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POSTnote 736

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Planning for net zero

Overview

- Achieving the UK's 2050 net zero goal will require new low carbon energy, transport and built infrastructure while also reducing energy demand. The government has stated delivery of these at the required pace requires addressing planning system delays.
- Infrastructure plans and policies are implemented at different scales, from nationally significant projects to local planning decisions. Planning organisations state concerns about the lack of holistic spatial planning to coordinate these scales of planning as well as with national net zero targets.
- Nationally significant projects, such as large-scale renewables, face delays due to issues arising prior to submitting planning applications or at the final stage of being granted permission. In some cases, community benefits for hosting projects are not properly considered and delivered.
- The new National Energy System Operator has committed to the delivery of Regional Energy Strategic Plans. These will map out the distribution networks and technologies required to reach net zero across the UK mainland and will be complemented by Strategic Spatial Energy Planning assessing sites for energy storage and generation infrastructures.
- The local planning process considers many aspects of an infrastructure project, but some stakeholders believe not all aspects are considered equally within planning applications. They suggest planning reforms are needed to reduce delays and to support a net zero transition.

Background

This POSTnote outlines the challenges and opportunities for the planning system and related policies in England for delivering the infrastructure and services that would be needed to achieve the UK's 2050 net zero target.[1]

With increasing global competition for low carbon infrastructure investment, organisations such as the UK Sustainable Investment and Finance Association (UKSIF) state the planning system is a major constraint.[2,3,4] The Climate Change Committee (CCC) latest progress report states that infrastructure needs to be implemented at a faster pace than at present.[5] Table 1 below highlights indicators related to relevant infrastructure affected by planning system decisions.[2]

Table 1 Key indicators from the CCC monitoring framework

Key Indicator	Progress	Targets
Households receiving energy efficient measures	Not on track	All fuel-poor homes should be at least band C by 2030.[9,10]
Residential energy demand	On track	Reduce energy demand by 15% by 2030.[11]
Public EV charging points	On track	300,000 EV charging points throughout the UK by 2030.[12]
Offshore wind capacity	Slightly off track	50 GW of offshore wind by 2030.[13]
Onshore wind capacity	Slightly off track	30 GW of onshore wind.[14]
Unabated gas share of electricity generation	Slightly off track	No more than 5% by 2030.[1]
Heat pump installations (PN 699)	Not on track	600,000 installations a year by 2028.[15]
Trained heat pump installers	Not on track	50,200 installers by 2030.[16]

Source: Progress in reducing emissions: 2024 Report to Parliament - CCC[1]

[1] The UK government also has a clean power by 2030 action plan in which it states 'the urgent need for change means we must undertake a wide-ranging reform programme, encompassing not only deep changes through primary legislation over the course of this Parliament, but to also get moving with operational and regulatory reforms across the system within the next year.'[1]

[2] The CCC, the government's independent advisory body,[6] have advised on the UK's 2035 NDC, submitted every five years under the Paris Agreement,[7] but have not yet given recommendations on how to achieve this target.[8] In their report, the CCC have also assessed the UK's Nationally Determined Contribution (NDC) for 2030, and made several priority recommendations.

The planning system

This POSTnote will largely focus on the English terrestrial planning system.[3] Planning is a devolved area and each of the four nations has its own planning system. They are structurally similar but differ in detail (Table 2).[4]

Table 2

Country	Legislative Structure	National Planning Policies and Guidance
England	Planning controlled by the following: • Town and Country Planning Act 1990 • Planning and Compulsory Purchase Act 2004 • Planning Act 2008 • Localism Act 2011 • Levelling-up and Regeneration Act 2023 • Planning (Listed Buildings and Conservation Areas) Act 1990	The National Planning Policy Framework (NPPF) sets out planning policies for England with Planning Practice Guidance (PPG).[22,23] National Policy Statements (NPSs) set out planning policies for Nationally Significant Infrastructure Projects (NSIPs).
Northern Ireland	Each council is the LPA for its area and has responsibility for local development planning, development management, and planning enforcement. This came into force from the Planning Act (Northern Ireland) 2011.	The Strategic Planning Policy Statement (SPPS) consolidates several planning documents setting out planning targets and principles.[24]
Scotland	Planning is controlled by the following: • The Town and Country Planning (Scotland) Act 1997, substantially amended by the Planning etc. (Scotland) Act 2006.	The National Planning Framework 4 (NPF4) sets out a spatial plan for Scotland. The NPF4 guides priorities and developments while also setting out national planning policy.[25]

[3] The terrestrial planning system is bounded by the land extended to mean low water spring tides. Marine planning boundaries extend to mean high water spring tides. The overlap is intended to ensure compatibility between plans (PN 388). Marine planning is done spatially and is relevant when considering the deployment of tidal and offshore wind energy (PN 625).[18–20]

[4] In 2016 the Research Service of National Assembly for Wales published a comparison between the 4 different planning systems.[21] For detail on country specific systems see: Wales, Scotland, and Northern Ireland.

