, and in other areas the new requirements for strategic plans and statements

Notes

44 See the Climate Just webtool, at **http://www.climatejust.org.uk/**

45 See the maps on the MappingGM website, at **https://mappinggm.org.uk/**

of common ground set out in the 2108 revised NPPF provide opportunities for a co-ordinated approach. Such co-operation will need to involve the Environment Agency, Local Enterprise Partnerships, Local Nature Partnerships, Natural England and water companies to develop assessments for sub-regions, including city-regions.

- ***All data used in the evidence base must be up to date:*** Existing data contained in strategic flood risk assessments and other assessments of future climate impacts form the foundation of a robust evidence base. However, it is vital that these assessments are up to date and take into account changes such as the updated Environment Agency's 'flood risk assessments: climate change allowances',[46] which might significantly change the level of identified risk and vulnerability of planned new development to flooding. Local authorities may also draw on catchment abstraction management strategies, water resource management plans,[47] river basin management plans, water cycle studies and other vulnerability assessments to assess the risks from urban heat island effects, building overheating, and water availability. Local planning authorities may also have regard to the Climate Change Risk Assessment contained in the National Adaptation Programme.
- ***Local planning authorities should consider using 'High++' scenarios when applying the UKCIP 09 projections:*** In applying the UKCIP 09 projections, local planning authorities should consider using the 'High++' scenarios for assessing vulnerability and when planning for resilience and adaptation options regarding sea level rise – especially for particularly vulnerable locations or sensitive development. For impacts not covered by this derived material, such as changes in temperature or extreme weather events, assessments can be informed directly by the latest set of UK Climate Projections[48] and the latest UK Climate Change Risk Assessment,[49] and also by strategic flood risk assessments, surface water management plans, and local climate impacts profiles. Assessments and maps of existing and potential components of ecological networks can also form part of the evidence base for climate change mitigation and adaptation. The latest set of climate projections, UKCP18, were issued in November 2018. In applying the UKCP18 projections, local planning authorities should consider using the highest probabilistic projection scenarios.
- ***An understanding of baseline carbon dioxide emissions is key for successful mitigation policy:*** The key evidence for successful mitigation policy relates to baseline carbon dioxide emissions and a good local understanding of trends. National data sets for carbon dioxide emissions are held by the Committee on Climate Change, and the Department for Business, Energy and Industrial Strategy (DBEIS) produces disaggregated figures for local authorities.[50] Evidence on assessing policy options – for example on differing renewable energy options – can be obtained from DBEIS.[51]
- ***The local community should be engaged in the plan-making process from the very start:*** Involving communities in plan-making from the earliest stage and giving them the information and support to enable them to engage effectively in decision-making can help in identifying locally based low-carbon and resilience measures. Neighbourhood plans provide a particular opportunity to work with community and third-sector groups[52] already blazing a trail in this area.
- ***The supply and demand for renewable and low-carbon energy must be mapped out for potential low-carbon communities:*** Understanding the potential for the supply of and demand for renewable and low-carbon energy in a local area is an essential starting point in considering opportunities to move towards low-carbon communities. A range of methodologies are available to quantify and map renewable energy resources in a particular area. The objective should be to identify sustainable energy resources by considering both potential and environmental

Notes

46 See the Environment Agency's 'Flood risk assessments: climate change allowances' webpage, at **https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances**

47 *Planning Advice for Integrated Water Management: Integrating Water Management at the Strategic Scale of Planning and Design to Achieve Sustainable Development*. Institute for Sustainability Leadership, University of Cambridge, Jun. 2014. **https://www.cisl.cam.ac.uk/publications/natural-resource-security-publications/planning-advice-integrated-water-management**

48 See the UK Climate Projections website, at **http://ukclimateprojections.metoffice.gov.uk/**. The latest set of UK Climate Projections were issued in November 2018. Some users, such as Leeds City Council, are already engaging with their formulation – see the UK Climate Projections Project March 2018 Newsletter, at **http://ukclimateprojections.metoffice.gov.uk/media.jsp?mediaid=88748&filetype=pdf**

49 See the Committee on Climate Change's 'UK Climate Change Risk Assessment 2017 Evidence Report' website, at **https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-climate-change-risk-assessment-2017/**

50 See the UK local authority and regional carbon dioxide emissions national statistics, available at **https://www.gov.uk/government/collections/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics**

51 *Renewable and Low-Carbon Energy Capacity Methodology: Methodology for the English Regions*. SQW Energy and Land Use Consultants, for the Department of Energy and Climate Change and the Department for Communities and Local Government, Jan. 2010. **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/226175/renewable_and_low_carbon_energy_capacity_methodology_jan2010.pdf**

52 See the CSE (Centre for Sustainable Energy) 'Sustainable Neighbourhood Planning Support – supporting communities to create low carbon neighbourhood plans' webpage, at **https://www.cse.org.uk/projects/view/1343**

restrictions. For example, for onshore wind this would mean considering where suitable wind speeds are attained and where there are environmental criteria such as constraints imposed by designated sites and species. Clearly identifying and mapping an area's sustainable resources helps to ensure that a strategic approach is taken, and enables effective community-led spatial planning. Sending clear signals to developers about where renewable energy would be most appropriate can accelerate deployment and avoid conflict. Both communities and energy providers must be integral to this process, so that decisions are realistic, viable and legitimate.

- ***Opportunities for renewable and decentralised energy should be assessed at an early stage:*** It is recommended that local communities assess their area for opportunities for renewable energy and decentralised energy. The assessment could focus on opportunities at a scale which could supply more than an individual building, and could include up-to-date mapping of heat demand and possible sources of supply. Local planning authorities can assist this process by looking for opportunities to secure:
  - decentralised energy to meet the needs of new development;
  - greater integration of waste management with the provision of decentralised energy;
  - co-location of potential heat suppliers and users;
  - the supply of heat through district heating networks; and
  - the use of renewable and low-carbon energy in public buildings, which can act as a critical mass for district heating systems.
- ***Opportunities for increasing the proportion of trips made through sustainable transport routes should be maximised:*** It is recommended that local communities assess their area for opportunities to reduce the need to travel, particularly by car, and to increase the share of trips made by sustainable travel, taking into account the need to maintain the sustainability of rural areas. Local planning authorities can assist this process by looking for opportunities to:
  - secure support for existing and new shops and services, including pre-school/primary education facilities, within walking distance of people's homes, thus reducing the need to travel;
  - secure better conditions for walking and cycling by lowering speed limits, managing motor traffic levels, increasing cycle storage provision and widening route options, for example by improving Rights of Way networks;
  - secure better public transport services, including new demand-responsive and community transport, as well as integration between existing services and opportunities to set up car-clubs; and
  - consider area-/community-based travel plans linked to neighbourhood plans and transport strategies.

4.3 The value of using established assessment frameworks

Adopting assessment frameworks can be a vital, resource-efficient way of delivering better quality and higher standards. Significantly, paragraph 129 of the 2018 NPPF makes clear that:

> *'**Local planning authorities should ensure that they have access to, and make appropriate use of, tools and processes for assessing and improving the design of development.** These include workshops to engage the local community, design advice and review arrangements, and assessment frameworks such as Building for Life. These are of most benefit if used as early as possible in the evolution of schemes, and are particularly important for significant projects such as large scale housing and mixed use developments. In assessing applications, local planning authorities should have regard to the outcome from these processes, including any recommendations made by design review panels.'* [Emphasis added]

The BRE's Home Quality Mark (HQM),[53] BREEAM[54] for buildings, CEEQUAL[55] for public realm/infrastructure and BREEAM for communities and the Passivhaus Trust's Passivhaus[56] assessment frameworks are designed to drive standards through benchmarking and positive (credible) recognition supported by formal verification.

In the case of HQM, BREEAM and CEEQUAL, this verification comes in the form of a UKAS (United Kingdom Accreditation Service) accredited certification process. All schemes provide a holistic set of criteria which not only support the delivery of an energy-efficient, resilient built environment, but also help to mitigate unintended consequences (such as those related to temperature control) and drive healthier, better-managed places.

BREEAM and CEEQUAL assessments are made on a 'Good' to 'Excellent' and then 'Outstanding' scale.

Notes

53 See BRE's Home Quality Mark website, at **https://www.homequalitymark.com/**

54 See BRE's BREEAM website, at **https://www.breeam.com/**

55 See BRE's CEEQUAL website, at **http://www.ceequal.com/**

56 See the Passivhaus Trust website, at **http://www.passivhaustrust.org.uk/**

The HQM (launched in 2015) is structured differently: it has a two-tier scoring system which includes a five-star rating and three quality indicators relating to environmental footprint, wellbeing, and running costs. The indicators are also scored on a scale of one to five. A broad spectrum of sustainability and quality issues can be targeted within the HQM to contribute to the overall star rating, offering flexibility for housebuilders. However, certain performance levels on the indicators (which are generated in parallel with the star rating) have to be addressed to a prescribed level. If they are not met, the indicator score will be capped, despite the overall star rating achieved. HQM indicators are therefore best used to provide the assurance for policy-makers, financiers and other stakeholders that a certain level of performance within a certain area of sustainability has been met. Homes which achieve level 4 on the footprint indicator will meet the 19% energy and carbon improvement standard outlined in Section 3.4 above. BREEAM and CEEQUAL have minimum performance criteria embedded within the overall ratings.

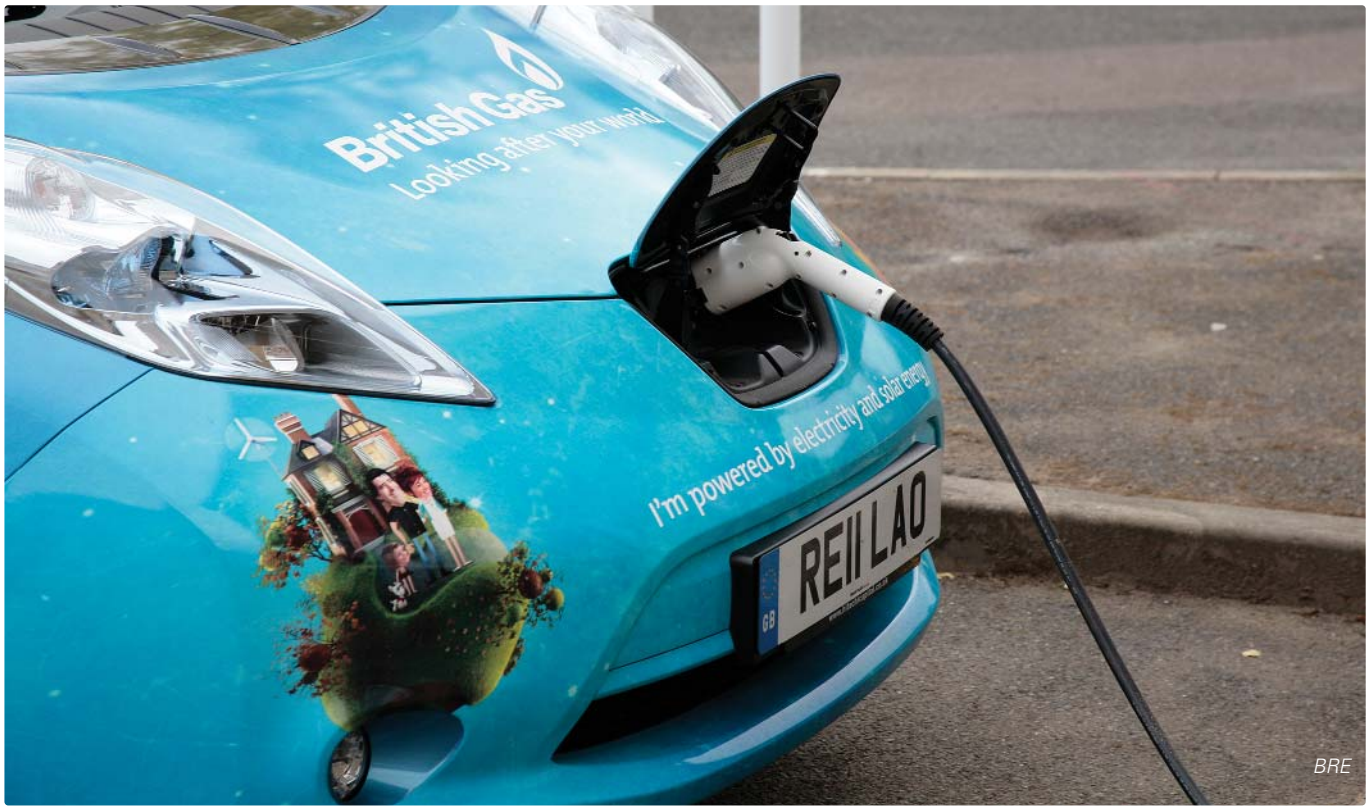
BREEAM and CEEQUAL are already widely adopted in local plan policies, while the HQM is beginning to be used as a 'deemed to satisfy' and/or preferred option within emerging plans (for example at Havant, the London Borough of Camden, and Ipswich) as one way of demonstrating and committing to delivering performance. The HQM will form the delivery element of the recently launched Essex County Council Design Guide (and Essex LPAs' policies), and BRE is in discussion with Hampshire County Council, Hertfordshire County Council and the Greater London Authority on a similar thread.

