UK Energy Research Centre

Infrastructure Transformation for Net Zero: Environmental Risks

UKERC Working Paper

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Introduction to UKERC

The UK Energy Research Centre (UKERC) carries out world-class, interdisciplinary research into sustainable future energy systems.

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Executive summary

Immediate predecessors of the 2021 Net Zero Strategy [1] embodied a government emphasis on environmental sustainability and protection alongside ‘clean growth’ as the way forward for the UK.

The 2021 Net Zero Strategy lauded UK government's ambition for integration of environmental protection into other policy areas and set out an ‘**integration principle’** whereby policymakers should look for opportunities to embed environmental **protection** in other fields of policy having impacts on the environment [1] (key commitment 11).

The ‘integration principle’ is now embedded as one of five ‘environmental principles’ in the Environment Act 2021, with a statutory duty (in some circumstances) for ministers to have ‘due regard’ to the principles when formulating policy and making decisions [2].

This is elaborated upon by the Environmental Principles Policy Statement which states “*Applying the integration principle involves considering whether the policy has the potential to cause a negative environmental effect which could be avoided, minimised, or reduced through alterations to the policy* ***in proportion to other policy aims***” [3].

Government policy, as set out in Powering up Britain: The Net Zero Growth Plan [4] reflected this caveat, relying upon measures being proposed via the Nature Markets Framework [5], signposting towards offsetting or compensation rather than strict environmental protection.

The Environmental Improvement Plan 2023 (EIP23) [6], which is the first revision of the 25 Year Environment Plan [7] also recognises that continued government leadership is needed “*to ensure environment is hardwired into all contributing departmental priorities*.”

As part of UKERC’s Phase 4 Integration project on infrastructure transformation for net zero, this research focused on the extent to which environmental protection is integrated into current decision-making processes related to the transformation in energy infrastructure that is required to reach net zero. The study involved an extensive review of energy and environment policy documents in a standardised way, and carried out detailed qualitative analysis through a series of interviews to examine practitioner perceptions of the current situation.

The analysis was carried out before the 2024 UK General Election and change to a new Labour administration, but the policies in the review are still current and the conclusions of this work are unchanged.

The document review revealed that potential environmental impacts are acknowledged in energy policy documents, along with the intent and need to mitigate them, but generally without specifics. Environmental policy documents, however,

exhibited little awareness of potential impacts from energy infrastructure, though the issue may simply have been outside of their scope.

Capacity constraint within the electricity grid was a topic of discussion in energy policy documents and was also frequently mentioned by interviewees. Using technology to manage the grid more flexibly, better matching supply and demand, and thereby reducing the extent of physical grid infrastructure expansion needed, is an area of focus in a range of energy policy documents.

Policy at the delivery level is focussed on the need for planning reforms to speed up consenting for grid infrastructure and the roll-out of renewables. The need for improved coordination between local authorities was highlighted in relation to policy implementation and this was also reflected in the interviews, both in relation to speeding up consenting and also to ensuring potential environmental impacts are given full consideration. Facilitating decarbonisation by speeding up consenting, is likely to be an area where energy and environment policy objectives will clash in the next few years. This seems to be the direction of travel for the new government, as *"unprecedented amounts of nationally significant solar – 2GW – more than the last 14 years combined"* have been approved in the period between July 2024 and November 2024 [8].

The overwhelming consensus from the interviewees was that although they could see the intention at high-level to make energy and environmental policies align, in reality *"net zero trumps the environment"*, environmental impact isn't 'joined up'*;* and that *"these are two quite different worlds"* where *"energy people and environment people have different mindsets".*

Additionally, due to the different ways policy is implemented in England, Wales and Scotland, interviewees at the local and regional level felt that a whole energy system view of Great Britain doesn't exist, creating difficulty in obtaining consensus for cross-boundary infrastructure. Different approaches to policies such as Biodiversity Net Gain, and onshore and offshore developments, were highlighted as leading to increased costs and sub-optimal siting of energy infrastructure. Lack of coordination or awareness of who has overall oversight of policy direction and decisions on energy infrastructure developments were also key concerns.