	• The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997	
Wales	Planning controlled by the following: • Town and Country Planning Act 1990 • Planning and Compulsory Purchase Act 2004 • Planning Act 2008 • Planning (Wales) Act 2015	Planning Policy Wales (PPW), alongside Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, forms the national planning policy framework for Wales.[26] Future Wales – the National Plan 2040 sets out a national development plan according to national priorities.[27]

All the planning systems are 'plan-led', with what can be built set out in plans (Figure 1), including Local Plans.[28] Local planning authorities[5] (LPAs) in England must develop a Local Plan,[30,31,6] setting out local planning policies consistent with the National Planning Policy Framework (NPPF) and relevant national policy statements[7] in accordance with section 20 of the Planning and Compulsory Purchase Act 2004.[8]

National Planning Policy Framework

The national planning policies for England are set out in the NPPF (CBP-8260). Following a consultation, the NPPF was reformed in December 2024.[37–39]

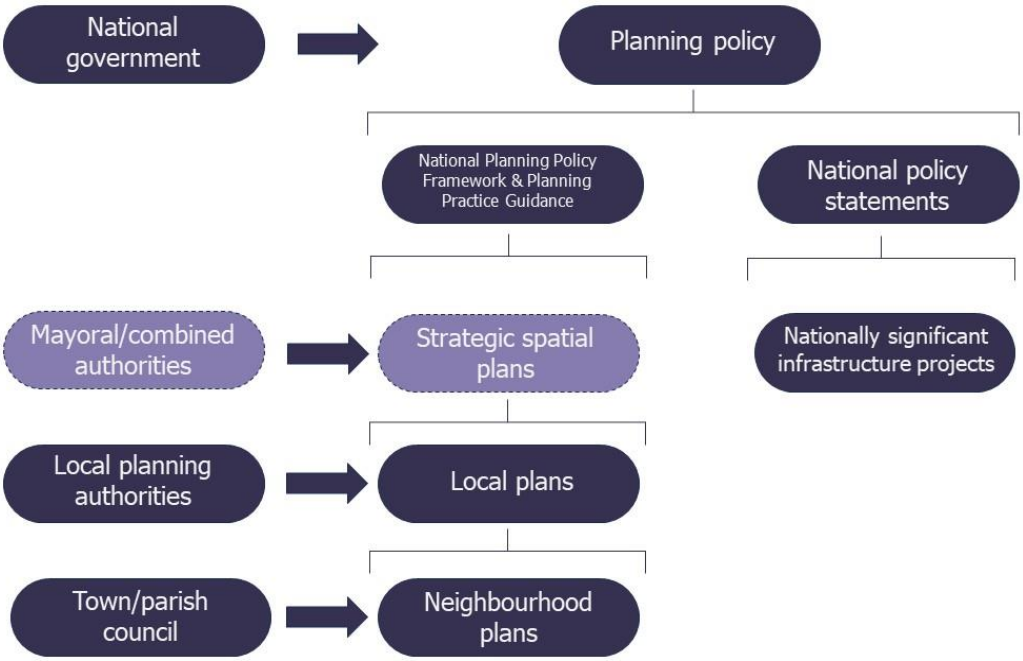
[5] LPAs can be a national park authority or a development corporation as well as an elected local authority[29].

[6] As of March 2024, 110 LPAs had adopted a local plan within the last 5 years. 291 had plans that were more than 5 years old.[32,33]

[7] Some National Policy Statements (NPSs) are relevant in the examination of local plans. The main role of NPSs is to set out the governments objectives and policies for the development of nationally significant infrastructure.

[8] Local plans are assessed by the Planning Inspectorate to see whether they have been created in line with national law and policy.[34] When a developer appeals a planning application refusal, PINS will assess the decision. There is currently no timescale in which LPAs have to complete a local plan, however, the 2023 consultation of the Levelling Up and Regeneration Act indicates that a plan must be implemented within 30 months. The consultation also states that work on the next plan should start, at the latest, 5 years after the previous plan.[35] National Development Management Policies (NDMPs) are also being introduced which will focus on nationally important issues. This will streamline local plans as they will be able to focus on locally important issues.[36]

Figure 1 Structure of the English Planning System



Spatial planning in Wales, Scotland, and Northern Ireland

Planning for net zero involves different policy sectors working across different levels of government (national, regional, and local). Spatial plans are used to inform decisions at a local, regional and a national level, but often each plan has different policy targets to meet.