4.4 Plan-making for adaptation

4.4.1 Local planning approaches to adaptation

Successful adaptation requires a holistic approach which includes everything from flood risk to heat stress. It requires evidence and policy that reflect the complex interrelationship of risks and vulnerabilities on matters such as people's health and wellbeing and the disproportionate impacts of issues such as heat stress on vulnerable groups. It requires co-operation with key agencies in public health to achieve a holistic approach. For much of the adaptation action that can be taken there will be multiple benefits, such as in the deployment of green infrastructure.

This guide does not repeat the comprehensive advice provided on flood risk by the NPPF, Planning Practice Guidance and the Environment Agency. However, it is worth noting that the application of the sequential test and the exception test should involve consideration of design innovation. Many EU nations have pioneered design approaches that allow communities to live with flood risk, and the UK's planning systems should seek to encourage such innovation, particularly in places that have no alternative realistic development options. Where building designs can demonstrate they can deal with flood risk safely over the long term, they should be positively considered against the exception test (and against the sequential test, if it has been applied).



BRE

MikeNicholson1955/Thinkstock

Principles

- Local development plans can set out how the local authority area will be planned over the long term to adapt to the opportunities and impacts arising from climate change. This requires a planning horizon of 50-100 years.
- Local development plans need to consider adaptation action across all spatial scales, from micro building-scale measures to future patterns of urban development. In some areas this will require the radical reconsideration of future growth options.

Good practice

It is recommended that, in their local development plans, local authorities should take the following action:

- Bring forward adaptation options for existing development in areas with significant vulnerability to impacts likely to arise from climate change.
- Pay particular attention to vulnerable groups,[57] as different impacts (and different options to manage impacts) will affect various parts of the community differently.
- Set out how new development should be planned to avoid significant vulnerability to impacts arising from climate change on a 50-100 year time horizon, tailored to the local authority area and the lifetime of the proposed development.
- Ensure that, when new development is brought forward in areas with significant vulnerability to impacts arising from climate change, risks can be avoided or managed through suitable and sustainable adaptation measures so as to provide sufficient resilience – in areas of water stress, and in order to secure development that would otherwise be unacceptable for its proposed location, resilience could be provided by setting standards for water usage in new development (any proposed standard should comply with Section 4.5.5 of this guide).
- Plan green infrastructure as part of wider green infrastructure networks in order to optimise its many benefits, including (in addition to supporting local biodiversity) supporting healthy living environments through providing, for example, urban cooling, local flood risk management, carbon sequestration, and local access to shady outdoor space. The planning guide to green infrastructure produced by the TCPA and The Wildlife Trusts provides more detail.[58]
- Adopt a creative approach to design innovation. The NPPF indicates that new development should be steered away from flood risk areas, but there can be cases where it is not possible to do this, or where to do so would be incompatible with wider sustainable development objectives. In these situations, innovative design can be used not only to manage the flood risk, but also to help resolve tensions that sometimes

Notes

57 For example by using the Climate Just mapping tool, available at **http://www.climatejust.org.uk/**

58 *Planning for a Healthy Environment – Good Practice Guidance for Green Infrastructure and Biodiversity*. TCPA and The Wildlife Trusts. TCPA, Jul. 2012. **https://www.tcpa.org.uk/Handlers/Download.ashx?IDMF=34c44ebf-e1be-4147-be7d-89aaf174c3ea**

exist between common mitigation approaches (for example the raising of finished floor levels or the provision of non-habitation uses on ground floors) and other planning issues such as access, overshadowing, heritage, and street scene. Such techniques range from internal ramping and localised land raising (with compensatory storage provided), through under-croft parking and pushing second storeys up into roof spaces, to approaches which allow buildings and their associated access routes to rise and fall with flood waters. Such measures – particularly where they help to reduce flood risk overall (for example by providing net additional flood storage, or by providing protection to existing homes from flood risk), or where they provide wider economic, social or environmental benefits to the community – can contribute to making appropriate development acceptable in flood risk areas. As ever, it will be up to decision-makers to determine the weight to be afforded to flood risk and other material planning considerations in the planning balance – although it should be noted that the presumption in favour of sustainable development does not apply when the NPPF's policies on development in flood risk areas suggest that development should be restricted. An industry-led code of practice on property level flood resilience techniques, due to be released at the end of 2018/early 2019, will provide more detail on such techniques. *Improving the Flood Performance of New Buildings,*[59] issued by the Department for Communities and Local Government, provides further guidance.

4.4.2 Local planning approaches to selecting sites for new development

Local planning authorities are under intense pressure to allocate sites for new housing in local plans, but site selection is a foundational component of dealing with climate change. Reducing the need to travel, connecting to existing heat networks and avoiding areas of flood risk are obvious considerations that can sometimes be in tension.

Principles

- In assessing sites for their suitability for new development, local authorities should consider their potential to support the move to a low-carbon future and to adapt to or mitigate the impacts of climate change holistically. Where sites perform poorly against any of the criteria identified below, local authorities should consider alternative site allocations, including opportunities for new communities.

Good practice

It is recommended that local planning authorities assess the suitability of sites for new development, and for the type and intensity of development, against the following criteria:

- whether developing the site is appropriate, having regard to the long-term suitability of building in the location, as well as the intended lifetime of the proposed development and any increases in risk resulting from climate change to known physical and environmental elements such as sea level rise, flooding, increased temperatures, instability, and extremes of weather;
- the extent to which existing or planned opportunities for decentralised energy could contribute to the energy supply for new development on the site;
- the potential for new development on the site to contribute to heat demand, or be a potential source of supply, where a heat network exists or could be provided;
- the scope for sustainable and low-carbon transport (particularly physically active modes) to make up a high proportion of trips to and from the site, including service trips;
- whether development of the site would result in the loss of a significant carbon sink;
- whether developing the site would offer opportunities to help the existing community to adapt to impacts arising from climate change, including through active water management (taking existing communities out of flood risk), sustainable drainage systems, and green infrastructure;
- the effect of developing the site on the capacity of biodiversity to adapt to likely climate change;
- whether the development provides gardens and plots for allotments, or other community areas to maximise opportunities for local food sourcing; and
- whether the development can improve sustainability through the creation of new jobs or by increasing the competitiveness of the area.

4.5 Plan-making for mitigation

4.5.1 Local planning approaches to reducing carbon dioxide emissions

The 2004 Planning and Compulsory Purchase Act duty on plan-making to mitigate climate impacts and the NPPF's requirement for 'radical reductions' (paragraph 148) in carbon dioxide emissions in line with objectives of the 2008 Climate Change Act create a powerful basis for local action. Local plans need a strong and precise policy narrative to show how such reductions will be achieved.

Note

59 *Improving the Flood Performance of New Buildings: Flood Resilient Construction*. RIBA Publishing, for the Department for Communities and Local Government, May 2017.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

Model policy
Draft Greater Manchester Spatial Framework – carbon emissions

Policy GM15: Carbon emissions

'Greater Manchester will have seen a 60% reduction in carbon emissions compared to 1990 levels by 2035. The following measures will help to achieve this:

1. *Direct development to locations that will minimise the need to travel and maximise the use of sustainable modes of transport for the movement of people and freight;*
2. *Secure major improvements to the walking, cycling, public transport and sustainable freight networks, including the use of integrated ticketing to promote the use of the public transport network;*
3. *Require new development to accord with the energy hierarchy, which in order of importance seeks to minimise energy demand, maximise energy efficiency, utilise renewable energy, utilise low carbon energy, and only then use other energy sources;*
4. *Require new developments to include a detailed carbon assessment to demonstrate how the design and layout of the development has sought to maximise reductions in carbon emissions, where appropriate;*
5. *Support the implementation of programmes and projects for retrofitting the existing building stock, especially in those areas where fuel poverty is a significant issue;*
6. *Increase the area of habitats that sequester and store carbon, including through a more than doubling of tree cover and the extensive restoration of blanket bog and lowland raised bog;*
7. *Support the delivery of renewable and low carbon energy schemes for all development but with particular opportunities for the use of decentralised heating and cooling networks in the strategic development locations.'*

Source: *Draft Greater Manchester Spatial Framework. Draft for Consultation.* Greater Manchester authorities, Oct. 2016, p.80.
http://www.greatermanchester-ca.gov.uk/download/downloads/id/371/draft_greater_manchester_spatial_framework_october_2016_-_full_version.pdf

Note: *This policy is currently being re-written.*

Model policy
Leeds City Council Core Strategy – carbon dioxide emissions

Policy EN1: Climate change – carbon dioxide reduction

'All developments of 10 dwellings or more, or over 1,000 square metres of floorspace, (including conversion) where feasible, will be required to:

- *Provide a 20% reduction in CO_2 emissions over Part L Building Regulations requirements (2013) until such time as the energy performance requirement in Building Regulations is set at a level equivalent to that in Code Level 4 of the Sustainable Homes.*
- *Provide a minimum of 10% of the predicted energy needs of the development from low carbon energy.'*

Source: *Implementation of Core Strategy Policies EN1 and EN2.* Leeds City Council, 2015.
https://www.leeds.gov.uk/docs/Implementation%20of%20Core %20Strategy%20Policies%20EN1%20and%20EN2.pdf

Principles

- Local development plans must contain policies which, taken as whole, secure radical reductions in carbon dioxide emissions. Plans should achieve this by identifying a range of policies which reduce carbon dioxide emissions and encourage renewable energy generation.
- Local authorities must have an effective monitoring regime to ensure that there is clear evidence of progress on reducing carbon dioxide emissions, and this progress must be clearly recorded in their annual monitoring reports.

4.5.2 Local planning approaches to renewable and low-carbon energy and associated infrastructure

This guide has set out the opportunities offered by rapidly evolving renewable energy technologies and how they can support a low- and zero-carbon future. The most effective way to capitalise on such opportunities is through the development of a comprehensive energy plan which reflects how the various renewable technologies can be best tailored to the spatial development ambitions of a particular locality. *Spatial Planning & Energy: A Guide for*

Model policy

Barnsley Local Plan – commitment to consider biomass heating systems for new and refurbished buildings

Policy CC1: Climate change and sustainable construction

'Development will be expected, subject to viability, to:
- *Reduce and mitigate the impact of growth on the environment and carbon emissions*
- *Ensure existing and new communities are resilient to climate change*
- *Harness the opportunities that growth, and its associated energy demands, brings to increase the efficient use of resources through sustainable construction techniques and the use of renewable energy*

We will take action to adapt to climate change by:
- *Giving preference to development of previously developed land in sustainable locations*
- *Locating and designing development to reduce the risk of flooding*
- *Promoting the use of sustainable drainage systems*
- *Promoting investment in Green Infrastructure to promote and encourage biodiversity gain*

Development will be expected, subject to viability, to demonstrate how it minimises resource and energy consumption, compared to the minimum target under current Building Regulations legislation, and how it is located to withstand the longer term impacts of climate change.