The proposal for a GB Strategic Spatial Energy Plan (SSEP) was generally well supported by interviewees. The main challenges foreseen in creating this are coordinating stakeholders with different interests and mindsets, and particularly – the lack of essential skills. There were frequent mentions of the need for upskilling within government bodies tasked with delivering infrastructure change; for having appropriate funding for recruiting, training and retaining skilled staff and building long-lasting teams to engender trust between developers and local communities.

In terms of the environment and community costs and benefits, the prevailing view was that these need to be raised to be on equal terms with energy development, with communities more involved in both the design of energy schemes and allocation of benefit funding. There were calls for these funds to be pooled across projects to provide more meaningful benefits to local communities, extending to those affected

by new transmission infrastructure, as well as those local to new energy generation sites.

In terms of balancing local versus wider needs and impacts, in the East of England, interviewees highlighted the trade-offs between onshore and offshore environmental impacts of offshore wind developments. In addition, the lack of coordination between individual offshore wind developments was also raised as creating the potential for unnecessary onshore environmental impacts.

Interviewees were asked their views on the challenges of achieving a halving of the build time of electricity transmission infrastructure from 14 years to 7 years. Several commented on the immediate need to resolve the current backlog of applications that are waiting for connection to the grid, and the requirement to deal with these more strategically, giving priority to those projects delivering greatest benefit, but also to manage demand through more innovative solutions and flexibility options rather than over-focussing on increasing capacity.

The development of regional and local energy plans was welcomed, to enable a more strategic approach to aid in the halving of delivery time. Mention was made of conferring a duty on local authorities to deliver net zero to ensure it is properly resourced and could be given the appropriate attention.

Engaging the public was felt both to be important but also a potential challenge that might slow delivery, so again, the issue of skills and resourcing of delivery teams in local authorities to help build relationships and facilitate community benefits was flagged.

Specific environmental risks mentioned during interviews were – lack of a developed evidence base for offshore environmental impacts compared to onshore, lack of understanding of potential impacts of untried technologies (e.g. batteries), pressure on water availability (e.g. for hydrogen CCS), lack of understanding of new processes, or of potential new pollutants (e.g. associated with battery technologies), developments being sub-optimally sited or not coordinated so that more infrastructure (e.g. transmission) is needed, and unnecessarily increasing the overall level of impact on the environment.

Interviewees were asked if they felt that the integration of energy and environmental policy or practice had changed over recent years. Some felt that integration has stalled or even rolled back; that there are difficulties, for example, ensuring that local authorities link energy and environment, and that a coherent approach is needed to mediate between objectives in the different policy areas. They also expressed a need to find the means to upskill, inform and engender trust between local authorities and other organisations working in these areas and energy infrastructure developers, but that there is a willingness to find ways to make this happen.

In Wales, a single government department deals with net zero and environment, and this is viewed as a benefit. With energy planning starting at the local level and feeding through to regional and then a national plan, policy is viewed as more cohesive than elsewhere. Scottish policy was also mentioned for being clear in its net zero objectives alongside a positive environmental agenda.

In terms of environmental policy, the document review found no cross-referencing or evidence of collaboration between nations regarding environmental strategy and practice. Neither was there collaboration for achieving cross-boundary conservation objectives. So it is unclear whether experiences and learning between nations is being shared or whether there is awareness in this sector of the potential risk from the rollout of new energy infrastructure.

At the same time, in the latest UK government policy documents, there appears to be a weakening in the language relating to environmental protection with a clear intention to compensate where environmental harm cannot be mitigated, with energy security and net zero targets overriding all other factors.

Removing consenting barriers to enable deployment of renewables and addressing capacity constraints within the electricity grid seem to be the main priorities, which could potentially increase environmental risk if these end up overriding the ‘integration principle’.