Wales, Scotland, and Northern Ireland have spatial plans. Wales' spatial plan is included in its 'Future Wales: The National Plan 2040' [27] and Scotland the 'National Planning Framework 4'.[40] These set out spatial principles and planning policy across all levels of development plans (Box 1, Table 2). Northern Ireland has the 'Regional Development Strategy 2035',[41] which has shared objectives with that of the spatial strategy of the Republic of Ireland.

Strategic spatial plans

The NPPF for England is just a statement of policy guidance,[42] and there is no national spatial plan. However, some regions in England have strategic spatial plans. Several types of authority, accounting for 60% of the English population, have devolved powers that include some control over local planning policies. Some, such as

combined authorities, have strategic planning power, allowing creation of planning policies that go beyond the basis set out at the national level. [9,44]

The Royal Town and Planning Institute (RTPI) suggest England previously developed regional rather than national spatial plans that were subsequently scrapped.[45] The National Infrastructure Commission (NIC) suggest national scale spatial plans may allow national objectives, such as net zero targets, to be translated into local plans by encouraging a proactive approach.[46,47]

The House of Lords Land Use in England Committee stated that the lack of spatial planning in England creates challenges over managing trade-offs between planning infrastructure and environmental land uses (PB 42).[48] RTPI suggest national plans could be transparent about the trade-offs between land uses, informing public debate on net zero developments.[49] National plans may be perceived as more trusted than developer supplied information, who are not perceived as a neutral party.[50,51]

Box 1: Spatial planning

Spatial planning has a broader remit than traditional land use planning, which strategically organizes and regulates development to promote economic, social, and environmental benefits.[52] It offers a more holistic approach to space shaping and delivery at local and regional levels.[53,54] Research suggests spatial modelling can inform optimal land use locations in spatial planning, as well as incorporating other types of evidence.[55,56] RTPI suggests that spatial planning should:

- Provide an evidence-based vision for places considering their local distinctiveness and community derived objectives.
- Translate this vision into a set of policies, priorities, programmes, and land allocation together with public resources to deliver them.
- Create a framework for private investment and regeneration that promotes economic, environmental, and social well-being for the area.
- Coordinate and deliver the public sector components of the vision with other agencies and processes.

Nationally significant infrastructure project regime

The Planning Act 2008 introduced a separate statutory regime for nationally significant infrastructure projects (NSIP),[57] which applies to projects of a certain type or size that the government considers of national importance.[58] Some NSIPs are net zero infrastructure, including overhead electric lines over 132 kilovolts, and onshore and offshore generation projects over 100 megawatts (MW).[39,59–61]

[9] The December 2024 English Devolution White Paper states that all areas, with or without a Strategic Authority, will have to produce a Spatial Development Strategy, which will be adopted with support from a majority of constituent members.[43]

The NSIP process requires the developer to apply to the Planning Inspectorate (PINS), instead of an LPA, for a different form of planning permission called a Development Consent Order (DCO). The final permission for these projects is granted by the relevant Secretary of State (SoS).

The NSIP application process has 7 stages, which are set out in table 3, and should take up to (a maximum of) 18 months once submitted (excluding pre application).[62]

Table 3 NSIP regime stages

Stage	Expected duration	Details
Pre-application	Depends on the scale and complexity of the project	Before submitting a DCO application, the developer must carry out extensive consultation on the proposal. The Planning Act 2008 sets out who the developer must consult.[63] These statutory consultees include local authorities, those with an interest in the land and local communities.
Acceptance	Up to 28 days	PINS will determine whether the application meets the requirements for formal examination.
Pre-examination	Around 3 months (no statutory time limit)	A planning inspector holds a preliminary meeting with interested parties to discuss the examination process and timetable.
Examination	Up to 6 months	The application is examined by one or several inspectors, they are the 'examining authority'. Views from interested parties and statutory consultees are collected and evidence is considered.
Recommendation	Up to 3 months	The examining authority writes a recommendation report which is sent to the relevant SoS.
Decision	Up to 3 months	The relevant SoS makes a decision on the project. This can differ from the recommendation made by PINS.
Post-decision	Up to 6 weeks	A period where the decision made on application can be challenged in the high court. This is called a judicial review.
Total time taken	Up to 18 months	The processes usually takes longer than the expected duration. In 2021, the average time for a NSIP planning decision was 4.2 years.[57]

Source: Table adapted from commons library briefing 'Planning for nationally significant infrastructure projects'.[57] A full description is given by the Planning Inspectorate – The process for Nationally Significant Infrastructure Projects.[64]

The NSIP regime abides by national policy statements, which state specific infrastructure planning policies.[65,10] At the examination stage, PINS uses national policy to judge whether a proposal is 'sound.'[34]