All non-residential development will be expected, subject to viability, to achieve at least BREEAM standard of 'very good' or equivalent. This should be supported by preliminary assessments at planning application stage.

All developments will be expected, subject to viability, to seek to initially incorporate appropriate design measures to reduce energy use, and thereafter decentralised, renewable or low carbon energy sources in order to reduce carbon dioxide emissions and should at least achieve the appropriate carbon compliance targets as defined in the Building Regulations.'

Source: *Local Plan Publication Draft 2016*. Barnsley Metropolitan Borough Council, Dec. 2016.
http://consult.barnsley.gov.uk/portal/development/planning/lppd2016/lppd2016?pointId=s1466625746635

Planners[60] and *Energising Masterplanning*[61] (both outputs from the EU SPECIAL project) provide further guidance on the benefits of energy planning.

Principles

- Building on the evidence base approaches set out in Section 4.2, local planning authorities are advised to design their policies to support and not unreasonably restrict renewable and low-carbon energy developments. Strategic sites which are central to delivering a local planning approach for decentralised energy should be allocated in the local plan.
- Given the need to build public consent for renewable projects, LPAs may wish to consider experimenting with bottom-up energy planning approaches at the neighbourhood scale, built around workshops which foster *informed consent* for renewables. This work is being pioneered by CSE.[62]

Good practice

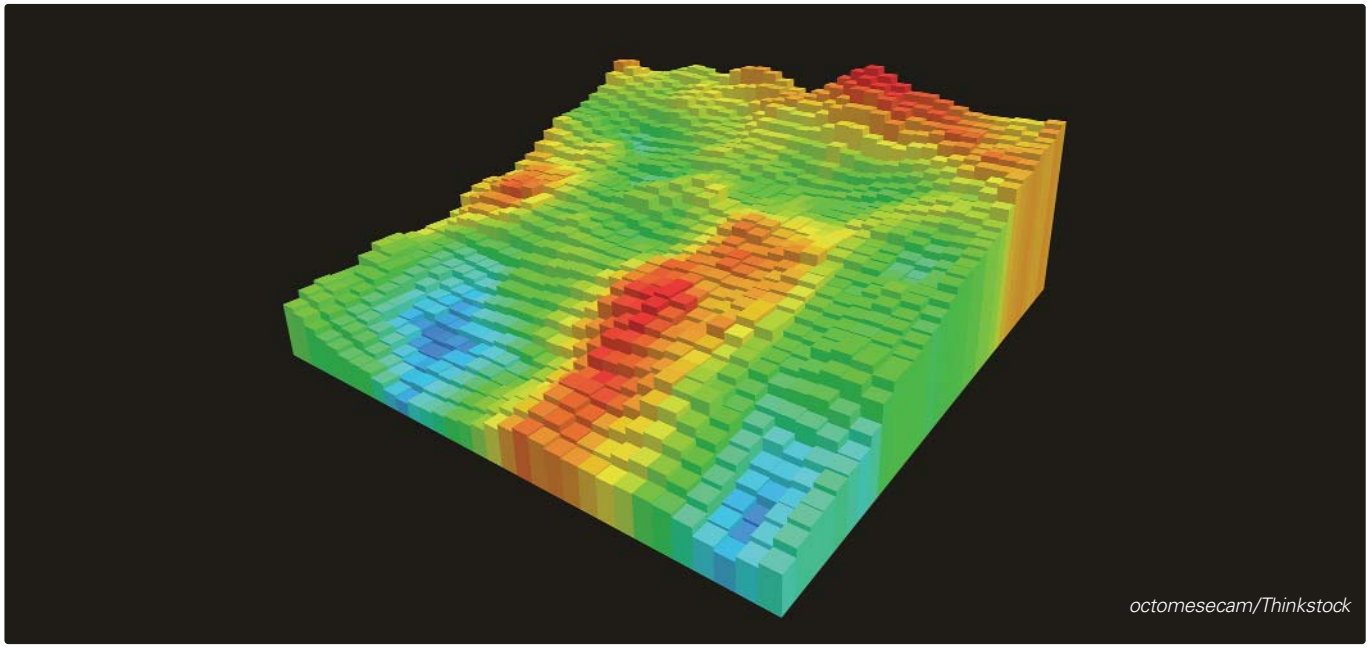
It is recommended that local authorities:
- Ensure that any local criteria-based policies – including local approaches for protecting landscape and townscape – which will be used to assess planning applications for renewable and low-carbon energy and associated infrastructure:
  - provide appropriate safeguards, so that any adverse impacts are addressed satisfactorily, but

Notes

60 *Spatial Planning & Energy: A Guide for Planners*. SPECIAL project. TCPA, Mar. 2016.
http://www.special-eu.org/assets/uploads/SPECIAL_Pan_Euro-Guide.pdf

61 K Henderson: *Energising Masterplanning*. SPECIAL Expert Paper 1. SPECIAL project. TCPA, Jun. 2015.
http://www.special-eu.org/assets/uploads/SPECIAL_EP1.pdf

62 See the CSE (Centre for Sustainable Energy) 'Future Energy Landscapes – community consultation method' webpage, at
https://www.cse.org.uk/projects/view/1315



do not preclude the development of specific technologies other than in the most exceptional circumstances;
- require the scale and impact of developments affecting recognised designations (Sites of Special Scientific Interest, Local Wildlife Sites, irreplaceable habitats such as ancient woodland, National Nature Reserves, National Parks, the Broads, Areas of Outstanding Natural Beauty, Nature Improvement Areas, Heritage Coasts, Scheduled Monuments, Conservation Areas, Listed Buildings, Registered Historic Battlefields, internationally recognised designations (Natura 2000 sites), and Registered Parks and Gardens) to be compatible with the purpose of the designation; and
- are informed by the approach and policies set out in the National Policy Statements for nationally significant energy infrastructure.

- Identify the most, and least, environmentally sensitive areas for deployment of different renewable technologies, and communicate this information to developers and communities, making explicit what criteria have been applied, including the relevant approaches set down in the NPPF on renewable energy.[63]
- Set out how any opportunities for district heating (to supply existing buildings and/or new development) identified through heat mapping will be supported.
- Set out the decentralised energy opportunities that can supply new development proposed for the area.
- Support opportunities for community-led renewable and low-carbon energy developments, including the production, processing and storage of bio-energy fuels.

4.5.3 Local planning approaches to setting requirements for using decentralised energy and district heat networks in new development

The government has signalled its support for developing heat networks and is supporting some local authorities to develop strategies to exploit heat networks.

Principles

- Local requirements for decentralised energy can be set out in a development plan document and could be derived from an assessment of local opportunities in line with Section 4.2.
- Where there are existing, or firm proposals for, decentralised energy supply systems with capacity to supply new development, local planning authorities can expect proposed development to connect to an identified system, or to be designed so that it can connect to it in future. In such instances, and in allocating land for development, it is recommended that local authorities set out how the proposed development would be expected to contribute to the decentralised energy supply system.
- Where a local requirement relates to a decentralised energy supply system fuelled by bio-energy, local planning authorities could ensure that fuel sources meet the objectives of sustainable development by not creating demand for bio-energy fuels known to

Note

63 See paragraph 151 of the NPPF

result in net carbon emissions through production methods, transport requirements, loss of carbon sinks or other environmental harm, such as loss of habitat or damage to landscapes.

Good practice
It is recommended that local authorities set requirements for decentralised energy that:
- relate to identified development areas or specific sites;
- are consistent with giving priority to energy-efficiency measures; and
- focus on opportunities at a scale that developers would not be able to realise on their own in relation to specific developments.

If a local requirement is set out as a target for the use of decentralised energy in new development, the target could be expressed as:
- the percentage reduction in carbon dioxide emissions to be achieved (in doing so, local planning authorities should set out how the target relates to standards for carbon dioxide emissions set by the Building Regulations); or
- an amount of expected energy generation, expressed in megawatt-hours per year.

4.5.4 Local planning approaches to setting authority-wide targets for using decentralised renewable energy (the 'Merton rule')

The powers in the 2008 Planning and Energy Act enabling local authorities to require 'Merton style' targets for renewable energy generation remain in place, and local authorities can require such measures, subject to the viability test. The problems of dealing with this test are set out in Section 4.2.1. The best example of the use of this requirement and a supporting methodology is contained in the draft London Plan, as set out as a model policy in the box below. The abolition of zero-carbon commitment creates an opportunity to use a Merton rule type of policy to achieve local ambitions for zero-carbon and energy-positive development.

Principles
- To deliver on the ambition of zero-carbon and energy-positive communities, local plans should set out decentralised renewable energy targets for application across a whole local authority area. These targets should be designed to secure a

Model policy
London Plan – zero-carbon commitment

Policy SI2: Minimising greenhouse gas emissions

'A Major development should be net zero-carbon. This means reducing carbon dioxide emissions from construction and operation, and minimising both annual and peak energy demand in accordance with the following energy hierarchy:
1) Be lean: use less energy and manage demand during construction and operation.
2) Be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly. Development in Heat Network Priority Areas should follow the heating hierarchy in Policy SI3 Energy infrastructure.
3) Be green: generate, store and use renewable energy on-site.
B Major development should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy and will be expected to monitor and report on energy performance.
C In meeting the zero-carbon target a minimum on-site reduction of at least 35 per cent beyond Building Regulations[i] is expected. Residential development should aim to achieve 10 per cent, and non-residential development should aim to achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided:
1) through a cash in lieu contribution to the relevant borough's carbon offset fund, and/or
2) off-site provided that an alternative proposal is identified and delivery is certain.
D Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver greenhouse gas reductions. The operation of offset funds should be monitored and reported on annually.'

i Building Regulations 2013. If these are updated, the policy threshold will be reviewed

Source: *The London Plan: The Spatial Development Strategy for Greater London. Draft for Public Consultation.* Greater London Authority, Dec. 2017. **https://www.london.gov.uk/sites/default/files/new_london_plan_december_2017.pdf**


zstockphotos/Thinkstock

minimum level of decentralised renewable energy use in new development.
- Development plans should ensure that such targets are based on a strong evidence base and are linked to the wider ambition of delivering radical cuts in carbon dioxide emissions.

4.5.5 Local planning approaches to setting requirements for sustainable buildings

Section 2 of this guide sets out the legal and policy background to the adoption of building standards. It emphasises that local planning authorities still have some flexibility with respect to housing standards, and have retained the pre-2015 reform powers with respect to non-domestic buildings and the public realm.

In this context there are a range of building standards and assessment frameworks which local authorities can adopt, subject to the viability test, including:
- BRE's Home Quality Mark;
- BRE's BREEAM Buildings;
- BRE's CEEQUAL (for public realm/infrastructure);
- BRE's BREEAM Communities;
- Passivhaus standards[64] (owned by the Passivhaus Trust); and
- the Sustainable Homes' SHIFT standard.[65]

The BRE schemes are holistic in their scope and include criteria that address a wide range of climate change issues (including energy and carbon efficiency, water use, flooding, and mitigation of the risks of overheating). Other kinds of design advice are available on specific issues – for example, the Zero Carbon Hub website includes guidance on assessing and addressing overheating in homes.[66]

Principles
- Any local requirement for a building's sustainability should be set out in a development plan document and applied appropriately to specific sites.

Good practice
In setting any local requirement for a building's sustainability, it is recommended that local authorities:
- Ensure that any local standards for a building's performance, or for measuring a building's performance, on matters relating to construction techniques, building fabric, products, fittings and finishes have a robust justification and do not duplicate the Building Regulations (unless, in the case of electric vehicle charging infrastructure/ cabling, this is a local requirement, or, in the case of green roofs, this supports a local planning approach to adaptation).

Notes

64 See the BRE's 'Passivhaus standard' webpage, at **http://www.passivhaus.org.uk/standard.jsp?id=122**

65 See Sustainable Homes' SHIFT website, at **https://www.sustainablehomes.co.uk/shift/**

66 *Overheating in Homes: Risk Management Strategies for Local Authorities*. Zero Carbon Hub. **http://www.zerocarbonhub.org/sites/default/files/Strategies%20for%20Managing%20Overheating%20Slides%20for%20Local%20Authorities%20FINAL.pptx**

Model policy

Camden Local Plan – making buildings resilient to climate change

Policy CC2: Adapting to climate change

'The Council will require development to be resilient to climate change.

All development should adopt appropriate climate change adaptation measures such as:
a. the protection of existing green spaces and promoting new appropriate green infrastructure;
b. not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems;
c. incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and
d. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

Any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement.

Sustainable design and construction measures

The Council will promote and measure sustainable design and construction by:
e. ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation;
f. encourage new build residential development to use the Home Quality Mark and Passivhaus design standards;
g. encouraging conversions and extensions of 500 sqm of residential floorspace or above or five or more dwellings to achieve 'excellent' in BREEAM domestic refurbishment; and
h. expecting non-domestic developments of 500 sqm of floorspace or above to achieve 'excellent' in BREEAM assessments and encouraging zero carbon in new development from 2019.

Source: *Camden Local Plan 2017*. London Borough of Camden, Jul. 2017, pp.258-59.
http://camden.gov.uk/ccm/cms-service/stream/asset/;jsessionid=85C6D0261034D0539EAD99D386146724?asset_id=3655163&

In the use of assessment frameworks, local authorities are advised to:

- Consider the stages and timings of certification, so as to ensure that development is not impeded and that a specific performance level has been met – for example, a final certificate issued under a BRE scheme would have been assessed using as-built evidence,[67] providing the highest level of rigour and confidence in performance.
- Take account of the impact and size of the development – some LPAs prefer to set higher performance levels based on floor area, cost and/or unit number, and this can enable higher standards to be met where viability is potentially stronger, while ensuring a minimum standard across the board.
- Focus on policy resilience and long-term aspirations – the BRE schemes are updated regularly to ensure that the performance criteria remain relevant and challenging where appropriate. As such, a BREEAM 'Excellent' rating under a 2011 scheme version will be less onerous to achieve in comparison with that under the recently launched 2018 scheme. LPAs should consider their long-term objectives, and may wish to set standards aligned to annual targets.
- Consider the flexible application of ratings. The highest rating under the BRE schemes (i.e. 'Outstanding' ratings) make up less than 2% of all projects assessed[68] – they are designed to be challenging and, while the highest level of performance should be encouraged, it may not always be suitable for every project.

Notes

67 With the exception of BREEAM Communities, which assesses the masterplanning stages

68 *The Digest of BREEAM Assessment Statistics. Volume 01, 2014*. BRE Global, 2014.
https://tools.breeam.com/filelibrary/Briefing%20Papers/BREEAM-Annual-Digest—-August-2014.pdf

Model policy

Leeds City Council Core Strategy – sustainability in building design and construction

Policy EN2: Sustainable design and construction

'Commercial developments of 1,000 or more square metres (including conversion) are required to meet the BREEAM standard of 'excellent', where feasible. Residential developments of 10 or more dwellings (including conversion) are required to meet a water standard of 110 litres per person per day and an energy efficiency standard equivalent to the standard at Level 4 of the Code for Sustainable Homes, where feasible.'

Source: *Implementation of Core Strategy Policies EN1 and EN2.* Leeds City Council, 2015.
https://www.leeds.gov.uk/docs/Implementation%20of%20Core%20Strategy%20Policies%20EN1%20and%20EN2.pdf

4.5.6 Local planning approaches to sustainable transport

Transport is major source of carbon dioxide emissions, giving rise to major impacts on human health, including through pollution in urban areas. The increase in transport emissions over the last 50 years has primarily been caused by the increase in trip lengths and by a modal shift towards the car, accompanied by changing land use patterns. This increase has offset any emissions reductions from improved vehicle efficiency.[69] Well-planned development can create opportunities for more sustainable transport choices and healthy lifestyles. Planning also needs to consider the technological transformation of transport systems, with the rapid introduction of electric vehicles, the use of autonomous vehicles, and radical changes in the nature of work and leisure, all of which may alter travel patterns.

Principles

- LPAs should prioritise walking, cycling and public transport and other smarter choices by setting targets for the proportion of trips in their area by these modes.
- Sustainable transport needs to be considered in an integrated manner[70] at the beginning of the plan-making process, so that development patterns are shaped by existing and planned sustainable transport infrastructure and to enable transport operators to respond as early as possible to development.
- LPAs should consider how the rapid and large-scale deployment of electric vehicles will impact on their plan policies.

Good practice

In this context, local authorities are recommended to:

- Support the development of voluntary travel plans for existing developments and communities – for example using the neighbourhood planning process.
- Ensure that appropriate targets are set within travel plans for new development, particularly for new neighbourhoods.
- Ensure that their infrastructure delivery plan includes investment in transport infrastructure, including public transport, that will contribute towards the achievement of these targets.
- Work in partnership with the regional or local transport authority and local transport providers (bus/train operators and community transport) to:
  - identify and establish within the local plan a strategic and local transport network to serve the needs of the area throughout the plan period;
  - support the delivery of the associated infrastructure and services throughout the period of the plan; and
  - establish the extent and levels of service that should underpin the strategic and local networks for existing and new developments, ensuring that they are consistently underpinned by other relevant policies.
- Monitor the numbers of trips and the proportions undertaken by different modes of transport.
- Establish a car parking management strategy and maximum car parking standards that are consistent with the promotion of the above principles, so as to support smarter choices, including the promotion of walking, cycling and public transport.

Local authorities should design their policies to focus on prioritising a move away from car dependency. Policies could include:

- prioritisation of development which focuses on improving local high streets and town centres;
- the prevention of both urban sprawl and the development of out-of-town centres; and
- measures to ensure that planning, transport and public health policies are joined up such that actions committed to and priorities outlined in the local transport plan are supported by planning approaches – local authorities should ensure that all developments are at least air quality neutral and do not lead to further deterioration of existing poor air quality.

Notes

69 A Wenban-Smith: 'Land-use drivers of transport emissions – revisited'. *Proceedings of the Institution of Civil Engineers – Transport*, 2016, Vol. 170 (2), 76-85. doi.org/10.1680/jtran.15.00097

70 R Hickman, C Seaborn, P Headicar, D Banister and C Swain: 'Spatial planning for sustainable travel?'. *Town & Country Planning*, 2010, Vol. 79, Feb., 77-82. Available at **http://www.tsu.ox.ac.uk/pubs/rhickman-paper02.pdf**

In the context of their transport strategies, LPAs should consider how to support the rapid deployment of electric and plug-in hybrid vehicles, ensuring in particular that new developments with parking facilities:

- are designed to provide opportunities for charging such vehicles, especially at home;
- include cabling for charging infrastructure;
- provide relevant charging infrastructure; and
- support the use of car clubs, particularly for such vehicles.

Model policy

Nottingham City Council – workplace parking levy to fund public transport improvements

Proposal PP1: Workplace parking levy

'The City Council is fully committed to introducing a Workplace Parking Levy (WPL) within its administrative boundary having developed a robust business case for the scheme. This demand management tool will influence the travel behaviour of commuters by introducing a levy for employers within the city of Nottingham's administrative boundary that provide 11 or more liable parking places. The WPL is a charge made for each parking place provided by an employer and used by employees, certain types of business visitors, and pupils and students. The decision remains with the employer as to whether they decide to pass the charge on to their employees. Employers will be required to obtain an annual licence for the maximum number of liable places they provide.

As commuters are the main cause of congestion in Nottingham, the City Council believes that it is only fair that employers accept their responsibility and proactively manage the traffic going to and from their employment sites and contribute to investment in public transport alternatives to the car. Ultimately employers will benefit from less congestion than otherwise would occur and employees will gain better public transport options.

The WPL will also:

- *Further encourage the uptake of travel plans and responsible parking management policies.*
- *Encourage employers to give stronger consideration to the development potential/costs of land used as parking in the city.*
- *Represent a financially efficient, high value for money proposal, with relatively low development costs and shorter implementation timescales than alternative charging mechanisms.*

The WPL will contribute to the necessary local funding contribution required for Nottingham's extension to the tram system, (NET Phase Two), safeguard the long-term future of supported Linkbus services and contribute to the redevelopment of Nottingham's Station Hub. It is estimated that the WPL will raise in the order of £14 million a year. This revenue will be ring fenced for investment in improving public transport in Nottingham. The City Council considers that the introduction of an extensive package of improvements as a result of the availability of WPL income will create a modern transport system, which will have a major impact on lessening congestion pressures and provide the necessary network capacity for future anticipated growth.

Extensive modelling has been used to assess both direct and indirect transport impacts of the WPL:

- *Direct transport impacts are where employee travel behaviour is altered directly by the imposition of the levy charge. As a tool in itself, it is considered that the WPL would have a positive but modest impact on modal shift. This is because not all employers will pass the levy onto their staff and where they do, due to the low costs involved, the number of affected employees who decide to transfer to public transport rather than use their car is likely to be relatively modest.*
- *Additional and larger direct positive impacts on modal shift would accrue from the wider demand management impacts of the WPL, complementary employer action to actively promote alternatives to the car and by positively managing staff parking provision.*
- *Indirect transport impacts will arise as a result of changes in travel behaviour due to the introduction of public transport infrastructure, integration actions and services funded wholly or in part by the WPL income, including NET Phase Two, Nottingham Station Hub improvements, and maintaining and enhancing bus services (e.g. Linkbus network development).*

Source: *Nottingham Local Transport Plan Strategy 2011-2026.* Nottingham City Council, Apr. 2011, pp.53-54.
http://www.transportnottingham.com/wp-content/uploads/2017/10/LTP-3.pdf

Section 5
Delivery and development management

In theory, England has a plan-led system. This means that all planning decisions should be taken in line with the local plan (which should contain detailed policy on climate mitigation and adaptation). However, as over half of English local planning authorities do not have a post-2012 up-to-date adopted plan, and many plans that were adopted post-2012 fail to demonstrate a five-year land supply (and can therefore be judged out of date), housing-related policy in a local plan may carry less weight and then the presumption in favour of development applies. It is vital that development management decisions made where a plan is absent or out of date reflect the principles identified in Section 14 of the NPPF, in Planning Practice Guidance and in Section 4 of this guide. Decisions must be based on sound evidence, assessing and reflecting the likely climate impacts, including carbon dioxide emissions, of a scheme over the full lifetime of the development. The importance of these factors will depend on the scale and location of the development. Just as with plan policy, changes in the climate impacts of the new development over time must also be considered, including responses to increased temperatures, river flows and sea level rise[71] over the full lifetime of the development.

The NPPF and Planning Practice Guidance contain well established guidance on the application of the sequential and exemption tests for flood risk. There is much less guidance for other adaptation issues and on mitigation. In particular, more attention must be paid to overheating and the impacts it has on human health and wellbeing; it is necessary to have a full understanding of the fabric of urban areas and of how design and the deployment of green infrastructure can reduce summer temperatures. Local planning authorities must be aware of the extent of permitted development in their area, and should keep track of the cumulative impacts that this type of development may have on the urban environment, particularly while the government is promoting other new policies on increasing the density of homes. Such high-density living can work well, but only when development meets the highest design standards and takes factors such as the urban heat island effect into account.

Box 5

Dealing with the presumption in favour of development

The general presumption in favour of development set out in paragraph 11 of the NPPF is qualified for where development would conflict with NPPF policy. Footnote 6 of the NPPF lists examples of development subject to this qualification, and identifies flood risk as an example.

In practice this means that the presumption does not apply where a development conflicts with NPPF policy. The courts have determined that the word 'restricted' in paragraph 14 of the 2012 NPPF should have a relatively wide meaning and could cover any situation where the NPPF indicates a policy that cuts across the underlying presumption in favour of development. Arguably, this includes, for example, the local environmental concerns set out in the fifth bullet point of paragraph 170 of the NPPF and the broader package of pollution concerns brought into play by paragraph 170.