NSIPs land use is not spatially planned, which may lead to inefficiencies. The NIC suggest efficient land use decisions require discussion and co-ordination of the plans and policy objectives of different sectors, such as energy, environment, transport and housing, to determine delivery priorities such as net zero.[46,66,67]

Planning the UK's energy

The National Energy System Operator (NESO) has committed to the delivery of Regional Energy Strategic Plans (RESPs). These will map out the distribution networks and technologies required to reach net zero across the UK mainland, divided into 11 regions. The RESPs will be complemented by the Strategic Spatial Energy Planning (SSEP) – covering Great Britain - assessing the optimal locations for electricity generation, and the storage and transportation of electricity and hydrogen.[68]

A key aspect of the UK's net zero targets revolves around future energy demand and supply.[69] Some local authorities have mapped out their energy needs using a Local Area Energy Plan (LAEP, PN 703). However. LAEPs are not mandatory in England, creating uncertainty for RESPs and possible delays.[70] A LAEP seeks to deliver various benefits and coordinate local energy transitions holistically.

Future energy mix

Alongside renewables, nuclear (PN 687), bioenergy with carbon capture and storage (BECCS), and demand-side flexibility are expected to play a part in the UK's future energy technology mix.[71] NESO suggest investing in nuclear energy generation,[11] alongside energy storage (PN 688), may alleviate issues caused by intermittent renewable energy production.[73,74] BECCS and direct air capture may also be applied to offset residual emissions[12] from carbon-intensive industries.[13]

[10] The government, through the addition of new legislation, will ensure that these are updated every five years.[1]

[11] Research also suggests investing in predictable tidal renewable energy generation can help address intermittency challenges (PN 625).[72]

[12] Residual emissions are greenhouse gas emissions that are difficult to reduce via decarbonisation routes such as carbon capture, utilisation and storage, fuel switching, and energy efficiency.

[13] BECCS can be used as a negative emission technology, counteracting emissions from other sources (PN 690). For example, emissions from carbon intensive industries such as steel and cement, so that they can operate at near zero emissions.[75] However, its use as a negative emissions technology does not mean it's a suitable tool for rapid decarbonisation of industry.[75]

In 2025, a proposed policy change will lead to all nuclear generating projects, including small modular nuclear reactors (PN 580),[14] falling within the NSIP regime, regardless of generating capacity.[76] Battery projects for energy storage are not within the NSIP regime, regardless of storage capacity.[77]

Environmental regulations

A 2023 House of Lords Built Environment Committee report found that the implementation of environmental regulations can cause development delays.[78,79] Most NSIP applications in England meet the criteria for requiring an Environmental Impact Assessment (EIA, CBP-7434, s2.3).[80,81] EIA regulations may also apply to planning applications determined by LPAs depending on the scale and effects of the proposal.[15]

There are also habitats regulations assessments (HRA) that may apply to NSIPs likely significantly affect some types of protected areas.[16,82] These environmental assessments are used to inform decision makers of the likely significant environmental effects of a project, which must be considered in decisions.

Considerations of biodiversity net gain (BNG) are an additional and entirely separate freestanding obligation arising under Schedule 7A of the Town and Country Planning Act 1990 and are not currently a requirement for NSIPs (PN 728).[83,84]

Opportunities and challenges for planning in net zero sectors

Currently, the TCPA and Bioregional, a sustainability consultancy, indicate that coordination between policy areas is lacking, with missed opportunities to realise multiple objectives simultaneously (Table 4).[85,86] GMCA suggest that regional authorities are already in the ideal position to coordinate and integrate these plans,[46] with one of the focuses as a combined authority assessing the interconnectedness of various plans and projects.[87] Areas of opportunity and challenge include the electricity generation system, housing and development, and resourcing and skills.

[14] There are also advanced reactors, however, they are not expected to be available for construction before 2030 (PN 457).

[15] The government has acknowledged the current system does not deliver intended nature recovery outcomes and leads to lengthy delays. It has set out a number of measures to address this, including: a roadmap to bring forward Environmental Outcome Reports (EORs) that will replace EIAs; to develop strategic approaches to managing environmental pressures around industrial clusters that engage the planning system; considering how to better use development to fund nature recovery; and, a public consultation on nature-positive best practice into energy infrastructure planning and development. [1]

[16] Special Protected Areas or Special Areas of Conservation designated under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations.

Electricity generation

Researchers suggest that meeting the UK net zero targets will require energy[17] demand reduction as well as a transition to low-carbon electricity generation[18] (PN 715).[90] Most of this is expected to come from renewables.[91] In 2023, 55.3% of the UK's electricity came from the following low carbon technologies:

- Wind power[92] (29.4%)
- Nuclear[93] (14.2%)
- Biomass energy[93] (5%)
- Solar power[94] (4.9%)
- Hydropower, including tidal[93] (1.8%.)

The government plans to double onshore wind, triple solar, and quadruple offshore wind power generation capacity by 2030.[95] By 2050, up to a quarter of the UK's energy could be produced by nuclear.[96]

The UK Sustainable Investment and Finance Association say that to fund these targets much greater levels of private investment is needed,[19] which can be incentivised by reducing uncertainties and delays.[2,98]

NSIP generation thresholds

Under the Clean Power 2030 Action Plan, onshore wind and solar projects with a generation capacity of 100MW or greater will go through the NSIP planning regime;[1] otherwise, the planning permission is determined by the LPA.[99,100] Industry stakeholders suggest the threshold should be more flexible to keep pace with the rate of technological advancement, in particular solar energy generation.[46,101]

The threshold set in 2008 was previously 50MW for solar, but solar panels and wind turbines have become more efficient since, with projects exceeding the power generation threshold on smaller sites than before.[102] The National Infrastructure Planning Association (NIPA), have stated that the inflexibility of this threshold and cost of the NSIP DCO process has limited potential investments in medium sized solar farms.[101]

[17] Energy is more than just electricity, it includes energy created from solid fuels (such as coal), natural gas, bioenergy, and petroleum. When talking about energy, this encompasses industry, transport, domestic, and services sector.[88]

[18] Clean energy creates no or few greenhouse gas emissions. Green energy is produced in a way that causes no harm to the natural environment. Renewable (sustainable) energy comes from sources that are constantly and naturally renewed.[89]

[19] NESO have stated that £40 billion of investment annually is needed to achieve clean power by 2030.[73] Over the same time period the government have committed £8.3 billion to GB energy and the National Wealth Fund is expected to commit £27.8 billion to secure clean energy investments.[97] The rest of £200 billion required is expected to come from private investments.

Previously, it led to solar farms clustering at 49.9MW to avoid the NSIP regime. However, recently several solar developers have brought forward proposals in the 100-200MW range despite these extra costs, as the outcomes of the NSIP regime are more consistent.[102]

Electricity network

For renewables projects, grid capacity is a key consideration.[3,50,85,103] The UK's electrical grid consists of electrical substations, power transmission, and power distribution (PN 372, PN 587). It is physically constrained by how much power it can transmit at any one time. Generators sometimes have to be programmed to reduce their output. The companies operating these generators are then compensated through a constraint payment funded through consumer bills.[104]

New grid infrastructure, most of which falls under the NSIP process, may reduce compensation requirements.[20] Researchers suggest that due to lack of transmission investment, current costs for constraint payments are over £1 billion and set to rise to £2 billion in the mid-2020s.[105,106] To deliver this at the scale and pace required NESO state that projects will need to be approved by the planning system for construction "as soon as possible".[73]

Difficulties in obtaining a grid connection also causes delays, with investors citing this as one of the main obstacles to energy investment in the UK. [107–109] NIPA have stated information on the availability of grid connectors and capacity for large renewables projects is available, but often not quickly enough.[101,21]

Although projects usually reserve capacity at grid connections for a set period, construction delays can lead to the loss of reservations, impacting project viability. Some projects may also be speculative, causing connection delays for projects that are not. The current queue for connections exceeds the volume of electricity required for achieving net zero scenarios.[111]

Bioregional state that LPAs and developers find it difficult to engage the national grid or distribution network operators on current and future grid capacity constraints. Various LPAs have cited the lack of grid connections as a barrier to renewables projects and reaching their net zero targets.[85,112] NESO are consulting on a connections reform to address issues faced by those seeking a grid connection.[22,115]

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[20] NESO estimate to around twice as much new transmission network infrastructure will be needed in Great Britain by 2030 than has been delivered in the past decade to connect new generation and meet future demand.[73]

[21] The Ofgem Strategic Innovation Fund is funding a discovery project for an AI solution to simulate the impact of small and large-scale connection requests (FastTrack) for network planners.[110]

[22] Connections reform has been outlined in NESO's Connection Action Plan. There are six key areas of action within the plan: raise entry requirements for grid connections to increase the quality of projects applying, remove stalled projects to release capacity, better use existing network capacity to reduce connection timelines, better allocation of available network capacity, improving data processes, and developing longer term connections process models.[113,114] The reform will be undertaken in cooperation with the Government and Ofgem to address regulatory reforms, incentives and penalties for grid and distributed network operators as well as a consultation on amending planning consent exemptions.[1]