5.1 Greenhouse gas emissions as a material consideration

There has been ongoing uncertainty about the treatment of greenhouse gas (GHG) emissions from new development, and particularly those that result from energy minerals. There is no doubt that carbon dioxide emissions are a material consideration, but it has been argued that little weight should be attached to these considerations when there are separate regulatory frameworks to deal with emissions from, for example, coal production. A recent planning application decision by the Secretary of State for Housing, Communities and Local Government provides a useful clarification on how government might expect these issues to be considered,

Note

71 Expressed in Environment Agency flood risk allowances

including the importance of the cumulative effect of GHG emissions:

> *'The Secretary of State has given careful consideration to the Inspector's analysis at IRC112-C115. For the reasons given he agrees that Green House Gas (GHG) emissions from the proposed development would adversely impact upon measures to limit climate change. He further agrees that most of the GHG emissions would be emitted in the short term, resulting in an adverse effect of substantial significance, reducing to minor significance in the medium term; and that Green House Gas emissions in the long term would be negligible, but that the effects of carbon in the atmosphere would have a cumulative effect in the long term (IR115). Given that cumulative effect, and the importance to which the government affords combatting climate change, he concludes that overall the scheme would have an adverse effect on Green House Gas emissions and climate change of very substantial significance, which he gives very considerable weight in the planning balance.'*[72]

5.2 Delivering a low-carbon and climate-resilient future

Principles

- Local planning authorities should engage constructively with developers to deliver well-designed sustainable buildings and high-quality local environments suitable for low-carbon living. It is reasonable for LPAs to expect proposals for major new development (ten or more dwellings, or commercial development with 1,000 square metres or more of commercial floorspace) to demonstrate how the proposed development complies with the criteria set out as good practice below. In determining planning applications for development, great weight could be given to the objective of securing climate mitigation and adaptation in line with the criteria set out below.
- LPAs are encouraged to support innovation which secures well-designed sustainable developments. Some features essential for securing a zero-carbon or energy-positive building, or for adapting to impacts arising from climate change, may give rise to concerns about incompatibility with an existing townscape. Such concerns should not, in themselves, normally warrant planning applications being refused permission. Planning permission may be refused only where the concern relates to a designated heritage asset and the impact would cause material harm to, or the removal of significance in relation to, the asset or its setting, and this is not outweighed by the proposal's wider social, economic and environmental benefits.

Good practice

In determining planning applications, LPAs are advised to expect proposed new development to:

- Avoid adding to the vulnerability of existing or other proposed development to impacts arising from climate change.
- Maximise the opportunities of new development to enhance resilience by, for example, reducing the causes of flooding.
- Contribute to achieving national targets to reduce greenhouse gas emissions set out in the Climate Change Act 2008 by:
  - using landform, layout, building orientation, tree planting, massing and landscaping to reduce likely energy consumption and increase resilience to increased temperatures;
  - using the layout, density and mix of development to support identified opportunities for decentralised energy;
  - connecting to an existing decentralised energy supply system with capacity to supply the proposed development, or being designed for a future connection where there are firm proposals for such a system;
  - not creating demand for bio-energy fuels known to result in net carbon dioxide emissions through production methods, transport requirements, and/or loss of carbon sinks.
- Provide public or private open space so that an accessible choice of shade and shelter is offered, recognising the opportunities for people, biodiversity, flood storage and carbon management provided by multi-functional green spaces and green infrastructure networks.
- Give priority to the use of sustainable drainage systems, paying attention both to the potential contribution to water harvesting to be gained from impermeable surfaces and to layouts that accommodate waste water recycling.
- Support sustainable waste management by providing space for recycling and composting.
- Increase the proportion of trips in the local area made by sustainable modes, particularly active travel modes, by:
  - giving comparative advantages to sustainable travel – for example by placing cycle parking closer to a main entrance than car parking (other than disabled parking);
  - implementing travel plans (unless the scale of the development is small) so as to reduce greenhouse gas emissions;
  - providing for safe and attractive walking and cycling opportunities, including secure cycle parking and, where appropriate, showers and changing facilities;

Note

72 Secretary of State for Housing, Communities and Local Government decision letter, 2 Mar. 2018. PINs ref. APP/P2935/V/16/3158266. **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692060/18-03-23_DL_IR_Highthorn_3158266.pdf**
Shortly before this edition of the guide went to press a legal challenge against the decision was upheld by the High Court, and so the case has gone back to the Secretary of State for re-decision

Energy strategy diagram from Shelter's 2014 Wolfson Economics Prize runner-up, 'Stoke Harbour'

- managing the provision of car parking (including consideration of charging for use), so that it is consistent with cutting greenhouse gas emissions, including the provision of electric vehicle charging infrastructure; and
- improving public transport and utilising a travel planning approach.

- Reflect, in cases where the site has not been allocated for development in a development plan document, the site selection criteria set out in Section 4.4.2.

5.3 Assessing renewable energy generation, storage and distribution

Principles

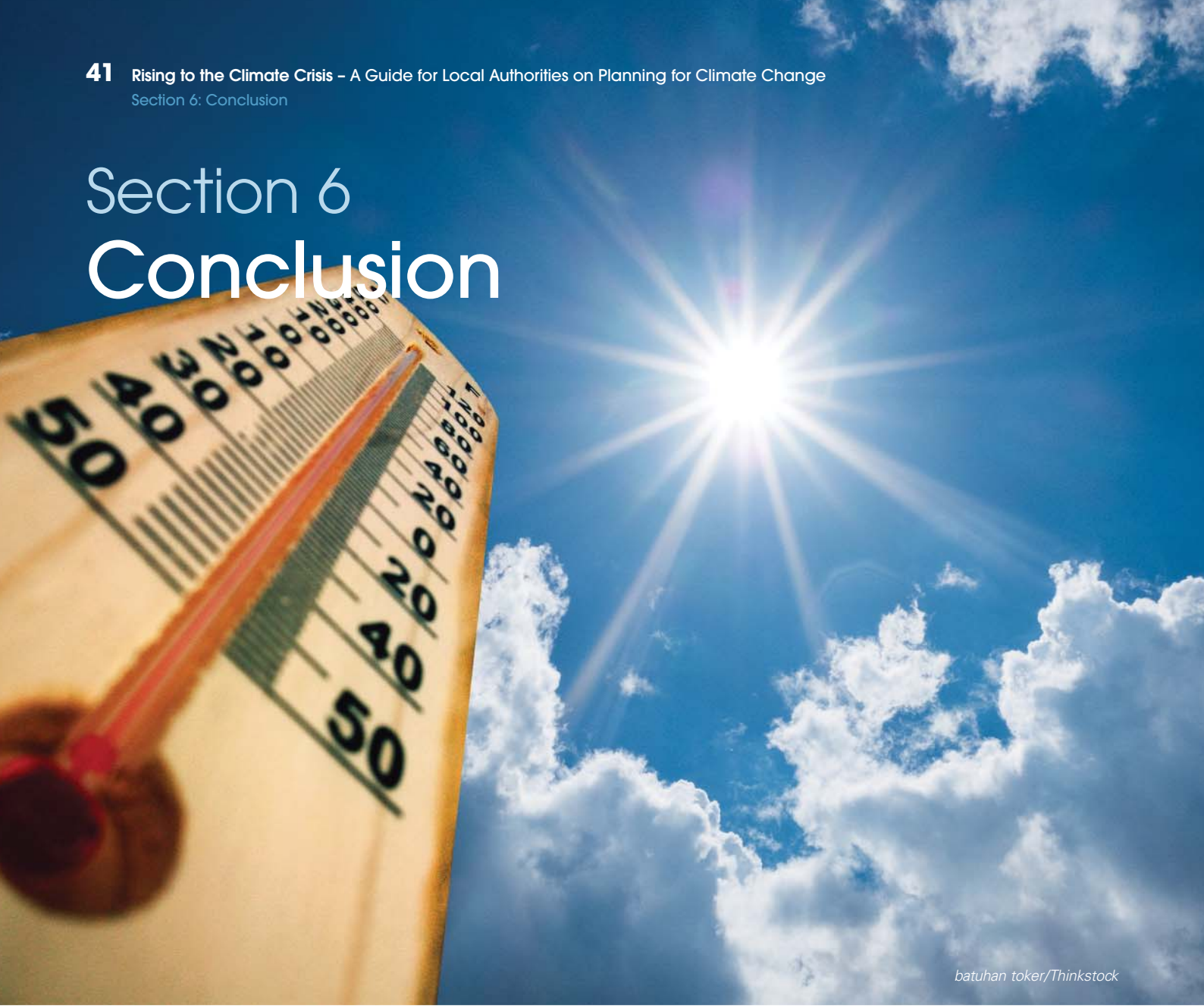
- Development management should not prevent, delay or inhibit proposals for renewable and low-carbon energy, and associated infrastructure, which could be permitted having regard to the objectives and advice set out in this guide.
- Decision-makers should recognise that energy technologies are changing, and they should be prepared to deal positively with the implications of new transport and energy technologies, such as battery storage and infrastructure for electric vehicles.

Good practice

In determining planning applications for the development of renewable or low-carbon energy, and associated infrastructure, LPAs are recommended to:

- Expect applicants to have taken appropriate steps to avoid and then mitigate any adverse impacts through careful consideration of location, scale, design and other measures, including ensuring that all reasonable steps have been taken, and will be taken, to minimise noise impacts.
- Give significant weight to the wider environmental, social and economic benefits of renewable or low-carbon energy projects and fuel sources, whatever their scale, recognising that small-scale projects provide a valuable contribution to the local area and contribute to security of supply and to cutting greenhouse gas emissions – and not reject planning applications simply because the level of output, or the number of buildings supplied, is small.
- Not require applicants for renewable energy development to demonstrate the overall need for renewable or low-carbon energy.
- Expect developers of decentralised energy to support the local planning approach for renewable and low-carbon energy set out in the local development plan, and, if not, to provide compelling reasons to justify the departure – but, otherwise, not question the energy justification for why a proposal for renewable and low-carbon energy must be sited in a particular location.
- Recognise that, when located in the Green Belt, elements of many renewable energy projects will comprise inappropriate development, which may impact on the openness of the Green Belt. Careful consideration will therefore need to be given to the visual impact of projects, and developers will need to demonstrate very special circumstances that clearly outweigh any harm by reason of inappropriateness and any other harm if projects are to proceed – such very special circumstances may include the wider environmental benefits associated with increased production of energy from renewable sources.

Section 6
Conclusion



batuhan toker/Thinkstock

Addressing climate change must be a central priority of the planning system if we are to ensure our future economic, environmental and social wellbeing. While communities can benefit from the deployment of renewable energy systems, they can also build a resilient social and economic future by anticipating and responding to climate change that is now inevitable. Communities that ignore the challenge will find the cost of impacts and of insurance rising sharply, threatening their economic and social fabric.

This guide has set out some of the ways that local authorities and communities can make a real difference to delivering a sustainable future. The threat of climate change is real, but so too are the opportunities. A resilient and sustainable future is achievable, but only if we act now.

Annex 1
Additional context

A1.1 Key national and local government bodies with a stake in planning for climate change

There are several government bodies that have crucial roles in planning for climate change:

- Ministry of Housing, Communities and Local Government (MHCLG) – responsible for planning policy.
- Planning Inspectorate (agency of MHCLG) – conducts the soundness test of plans and conducts appeals.
- Department for Business, Energy and Industrial Strategy (DBEIS) – responsible for ensuring the delivery of low-cost and clean energy systems.
- Department for Environment, Food and Rural Affairs (Defra) – responsible for the National Adaptation Programme.
- Committee on Climate Change (CCC) and the Adaptation Sub-Committee (ASC) – statutory bodies charged with oversight of the government's implementation of the Climate Change Act 2008.
- Environment Agency (agency of Defra) – responsible for some kinds of flood risk (but has no overall responsibility for other aspects of climate adaptation).
- Lead local flood authorities (and emergency planning teams/local resilience forums) – statutory consultees to planning.
- Natural England (agency of Defra) – the government's adviser on the natural environment in England. Its role includes work on climate change adaptation and mitigation for the natural environment, and how that can also help society to adapt.
- Historic England – statutory advisor on the historic environment.
- Highways Agency – responsible for the operation, maintenance and improvement of England's strategic road network.