Some regional and combined authorities provide energy data and plans to their Distribution Network Operator (DNO)[23] to predict future demand and make the appropriate local grid upgrades. There are examples of regional authorities being an effective middle-party to bring together data from local authorities.[24,87] However, supplying data to the DNOs doesn't guarantee gaining required grid connections.[116]

NSIP regime

Developers state there are delays to NSIP planning consent. Most of these delays are either at the start with the preapplication process, or at the end with the secretary of state decision.[101] This timeline variability creates uncertainty that may lead to a loss of investment in projects.[50,51]

The preapplication process varies in time based on project complexity and how many rounds of consultation with statutory consultees[25] and interested parties are needed. NIPA have cautioned against making this stage overly prescriptive as different projects require different approaches to avoid applications being submitted with unconsidered issues that could arise later in the process.[101]

At the decision stage, the secretary of state ensures their decision statement is robust to legal challenges and further delays.[26] Many legal challenges of planning decisions are based on out-of-date NPSs.[46,47,86,101] The government has committed to updating NPSs in 2025 and 5 yearly reviews.[1]

Stakeholders such as the National Infrastructure Commission (NIC), the government's infrastructure advisory body, suggest various mechanisms for expediting the NSIP process for large renewables,[119] such as strategic environmental approaches.

This includes data sharing and using spatial planning.[27, 28] Together, these recommendations would address tensions in site selection and aid the delivery of EIAs.[47] Regen, an energy consultancy, suggest that the fast-track scheme, introduced recently for NSIP projects is modified to provide a direct route for renewables.[114,120]

[23] DNOs are companies which own and operate the grid network which distributes electricity from the national transmission network to businesses and homes. National Grid, SSEN, and SPEN own and manage the infrastructure which transmits the energy produced from generation sources to distribution networks.

[24] The data from local authorities would be from their LAEP. However, since this is not mandated, these will not always be available to regional authorities to bring in all the required data for energy planning.

[25] Statutory consultees vary by location and government. They are defined by Schedule 1 of The Infrastructure Planning regulations.[117]

[26] An independent review for government into the delays caused by legal challenges was completed in October 2024 and provides recommendations to alleviate the issues.[118]

[27] Effective spatial planning is that which effectively engages the community on the ideal location for certain infrastructure. Similar to the Scottish NPF4, which consulted communities beforehand, informing developers where they could develop.[25]

[28] By sharing data between developers this may avoid repeating the work needed to complete EIAs.[46]

Community engagement and benefits

Any NSIP development is likely to affect the surrounding community temporarily or permanently. Many developers choose to undertake community benefit schemes to compensate for negative impacts, despite not being a planning requirement. These are separate from the mandatory NSIP community engagement (consultation).

Renewable UK suggest that community benefits should remain voluntary to ensure flexibility, suggesting mandatory benefits packages could lead to unintended effects.[46,103] There is widespread agreement that benefits need to proportionate to the size of the project and appropriate to the community.[3,47,121]

The devolved nations have best practice guidance on appropriate benefits for onshore renewable energy developments.[29,122,123] The guidance suggests benefits equivalent to £5,000 per MW of the development per annum for the lifetime of the project.[30]

Research suggests effective community engagement outlines the benefit options available so that the community can choose the most appropriate benefits.[124] The possible benefits to include will vary between communities, such as installing energy efficient measures in homes to reduce bills or funding community initiatives.[46,51,103]

Effective community engagement provides opportunities beyond selecting benefits. If effective, Regen suggests the community should not perceive renewables projects as being imposed upon them.[120] Depending on project types, this may speed up delivery by reducing opposition and increasing likelihood of hosting future projects. Engaging communities around projects (not just renewables) can also inform place makers with local knowledge about practical feasibility.[116,125–127]

RTPI state effective systems from other countries including the Commission Nationale du Débat Public from France. This is a statutory independent body that handles community engagement throughout the whole process.[128]

Housing, development, and transport

England has a target to build 1.5 million new houses.[129] How these are built will affect energy demand, progress towards the net zero target and remaining within 1.5˚C compatible carbon budgets.[130]

Heating and powering buildings accounts for 30% of the UK's total energy usage.[131] Heat networks can be implemented as a low carbon heat supply (PN 632), reducing energy usage.[132] Building new homes to a high energy efficiency standard (PN 650) and in the right location may reduce future energy demand. Demand reduction, also reduces the need for renewables and grid infrastructure.[70]

[29] The UK government has committed to building upon existing approaches and to encourage consistency in community benefits and plans to publish updated guidance.[1]

[30] For a solar farm operating for 25 years and operating at 50MW this would be £6.25million worth of compensation.

Building regulations enforce the standards for the built environment.[31] Updates to The Future Homes and Buildings Standards aim to improve current energy efficiency building regulations. However, stakeholders such as the Town and Country Planning Association (TCPA) believe policies are not sufficient to achieve net zero.[85,86,133]

Currently there are over 1 million houses that were granted planning permission under previous building standards yet to be constructed,[134–136] creating committed future carbon emissions.

Some LPAs have created net zero policies beyond building regulations.[51,87] However, the RTPI state long-term consistency across different areas will help create a level playing field and improve certainty for developers.[51] The TCPA suggest that until the future homes standard achieves net zero buildings, LPAs should be able to set higher energy efficiency requirements through local plans. This is currently limited by a December 2023 ministerial statement prescribing the use of building regulations metrics to set energy efficiency standards.[137]

Greater decarbonisation of the grid and retrofitting will be required if the future homes standard sets lower efficiency requirements.[86,138] Inefficient housing will also add cost to householder energy bills, affecting lower income households the most (PN 550).

Newly built houses will account for less than 20% of the 2050 housing stock in the UK.[139] To stay within carbon budgets, existing homes will all need to be retrofitted (PN 650, PN 699) to improve their energy efficiency standards.[140] It is often difficult and expensive to retrofit older properties, but will reduce heating bills in the long run.[141–143] WRAP suggest complex retrofitting regulations have limited the rollout of retrofit at scale and streamlining these may encourage uptake.[144–146]

Optimal locations

Alongside energy efficiency, the TCPA suggest housing developments should consider the implications of where a development is located and the subsequent behaviours of its residents to achieve net zero. The location and supporting infrastructure influences lifestyle behaviours and transport patterns (PN 714). [85–87,147,148]

Some local and combined authorities may consider optimal locations for new housing based on energy, employment, transport, and environmental factors. However, Bioregional suggest this may be overruled if a 5-year land supply cannot be demonstrated with an up to date local plan.[32,66,85,86,150] This may result in developments being approved regardless of location or quality to meet targets.[33]

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[31] The standards for building regulations are enforced and approved by one of two building control authorities, depending on the type and size of the building. For most buildings, up to 18 metres high, the local authority's building control service or a private registered building control approver are responsible. For buildings over 18 metres in height, approval for the building regulations is given by the Building Safety Regulator (CBP-8482).

[32] A 5 year land supply is an allocation of sites which can provide 5 years' worth of housing in an LPA.[149]

[33] Where there are no relevant plan policies or policies are out of date, the presumption in favour of sustainable development requires granting permission is granted unless application of NPPF policies that protect areas or assets provide a strong reason for refusing, or that the impacts of granting

However, as a combined authority with planning powers, Greater Manchester Combined Authority (GMCA) has had some success in allocating different housing targets for its LPAs based on its spatial development strategy.[151]

At a national scale, Bioregional state the NPPF consultation did not propose clear guidance around quality and strategic locations for growth. The updated NPPF was not accompanied by a spatial plan, and specific locations for infrastructures and developments are yet to be identified.[39] The TCPA state measures to achieve emission reductions in locations can be contradicted by other policies, such as the National Highways increasing road capacity to deliver economic growth.[51,152]

Construction

Planning for the built environment permits construction without considering carbon impacts.[86] The carbon impacts of a development are from the embodied carbon[34] within the materials, and from its subsequent operational use (PB 44).[154] Carbon accounting (measuring and recording embodied carbon) for developments helps assess the carbon implications of developments.[6,86,35]

Researchers suggest embedding circularity into new buildings through the planning system by ensuring that buildings have end of life considerations.[159–161] This would allow for construction materials or buildings to be reused and open a market for secondary materials (PB 44). They state that an audit before a structure is demolished or deconstructed is key to recovering as many materials as possible and reducing waste.[126,128]

Transport

People's travel is intrinsically linked to where they live and the behaviours that their community encourages.[147,162] For new developments, contributors argue that if key infrastructure such as public transport networks, cycle lanes and pedestrian walkways are absent, residents' reliance on private/high emission vehicles increases.[85,87,147]

They recommend that place design in relation to transport should be enforced through planning policies.[66,85,147,163] If the relevant infrastructure and transport links are installed post housing development construction, it is harder to change existing behaviours (PN 714), which may result in continued high emissions vehicles use.

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permission can be demonstrated to outweigh the benefits as assessed against NPPF policies as a whole with particular regard to key policies such as sustainable locations (paragraph 11, footnote 7, 8 and 9).