A1.2 Other climate-related government policy

There is a significant amount of other policy that has an impact on planning and the policies that underpin plan-making and development management. The list below, while not exhaustive, demonstrates how much has happened in the last couple of years:

- The UK Climate Projections 2018 (UKCP18)[A1] were released in November 2018, and illustrate a range of future climate scenarios until 2100 resulting from different global emissions scenarios. These show across the board that increasing summer temperatures, more extreme weather and rising sea levels are all on the horizon, and urgent international action is needed. UKCP18 can be used as a tool to feed the most up-to-date scientific evidence into decision-making. These projections are now being factored into the Environment Agency flood risk allowances.[A2]
- The Committee on Climate Change and its Adaptation Sub-Committee reports:
  - Volume 1: *Reducing Emissions and Preparing for Climate Change: 2017 Report to Parliament. Summary and Recommendations*.[A3]
  - Volume 2: *Meeting Carbon Budgets: Closing the Policy Gap: 2017 Report to Parliament*[A4] gives policy guidelines. Current policies would leave a gap of at least around 100 $MtCO_2e$ in 2030 compared with what is required by the fifth carbon budget.

Notes

A1 See the Met Office's UK Climate Projections website, at **https://www.metoffice.gov.uk/research/collaboration/ukcp**

A2 *Flood Risk Assessments: Climate Change Allowances*. Guidance. Environment Agency, updated Feb. 2017. **https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances**

A3 *Reducing Emissions and Preparing for Climate Change: 2017 Report to Parliament. Summary and Recommendations*. Committee on Climate Change, Jun. 2017. **https://www.theccc.org.uk/wp-content/uploads/2017/06/Reducing-emissions-and-preparing-for-climate-change-2017-Report-to-Parliament-Summary-and-recommendations.pdf**

A4 *Meeting Carbon Budgets: Closing the Policy Gap. 2017 Report to Parliament*. Committee on Climate Change, Jun. 2017. **https://www.theccc.org.uk/wp-content/uploads/2017/06/2017-Report-to-Parliament-Meeting-Carbon-Budgets-Closing-the-policy-gap.pdf**

- Volume 3: *Progress in Preparing for Climate Change. 2017 Report to Parliament*[A5] assesses the effectiveness of the National Adaptation Programme in preparing the UK for the effects of climate change and identifies policy recommendations. It concludes that, despite some areas of progress, the level of risk has increased for a significant number of priorities, such as surface water flood risk. The measures set out in the current National Adaptation Programme are not sufficient to avoid the impacts of climate change increasing.

- The UK Climate Change Risk Assessment sets out the priority climate change risks and opportunities for the UK. It includes an independent evidence report setting out the latest evidence on the risks and opportunities to the UK from climate change. In January 2017, the government presented the second UK Climate Change Risk Assessment to Parliament. This was informed by the Adaptation Sub-Committee's evidence report for CCRA2 published in July 2016.[A6]
- The 25 Year Environment Plan,[A7] published in January 2018, contains a very strong vision for a high-quality, multi-functional environment, along with a large number of aspirations and some clear commitments from government.
- *Clean Growth Strategy: Leading the Way to a Low Carbon Future*[A8] was published in October 2017 and sets out proposals for decarbonising all sectors of the UK economy through the 2020s. It explains how the whole country can benefit from low-carbon opportunities, while meeting national and international commitments to tackle climate change.
- The Industrial Strategy[A9] published in 2017 also sets out how the move to cleaner economic growth – through low-carbon technologies and the efficient use of resources – is one of the greatest industrial opportunities of our time.

Notes

A5 *Progress in Preparing for Climate Change. 2017 Report to Parliament*. Committee on Climate Change, Jun. 2017.
https://www.theccc.org.uk/wp-content/uploads/2017/06/2017-Report-to-Parliament-Progress-in-preparing-for-climate-change.pdf

A6 *UK Climate Change Risk Assessment 2017 Synthesis Report: Priorities for the Next Five Years*. Committee on Climate Change, Jul. 2016.
https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Synthesis-Report-Committee-on-Climate-Change.pdf

A7 *A Green Future: Our 25 Year Plan to Improve the Environment*. HM Government, Jan. 2018.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/673203/25-year-environment-plan.pdf

A8 *The Clean Growth Strategy: Leading the Way to a Low Carbon Future*. HM Government, Oct. 2017.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/651916/BEIS_The_Clean_Growth_online_12.10.17.pdf

A9 *Industrial Strategy: Building a Britain Fit for the Future*. HM Government, Oct. 2017.
https://www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future

Annex 2
Case studies

A2.1 Mitigation

Ardley Energy Recovery Facility

Tags: Mitigation; Energy

Planned initially at a strategic level, this is a good example of a low-carbon heat network development.

It is located approximately 5 kilometres from North West Bicester eco-town, with the premise that the eco-town can use the waste heat from the facility. Outcomes include a planning condition for the EfW facility requiring a CHP Feasibility Review, assessing potential commercial opportunities for the use of heat from the plant, and the Local Plan site allocation policy for the North West Bicester Eco Town area. The SPD references using the waste heat and encourages new developments to explore potential to hook up to the facility.

Further information: **https://viridor.co.uk/our-operations/energy/energy-recovery-facilities/ardley-erf/**

Battersea Power Station Masterplan

Tags: Mitigation

Located south of the River Thames, the iconic Grade II* listed Battersea Power Station building is undergoing a substantial refurbishment along with the birth of a new community. Plans for the 42 acre site include new residential accommodation, hotels, offices, community and leisure facilities along with an extension of the tube line, a new underground station, and a wharf for the river bus.

Battersea Power Station has committed to contributing more than £200 million to the extension of the Northern Line amongst other investments to improve transport links in the area (see Battersea Power Station, Phase 3 Amendment ES Addendum, Non-Technical Summary, 2014).

The masterplan will be served by a 7 MWe combined heat and power unit providing low-carbon heat and electricity which can possibly export energy to nearby communities and expand the district heating network. The energy-efficient design and site-wide energy centre are predicted to reduce carbon emissions by 38%. The renovated and new buildings have high sustainability targets under BREEAM and the Code for Sustainable Homes.

Further information: **https://www.batterseapowerstation.co.uk**

Big Birmingham Bikes

Tags: Mitigation; Transport

Birmingham City Council, through its Wellbeing Service, has provided more than 4,000 free bikes and cycle training to residents living in deprived areas, in order to improve their mobility, health and wellbeing, as well as increasing access to workplaces, education and training.

The scheme was also designed to bring about behaviour change by encouraging people to travel by bike rather than private car, thereby reducing congestion – and pollution – on roads. Big Birmingham Bikes has linked up with over 50 community groups including homeless and mental health charities, and GPS tracking is used to monitor the effectiveness of the scheme and provide data to guide planning and policy to support cycling.

Further information: **https://www.ashden.org/winners/birmingham-bikes**

BRE Flood Resilient Repair Home

Tags: Mitigation; Housing

An existing Victorian terraced home on the BRE Innovation Park, Watford, was refurbished and adapted by BRE and partners to demonstrate how homes can be both resistant and resilient to flooding while still looking and feeling homely. It showcases a range of innovative products and practical design measures that reduce the risk of a flood and the time/resources spent on flood remediation.

The house has undergone several testing scenarios and performs well. It has featured on the BBC's *Countryfile* and is open to the public.

The house is designed to both resistant and resilient to flooding:

- Resistant to flooding from water up to 600 millimetres (2 feet) deep, with measures including:
  - studded cavity drainage barriers within walls and floors to channel water to drainage outlets;
  - drainage channels beneath the floor, around the perimeter of the room;
  - a sump in the corner of the home fitted with automatic pumps to remove the water, pumping it outside, before it can reach up to the floor.
- Resilient to the effects of being flooded, with measures including:
  - sockets and switches placed higher up the wall with ceiling wiring;
  - waterproof, magnesium oxide wall boards;
  - ceramic tiled floor and loose rugs in place of fitted carpets.

Several thousands of litres of water were poured into the home to replicate a flood event that would have caused severe damage and taken days, potentially weeks to remediate. After just one hour, the water had been removed via the floor drains and sump pump, the floor was dry and the house habitable.

Further information: **https://www.bre.co.uk/resilience**

Brescia District Heating Network, Italy

Tags: Mitigation; Carbon dioxide emissions; District heating

Brecia's district heating network has been developing since 1972, with the newest production plants using the latest technology to limit carbon emissions. To date, over 70% of the population of the Brescia Municipality live or work in areas supplied by the district heating network.

An important step forward was taken in 2004 with the completion of the plant with biomass-powered design. Heat produced by energy from waste covers over 40% of the heating requirements of district-heated places. The district heating network of Brescia goes beyond the municipal boundaries to serve parts of the adjoining municipalities of Bovezzo and Concesio. By the end of 2009 over 40 million cubic metres of buildings were connected, and Brescia anticipates reaching its ambitious target of 45 million cubic metres by 2020.

By 2015, the heating network had nearly reached its full potential size and the challenge was then to improve the efficiency of the heat sources in the system. One project that is working towards this is PITAGORIS,[i] funded by the European Commission, in which A2A[ii] and Ori Martin[iii] are working in collaboration to recover waste heat from the smoke from the steel industry blast furnaces and produce both electricity and heat for the district heating network.

i Planning with Innovative and low energy Thermal And power Generation from Residual And renewable Sources – **https://pitagorasproject.eu/**
ii A2A organisation – **https://www.a2a.eu/**
iii Ori Martin organisation – **https://www.a2a.eu/**

Further information: **http://stratego-project.eu/wp-content/uploads/2014/09/3a-STRATEGO-local-case-IT-Brescia.pdf**

Bus Rapid Transit (BRT) Route in Catania, Italy

Tags: Mitigation; Transport

Municipal planners in Catania have helped facilitate the preparation of an urban traffic plan, addressing a new transport policy for sustainable mobility related to bus rapid transit (BRT). A BRT is a transport system with a high percentage of protected routes that predominantly operates as a light rail transit away from existing road and tram systems to avoid busy intersections.

In April 2013 the first BRT line began operating in the city of Catania. AMT (Azienda Metropolitana Trasporti Catania)[i] is the Catania municipal public transport company, operating 50 bus lines, and covering approximately 40% of the city road network. It covers 11 million kilometres and transports 30 million passengers. The mixed-traffic operation and the high level of car traffic strongly affect the capability of ANT to supply a competitive and sustainable energy public transport service with respect to car use. In view of the long time needed to build rail systems, in 2011 the Municipality of Catania collaborated with the University of Catania on the preparation of a short-term transport plan.

An urban traffic plan was then implemented, which included BRT among other pilot projects to promote a change in the transport choice of citizens, saving energy and reducing carbon dioxide emissions. The BRT showed that public transport can compete with car usage and that modal shift can be increased in order to save energy and reduce carbon emissions.

i AMT organisation – **http://www.amt.ct.it/**

Further information: **https://sustainabledevelopment.un.org/partnership/?p=331**

Delivering Renewable Energy through Local Development Orders in Swindon

Tags: Mitigation; Renewable energy

Swindon Council has provided upfront planning permission in certain areas for solar photovoltaics and other renewable energy forms, via the creation of three low-carbon Local Development Orders (LDOs) in 2015.

This case study demonstrates how a streamlining of the system for granting permission for renewable sites has enabled a democratic and more efficient delivery of renewable energy in Swindon. This has been achieved through the use of LDOs. LDOs require sites to be submitted upfront and then permission can be granted at the right time when the sites are ready to be developed.

The process of applying for planning permission can be time-consuming, even where the principle for renewable energy has already been established in an area. To streamline this system, LDOs were introduced to facilitate the granting of permission for renewable energy. The process requires landowners, developers and the community to submit potential sites for inclusion in their LDO. A consultation then takes place with engagement of the community.

Further information: **http://www.emcouncils.gov.uk/write/LDOs_as_a_Proactive_Planning_Tool_-_David_Dewart.pdf**

Dunsfold Park Carbon Ambition

Tags: Mitigation; Carbon dioxide emissions; Masterplanning

The masterplan for Dunsfold Park, developed by The Rutland Group, shows how the aerodrome will be redeveloped and the business park group grown to create a new sustainable village of around 1,800 homes.