[34] Embodied carbon means all the CO_2 emitted in the production of materials. It is estimated from the energy used to manufacture a given material, including the extraction and transport of the raw materials required. Embodied carbon also considers the emissions from the building and deconstruction processes of a building.[153]

[35] Methodologies have been developed such as the Tyndall Carbon Budget Tool and Bioregional's Net-Zero Living Spatial Planning Tool, which provide carbon assessments of developments or local authority areas. Whereas the Hawkins Brown Emissions Reduction Tool provides embodied carbon emissions.[155–157] A standard whole life carbon assessment (WLCA) for the built environment has been developed by RICS which can be applied to developments.[158]

The CCC's 2024 progress report states that the UK is on track with electric vehicle (EV) charging points roll-out, but is not on track in EV sales rates.[17] The RTPI suggest increasing numbers of EVs will require locations of new charging points to be planned together with grid upgrades and the locations of other higher energy demand developments (such as data centres) to keep pace with the rising energy demand.[51]

Resourcing and skills

All contributors stated a lack of resourcing across net zero delivery areas (PN 711). Several emphasise that planning departments may not have the capacity to deal with the workload, often exacerbated by the lack of relevant experienced planners.[86,120,36]

For instance, some LPAs may have had less experience with renewables and low carbon energy scheme planning applications,[50,120] while others share their experience, such as Suffolk County Council's Centre of Excellence.[164] It has been suggested there is a lack of appealing public sector planning job opportunities compared to higher paid private sector roles with more varied career development potential.[51,66]

The government has announced that it will recruit 300 new planners to increase LPA capacity, [165] across 326 English LPAs.[29,166,37] LPAs are also facing resourcing issues for roles which assist planners, such as ecologists and drainage engineers. This reduces the availability of specialist guidance on applications for planners on areas such as BNG (PN 728).[87] For example, the Aldersgate Group state that there is competition from a small pool of trained professionals, particularly ecologists with the introduction of BNG, and the private sector has the resources to hire them.[167] Options for alleviating this include creating regional hubs for specialist advice.[167]

Funding for local authority projects is usually competitive, with larger more experienced authorities receiving the most.[116] Funding streams are often only available for specific types of projects and can lead to projects being delivered in a suboptimal order.[87] GMCA have suggested that more control over their funding would allow better allocation based on their specific needs.[87]

Researchers suggest roles in construction and retrofitting are facing a drop off between completion of college courses and securing a job.[126] The Construction Industry Training Board (CITB) state the lack of job acquisition could be an collaborative opportunity for the government, colleges, and industry for future workforce planning.[38]

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[36] The government has stated that it will "reform planning resourcing for the longer term".[1]

[37] The English Devolution White Paper 2024 states the government is seeking to reorganise two tier local government into single unitary authorities covering areas with a population of 500,000 or more. In areas with two tiers of local government, before moving to a single tier, the government will establish Combined County Authorities but not Combined Authorities, which may reduce the number of LPAs.

[38] CITB state that if colleges can clearly see the demand for specific roles, they can invest appropriately to meet this demand.[126] Apprenticeships are considered the gold standard for training construction professions, but CITB suggest further education colleges in England are underfunded and are competing with industry to hire tutors and assessors.[143]

Table 4 A summary of the key challenges for planning and net zero

Challenge	Description
Energy Demand	If the energy demand of the UK is reduced, the rate at which new infrastructure will need to be built will also be reduced.[70] In terms of the UK's housing stock, demand reduction can involve rolling out retrofit at scale and ensuring new houses and towns are built with to appropriate net zero standards.
Nationally significant infrastructure projects	Large net zero infrastructure projects, such as renewables and transmission lines, are facing delays through the NSIP regime. These are from the pre-application stage, where project differences, developer efficiency, and policy changes are some factors that control the duration;[101,119] and from the decision stage where the secretary of state and the quality of the application affect the duration. To alleviate some of the issues at the pre-application stage it has been suggested that spatial planning could be used to find optimal locations for infrastructure. Data sharing between developers could speed up several NSIP procedures including EIAs.
Community engagement and benefits	Public understanding and acceptance of net zero infrastructure is key to meeting national targets.[3] To achieve this, communities need to be effectively engaged so that they understand why certain projects are needed and what benefits arise from implementing net zero infrastructure.[46,120]
Grid connections	The queue to access the national transmission network is overwhelmed with more than 700 gigawatts of projects.[168] This is delaying the delivery of renewable energy projects.[103] NESO have planned a connections reform to address issues faced by those seeking access to and using the electricity network.[113]
Policy coordination and integrating planning integration across different scales	Net zero planning encompasses many departments within a planning authority, but also the coordination of plans at the local, regional, and national scale. Currently there is no mechanism to join-up departments and policy with a net zero focus.[169] Research has been commissioned by RTPI on options for integrating local scale spatial planning and LAEPs with respect to net zero goals.[170] The TCPA state that national plans could be effective at combining spatial data and research such as modelling locations for renewables.[55,171,172] However, they suggest resolving such 'top down' plans with smaller scale local and regional plans requires addressing issues around devolution in England.

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