It aims to minimise the environmental footprint of the village by incorporating and delivering innovative designs, technologies and practices for energy, transport, waste and construction. The new eco-village settlement will be both socially and environmentally sustainable, providing local people with access to new homes, new jobs, a 350-acre country park, new schools, shops and other community facilities.

The planning application includes:

- district heating and energy provided by an on-site CHP plant fuelled by locally sourced low-grade timber;
- on-site waste processing to convert unrecyclable waste into biofuel;
- an urban drainage system which would feed surface water run-off into landscaped water features which would link with the Wey and Arun Canal;
- car-user charging and provision for electric cars.

The scheme demonstrates that sustainable rural development need not necessarily be deemed a paradox – new rural communities have the potential to contribute to a sustainable future. It also highlights the critical role of an enthusiastic and supportive landowner, and of an inspirational professional team in driving forward an ambitious project.

This planning application was approved by MHCLG in March 2018.

Further information: **http://www.dunsfoldparkmasterplan.com/**

Energy Policy Review for Central Bedfordshire Council

Tags: Mitigation

The review was undertaken by Third Revolution Projects on behalf of Central Bedfordshire Council in summer 2017 to assess whether the council's policy was compliant, in particular with the 2015 Government onshore wind Written Ministerial Statement, and generally fit for purpose in terms of the UK's transition to a decentralised low-carbon energy system.

The review highlighted examples around the country where planning inspectors had only found onshore wind policy sound where specific areas had been identified as being suitable. Successful policy followed two main approaches:

- allocating areas, following a call for sites, similar to the allocation of housing; or
- identifying areas based on landscape character and other constraints.

Inspectors appear comfortable with either, but experience of calls for sites appears to have yielded few sites. The review also noted that the low-carbon energy transition requires planners and the public sector to become more proactive – first, to manage the spatial implications of developers bringing forward large numbers of smaller energy schemes; and secondly to support delivery through, for example, focusing on infrastructure (for example increasing capacity on the electricity grid).

Further information: **http://www.centralbedfordshire.gov.uk/Images/renewable-policy-review_tcm3-27331.pdf**

Grey to Green Phase 1, Public Realm Resilience in Central Sheffield

Tags: Mitigation

The 'Grey to Green Phase 1' scheme originated in the City Centre Masterplan 2013 as a key step towards restoring the boundary of Sheffield City Centre to its historic origins around the River Don. It transforms redundant carriageway in the city into a network of sustainable drainage, flower meadows and rain gardens. The project has improved the city's resilience to climate change, enhanced the public realm, and increased connectivity in the city centre. The project is now attracting investment in new and existing jobs.

The overall project provides:

- attractive new public spaces replacing 1.2 kilometres of redundant roads;
- a sustainable urban drainage system (SuDS) to reduce flooding and improve the city's climate change resilience;
- rain gardens, public art and street furniture that enhance the public realm;
- high-quality footways that have increased walkability to the city centre;
- extensive planting of perennial flower meadows, increasing amenity and natural environment; and
- 2016 CEEQUAL (Civil Engineering Environmental Quality Assessment and Award Scheme) Outstanding Achievement Award winner.

Further information: **http://www.ceequal.com/case-studies/grey-to-green-phase-1/**

Gwithian and Gwinear Neighbourhood Plan, Cornwall

Tags: Mitigation; Political leadership; Neighbourhood planning

Led by the Parish Council, with support from Cornwall Council's planning team, the community of Gwithian and Gwinear in Cornwall prepared a neighbourhood plan for their area. Drawing on strong support for appropriately scaled and sited renewable energy projects within the community, the plan contains technology-specific policies, including the identification of locations for wind turbines, and an overarching policy which promotes community-ownership of renewable energy projects.

The policies build upon evidence and guidance developed for the whole of Cornwall by Cornwall Council. The community of Gwinear-Gwithian parish supports wind energy development by the number of operational wind turbines throughout the parish and the creation of the Gwinear-Gwithian Sustainable Community Fund (GGSCF). The community does, however, believe that wind energy development should only be permitted in appropriate locations, and this is evidenced through the various public consultations undertaken as part of the neighbourhood development plan. For this reason, a policy has been established to ensure that future wind energy development is located in landscape areas capable of accommodating such development providing a range of criteria are met.

This policy has been informed by Cornwall Council's draft supplementary planning document (SPD) on renewable energy, using its descriptions on community energy models and assessments on landscape sensitivity to evidence the approach taken. The policies within the neighbourhood plan (NP) have been drafted following considerable interaction and consultation with the community over the last two years by way of setting up a dedicated NP website, forming a Steering Group & Task Group, holding regular consultation/drop-in events across the parish (five stages in total), leaflet and draft plan delivery to every household, informing local medial, drop-off boxes for comments/questionnaires in local shops/ post offices/pubs, advertising in the two local parish magazines, and advertising on five parish notice boards and local shops.

The NP was created by a group of committed individuals from both Gwinear-Gwithian Parish Council, a clerk and project officer and dedicated members of the community who formed the Steering Group.

Further information: **https://www.cornwall.gov.uk/media/28922186/final-gg-neighbourhood-plan-after-examination.pdf/**

Hamburg Energy Hill and Energy Bunker

Tags: Mitigation; Energy

The 'Renewable Wilhelmsberg Climate Protection Concept' set out the ambition to supply the Elbe islands with 100% renewable energy and deliver a sustainable approach to energy across the district. To achieve this, a range of energy projects were introduced including local renewable energy production and distribution, and energy efficiency.

Potential sites for local renewable energy production were assessed and a former land-fill site was selected. This 45 hectare area of contaminated land had been used for toxic industrial waste. Local people had not been allowed on the site for decades.

The site, now known as the Georgswerder Energy Hill, has been transformed. It is an important source of renewable energy and supplies around 4,000 households with electricity using wind and solar generation. The energy from land-fill generated gas is also being used.

Further information: **https://www.iba-hamburg.de/fileadmin/Mediathek/Whitepaper/140801_Energy_Bunker_english_final.pdf**

Hanham Hall, Gloucestershire

Tags: Mitigation; Housing

A flagship Carbon Challenge scheme promoted by the Homes and Communities Agency. England's first large-scale housing scheme to achieve the 2016 zero-carbon standard. The development will create 187 new homes, ranging from one-bedroom starter flats to five-bedroom family houses.

Two thirds of the units will be sold privately, while the rest will be offered for affordable rent. There is no visible distinction between the private and rented housing.

Further information: **http://www.hta.co.uk/projects/hanham-hall**

Hannover zero:e Park, Germany

Tags: Mitigation; Carbon dioxide emissions; Housing; Design

Part of Germany's *'Energiewende'* (energy transformation), this is Europe's largest zero-emissions housing development. It is an exemplar for future large-scale passive housing projects and sets the standard for outcomes from urban land use planning.

In 2002 Hannover City Council agreed to develop a zero-emissions housing estate to support Hannover's aim to reduce carbon dioxide emissions by 40% by 2020, as part of the Climate Alliance Hannover 2020. In 2010, over 300 detached, semi-detached and terraced houses and a supermarket were built in the suburb of Wettbergen to the PassivHaus Standard,[i] a highly efficient design with a significantly lower energy footprint that conventional housing.

The whole development has been designed to be reduce carbon dioxide emissions over the long term:
- power for household electricity and heat is compensated for by renewable energy generation;
- the plots face south to exploit solar energy, and rainwater is drained using private and public through-trench systems.

The PassivHaus construction was supported by Hannover's proKlima climate fund, which continues to analyse the energy date from the development.

i The PassivHaus Standard – **http://www.passivhaus.org.uk/standard.jsp?id=122**
The PassivHaus Standard sets out a range of requirements, including:
- a maximum primary heating requirement of 40kWh per square metre per year;
- usage guidance for home owners; and
- the obligation that additional energy for heating or household electricity should be supplied through renewable energy generation

Further information: **https://www.hannover.de/en**

Integrating Multiple Climate Change Policies in Regeneration, Fornebu, Norway

Tags: Mitigation

Multiple energy saving policies can be adopted in one development. Fornebu includes a combination of renewable energy sources, such as heat from sea water and the provision of extensive recreational and wildlife spaces, into a newly planned community on brownfield land (a former airport).

Following the relocation of Oslo international airport, the decision was made to redevelop the old airport site into 6,000 housing units, social and commercial infrastructure, 20,000 offices and extensive recreational and wild life spaces. The underlying philosophy was that the area should be a showcase for modern environmental thinking, emphasising sustainability in terms of energy, environmental standards and adaptation to climate change. The visions and strategies were incorporated into the masterplan, a statutory instrument, adopted by the Baerum Municipality[i] in 1999. The entire development process is expected to be complete by 2025.

The project emphasises the combination of renewable energy sources such as heat from sea water and solar energy with passive house standards, the use of appropriate building materials, energy efficient lighting, local recycling and handling of waste and a strong emphasis on public transport.

i Baerum municipality website : https://www.baerum.kommune.no/politikk-og-samfunn/barum-2035/stedsutvikling-i-barum/sandvika/AMT organisation – **http://www.amt.ct.it/**

Further information: **http://www.special-eu.org/assets/uploads/05-Norway-description.pdf**
http://www.special-eu.org/assets/uploads/05-Norway-panels.pdf

London Plan Policy to Promote Decentralised Energy

Tags: Mitigation; Carbon dioxide emissions; Decentralised energy

The Mayor of London is supporting the greater use of renewable and low-carbon generation technologies, and has set a target for London to generate 25% of its heat and power requirements through the use of local, decentralised energy (including the use of energy from waste and biomass schemes) systems by 2025.

Shifting 25% of London's energy demand to be supplied through decentralised systems could save up to 2.57 million tonnes of carbon dioxide a year. Greater use of decentralised energy will also help London become more self-sufficient and secure in relation to its energy needs. An innovative support programme combines engagement, training, planning advice, technical support and commercial analysis from Arup to help London boroughs identify and deliver decentralised energy schemes. This has helped to create a thriving market for heat in London, helping to achieve the capital's ambitious carbon reductions targets. The programme provides an excellent model that could be transferred to other cities across the UK.

The Mayor has developed an online London Heat Map tool which will help boroughs and developers identify and develop key decentralised energy opportunities.

The London Plan is currently being updated; it was published for consultation in December 2017 and the final version is being examined in early 2019.

Further information: **https://www.london.gov.uk/what-we-do/planning/london-plan/current-london-plan/london-plan-chapter-five-londons-response/poli-0**

North West Bicester Supplementary Planning Document

Tags: Mitigation; Design; Evidence

This Supplementary Planning Document for North West Bicester is a good example of a local authority setting ambitious design guidance to promote climate change adaptation and mitigation.

This guidance has a strong evidence base, including the results of research with Oxford Brookes University on modelling the climate that Bicester is likely to experience in the future.

Further information: **https://www.cherwell.gov.uk/downloads/download/281/north-west-bicester-spd-february-2016**

North West Cambridge Development

Tags: Mitigation; Housing

The largest expansion plans in the University's 800 Year history and includes 3,000 new homes and University research and teaching facilities, community facilities and public open space on the 150 hectare site.

The proposals are intended to meet the University's development needs for the next 20 years. The scheme meets Code for Sustainable Homes level 5 and BREEAM 'Excellent' standards across the entire site. The community have been engaged from day one through extensive and collaborative consultation. Early delivery of state-of-the-art community facilities has embedded this site into the local area.

Further information: **http://www.nwcambridge.co.uk/**
http://www.nwcambridge.co.uk/sites/www.nwcambridge.co.uk/files/o1_16_sustainability_statement.pdf

Nottingham Workplace Parking Levy

Tags: Mitigation; Transport

The Workplace Parking Levy (WPL) places a modest charge on employers providing 11 or more parking places, and invests the revenue in sustainable transport measures such as new tram routes, electric buses, cycling and public transport smartcards.

Nottingham City Council is the first local authority in Europe to implement such a scheme, which is increasingly being recognised as an innovative solution, and is already encouraging more sustainable travel behaviour across Nottingham. Congestion on the city's roads is falling and air pollution is being reduced as commuters switch to the efficient public transport that is being paid for by the levy. Nottingham's integrated approach to sustainable public transport and parking is outstanding, setting an example for other cities to follow.

Further information: **https://www.nottinghamcity.gov.uk/transport-parking-and-streets/parking-and-permits/workplace-parking-levy/**

Oakham North Climate Change Adaptation Strategy

Tags: Mitigation; Housing

The climate change adaptation strategy for Larkfleet Homes' Oakham North development aims to manage the most significant impacts of climate change and create a more attractive and comfortable development that is resilient and flexible to future change.

The risks, including overheating, flooding, water shortages, and changes in ground conditions affecting structural stability, were assessed, and technical feasible solutions were identified to reduce the vulnerability of the homes on the site. This includes modifications to the building fabric and services, internal layout and structural design. Sustainable drainage systems and green infrastructure, particularly trees, were highlighted as having a crucial role in maintaining a safe and comfortable environment.

The study provides valuable lessons for the construction industry. An adaptation strategy was developed, taking into account cost/benefit analysis, householder perceptions, market factors, supply chain capacity and the policy context.

The findings will be used by Larkfleet to address climate change in Oakham North and future developments.

Further information: **https://www.arcc-network.org.uk/wp-content/D4FC/D4FC40-Oakham-north-full-report.pdf**

Richmondshire Local Plan Renewable and Low Carbon Energy Study

Tags: Mitigation; Carbon dioxide emissions

This study, prepared for Richmondshire District Council by AECOM, developed policy recommendations for the area covered by the local plan to reduce building- and development-related carbon dioxide emissions through the planning process.

It examined the current and future energy demand from the existing housing and non-domestic building stock, as well as energy requirements from new build delivered through the growth strategy proposed in the emerging Local Plan to 2028.

Further information: **https://www.richmondshire.gov.uk/media/5123/richmondshire-local-plan-renewable-and-low-carbon-energy-study-august-2012.pdf**

Stafford Close Housing Scheme, Dartmoor National Park

Tags: Mitigation; Housing

Stafford Close provides 18 'Passivhaus' dwellings in Dartmoor National Park, a nationally protected landscape. It is believed to be the first of its kind in a UK National Park.

Fourteen dwellings are aimed at providing affordable rented housing for local people; these are owned by the Community Land Trust and will be managed in conjunction with Teign Housing Association. The remaining four dwellings will be sold to local people at a reduced market value.

Further information: **https://www.theexeterdaily.co.uk/news/business-daily-local-news/dartmoor-housing-scheme-wins-award-planning-excellence**

Wirksworth Neighbourhood Plan

Tags: Mitigation; Neighbourhood planning

Wirksworth is a small market town within the Derbyshire Dales. It is a relatively prosperous community, albeit with an ageing population (37% over sixty years of age). The neighbourhood plan objectives include striving to become a more energy-efficient/low-carbon town.

The following policies were included:

- Code for sustainable homes policy – code level 4 to 2017, code level 5 from 2017-2020, code level 6 from 2020 onwards.
- Minimum BREEAM standards for non-residential development – BREEAM 'Very Good' from 2017; BREEAM 'Excellent' from 2020. Proposals not achieving these standards refused unless open-book evidence submitted to explain and justify.
- Promoting retrofitting of existing buildings including traditional buildings.
- General policy supporting renewable energy (microgeneration only), provided there is no harm to landscape character/biodiversity/heritage assets.
- Creation of specific new dedicated cycling routes.
- Rainwater and stormwater management.
- Short design briefs given for development sites, encouraging renewable energy and sustainable design.

Further information: **https://www.derbyshiredales.gov.uk/planning-a-building-control/planning-policy/neighbourhood-planning/wirksworth-neighbourhood-plan**

UEA Enterprise Centre

Tags: Mitigation; Energy

This ground-breaking project on the University of East Anglia campus showcases low-carbon sustainable building with a highly ecological specification that achieves thePassivhaus and BREEAM 'Outstanding' standards.

The project aimed to develop future businesses, provide dedicated space to support workshops, networking, open-plan offices, and incubation hatchery space for start-up companies in the knowledge economy. A commitment to sourcing local trade and low-carbon materials made it an exemplar for specification as well as energy performance.

As part of the formal pre-application process, there was an extensive consultation, including stakeholder workshops and numerous engagements with Norwich City Council Planning Department, conservation officers, the Greater Norwich Development Partnership Design Review Panel, Highway and Parks and Open Spaces Committees. There was also an exhibition of the proposed designs, where members of the community were invited to comment on the proposals, and a presentation was given to the Norwich Forum for the Construction Industry.

Further information: **https://www.architype.co.uk/project/the-enterprise-centre-uea/**

A2.2 Adaptation

Burghfield Park

Tags: Adaptation; Flooding

A mxed-use proposal for 156 sustainable homes, 45 affordable, 24 flood resilient can-float homes, a new flood relief scheme to provide added protection to the local community, and a new sailing club leisure facility, and comprehensive ecological mitigation and enhancement and new public access and open spaces.

The proposals do not form part of the local development plan but do accord with other key policy needs including: West Berkshire Economic Development Strategy, Thames Valley Berkshire LEP Strategic Economic Plan, and West Berkshire Strategic Flood Risk Assessment. The development directly fully funds additional essential infrastructure needs, including removing an entire community and businesses form flood zone 3 (high risk) to flood zone 1 (low risk), a new flood cell to offer wider alleviation, new leisure sporting facilities, and new high-quality sustainable housing.

Further information: **http://www.burghfield-park.com/**

Climate Change Vision and Action Plan for the Lower Ouse Valley

Tags: Adaptation; Flooding; Community engagement

LDA Design worked with communities in Newhaven, Seaford and Lewes and rural areas to help them understanding the risks and opportunities and prepare to adapt. The work was part of Coastal Communities 2150, an EU project exploring innovative ways to engage people in planning for the future.

Long-term adaptation scenarios were created, including traditional flood defences and more creative solutions such managed realignment, buildings and infrastructure relocated to higher ground or raising them up on stilts or floating platforms, and crops and farming techniques which are more resilient to extreme weather.

Illustrations and case studies were developed to help people visualise these scenarios and their implications. These were used in a series of consultation events including public exhibitions, a formal workshop and a pub quiz. A vision and action plan were then developed, working with the community steering group. Additionally, a climate trail was designed with displays in five popular local destinations.

The work was completed in 2013 and received a Landscape Institute Award in 2014.

Further information: **https://www.lda-design.co.uk/projects/climate-change-vision-and-action-plan-for-the-lower-ouse-valley/**

Cockermouth Flood Alleviation Scheme, Cumbria

Tags: Adaptation; Flooding

Cockermouth and adjoining communities experienced flooding in 2009. Existing defences had a 10% chance of overtopping frequently in any given year. The scheme provided 1.7 kilometres of improved flood defences and a self-closing flood barrier.

Located in a conservation area, close to a SSSI and SAC the scheme required a sensitive approach to design and construction.

Further information: **http://www.volkerstevin.co.uk/en/news/detail/cockermouth-flood-defences-officially-unveiled**

Ellis Meadows – Leicester City Council

Tags: Adaptation; Flooding

Ellis Meadows has delivered flood management for the city and also provided a great new open space; with more access and routes, and improved biodiversity.

Leicester is one of the top cities at risk from surface water flooding. One solution would have been hard engineered defences; the solution adopted is multi-beneficial. It also provides new open areas for one of the most densely built-up housing areas in the city.

Further information: **https://www.leicester.gov.uk/news/news-story-details/?nId=88872**

King's Cross Square, London

Tags: Adaptation; Urban regeneration; Tree planting; Sustainability

King's Cross is one of the largest and most exciting redevelopments in London. The 67 acre site has a rich history and a unique setting.

What was an under-used industrial wasteland is being transformed into a new part of the city with homes, shops, offices, galleries, bars, restaurants, schools, and even a university.

King's Cross has included everything from promoting energy efficiency to encouraging green transport; from re-use of heritage buildings to a massive programme of tree planting; from sustainable building design to ensuring social and cultural diversity.

Further information: **https://www.kingscross.co.uk/about-the-development**

Leeds Flood Alleviation Scheme

Tags: Adaptation; Flooding

The Leeds Flood Alleviation Scheme represents a critical infrastructure scheme within Leeds city centre, which is being promoted and delivered by Leeds City Council. Project partners included the Environment Agency, Canal and Rivers Trust and Yorkshire Water, with Arup acting as technical advisors and BMM as contractor.

The project comprises the delivery of a sympathetically designed and innovative infrastructure which raised the standard of protection to flood risk in the city centre. Arup acted as technical advisor to the scheme, which included provided full planning, engineering, project management and technical specialist support to the scheme.

Further information: **https://www.leeds.gov.uk/parking-roads-and-travel/flood-alleviation-scheme/flood-alleviation-scheme-phase-one**

Northampton Green Infrastructure Plan

Tags: Adaptation; Green infrastructure

The Northampton Green Infrastructure Plan is an innovative planning document, interactive map and toolkit to deliver practical implementation of multi-functional green infrastructure at local level.

It forms part of the evidence base for the Northampton Local Plan Part 2 and demonstrates the role of green infrastructure within the borough. It also provides guidance for developers who submit future planning applications within the borough. The plan is supporting by an interactive map.

Further information: **https://www.northampton.gov.uk/info/200205/planning-for-the-future/2049/green-infrastructure-in-northampton/1**

Small-Scale SuDS Tool, Royal Borough of Kensington and Chelsea

Tags: Adaptation; Sustainable urban drainage

Royal Borough of Kensington and Chelsea Small Scale Sustainable Drainage Systems (SuDS) Tool is designed to assist the council in assessing the suitability of SuDS provision within small-scale development proposals.

The main focus of the tool is to enable the council to ensure that the water attenuation requirements for SuDS are met by development proposals. It is designed for small scale development up to a maximum of ten dwellings.

Further information: **http://rbkc.suds-tool.co.uk/index.php?autoid=7390459b545f6cd1d8679c578ee640f**

Tame Valley Landscape Vision Development

Tags: Adaptation; Strategic scale; Climate change; Significance of water; Urban and regional regeneration

The boroughs of North Warwickshire and Tamworth are under major development pressures from new housing, industrial and infrastructure projects.

This makes it an important time for the authorities in the region, including Birmingham City Council, North Warwickshire Borough Council, Solihull Metropolitan Borough Council, Tamworth Borough Council, Warwickshire and Staffordshire County Councils, as well as the cross authority groupings such as the combined authority, the Midlands Engine and the Local Economic Partnerships.

Pressure from development has provided the catalyst to consider the Tame Valley in the context of strategic regional environmental, social and economic concerns. The purpose of this report is to demonstrate the great potential the valley has to provide a substantial ecological, cultural and economic role in the future of the region.

Further information: **http://www.tamevalleywetlands.co.uk/wp-content/uploads/2017/01/TVWW_Report_Final_WEB.pdf**

Wallasea Island Wild Coast Project

Tags: Adaptation; Sea level rise; Green infrastructure; Design

This is a landmark conservation and engineering scheme which has been designed with climate change and sea level rise in mind.

The project is transforming the island into a landscape of marshland, lagoons, ditches and sea. The land has been raised above sea level using 3 million tonnes of earth from the Crossrail scheme in London, and a new 115 hectare inter-tidal region has been created. There are long shallow slopes from the new sea wall to provide space for the saltmarsh to gradually migrate inland as sea levels rise.

Further information: **https://www.rspb.org.uk/reserves-and-events/reserves-a-z/wallasea-island-wild-coast-project**

Willow Way, Christchurch

Tags: Adaptation; Flooding

A proposal for two flood resilient can-float homes situated in flood zones 2 and 3, having being classified as safe with dry access by the Environment Agency and conforming to current UK guidelines.

It has been accepted that the proposals are fully flood-resilient taking in to account the new climate change requirements and in this case sea level rise up to 2116. Having passed the Environment Agency requirements, the proposals are subject to the sequential and exceptions tests. The sequential test is currently being disputed and contested following a recently failed planning appeal. The proposals are deemed to have passed the exceptions test as the buildings do not make flooding worse elsewhere and offer betterment to the local community.

Rising to the Climate Crisis – A Guide for Local Authorities on Planning for Climate Change

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