1. Introduction

A UK government ambition for integration of environmental protection into other policy areas was set out in an 'integration principle' in the 2021 Net Zero Strategy: Build Back Greener [1], which stated:

*"The **integration principle** is the principle which states that policy-makers should look for opportunities to embed environmental protection in other fields of policy that have impacts on the environment."* (key commitment 11, p251) and -

*"The **integration principle** will create a prompt for policy makers to embed environmental protection in policy making, triggering consideration of the government's priorities for environmental protection (such as net zero) and whether these priorities can be supported through the new policy*." (key commitment 13, p251)

It has been a tumultuous few years in politics and world events since the 2021 Net Zero Strategy was published, which itself heralded changes from the previous UK Industrial Strategy [9], associated Clean Growth Strategy [10] and the government's flagship 25-Year Environment Plan [7]. Those predecessors of the 2021 Net Zero Strategy, embodied a government emphasis on environmental sustainability and protection alongside 'clean growth' as the way forward for the UK.

The 'integration principle' is now embedded as one of five 'environmental principles' in the Environment Act 2021, with a statutory duty (in some circumstances) for ministers to have 'due regard' to the principles when formulating policy and making decisions [2].

This is elaborated upon by the Environmental Principles Policy Statement [3] which states "*Applying the integration principle involves considering whether the policy has the potential to cause a negative environmental effect which could be avoided, minimised, or reduced through alterations to the policy **in proportion to other policy aims***." [3]

The latest government policy, as set out in *Powering up Britain: The Net Zero Growth Plan* [4] reflects this caveat, relying upon measures being proposed via the Nature Markets Framework [5], signposting towards offsetting or compensation rather than strict environmental protection.

The Environmental Improvement Plan 2023 (EIP23) [6], which is the first revision of the 25 Year Environment Plan [7] recognises that continued government leadership is needed "*to ensure environment is hardwired into all contributing departmental priorities*."

The only mention of the possibility of energy infrastructure impacts in the EIP23 is in relation to competing demands on land. A new Land Use Framework, which the EIP23 mentions was due for publication in 2023, still awaits publication in 2024. It will be pertinent to see how potential energy-environment trade-offs are addressed in this document.

As part of UKERC's Phase 4 Integration project on infrastructure transformation for net zero, this research focused on the extent to which environmental protection is integrated into current decision-making processes related to the transformation in energy infrastructure that is required to reach net zero.

The study examined a wide range of policy documents relating to the energy transition and environmental protection and carried out a series of interviews with experts at the energy-environment interface to gain further understanding.

This working paper presents a synthesis of key themes emerging from this research.

This work was carried out before the 2024 UK election and change to a Labour administration, but the policies in the review are still current and the conclusions of this work are unchanged.

An illustration of how the new Government intends to approach the challenges of the energy-environment interface is provided by the Marine Delivery Routemap published by the Crown Estate (which manages the seabed around England, Wales and Northern Ireland) in September 2024 [11]. The Routemap aims to support the growth of key industries alongside the creation of thriving biodiversity and marine environments. This follows legislation brought forward in the King's Speech, to modernise The Crown Estate's borrowing and investment powers, alongside the new Great British Energy-Crown Estate partnership. The partnership has also published its thinking on the Future of Offshore Wind, [12] which sets out its approach to leasing additional capacity out to 2040 in support of the UK's net zero and energy security ambitions.

1.1 Approach

Initially, a scoping exercise was carried out to identify relevant energy and environment policy documents authored by both GB governments and relevant non-departmental public bodies. These encompassed UK-wide policies, along with others where policy is devolved to Wales and Scotland, and totalled 123 documents (see Appendix 1): 59 relating to the environment, 48 relating to energy plus an additional 16 over-arching socio-economic framing policies. The majority of documents included in the review were published between 2018 and 2022, but a small number dating back to 2008 were also included along with additional documents published in early 2023. Documents dated 2018 – 2023 made up 86% of those included in the review.

The research team constructed an initial comprehensive list of 112 search terms which was applied to all 123 review documents, using a GREP[1] tool (PowerGREP). This analysis enabled a rapid identification of the most relevant search terms across this wide range of documents.

Following this broad keyword/term search, a subset of 35 key policy documents (and the 56 most fruitful search terms) was selected for 'deep dive' scrutiny – i.e. querying the context of each mention (using both PowerGREP and the 'find' tool of the .pdf document reader). This selection of documents was based on ranking the documents by type and by topic (see Appendix 1, Table A6), with those scoring A on both criteria deemed the most important (see Appendix 1, Tables A1 – A5, which shows the assigned rank of each document).

This process allowed a wide range of policy documents to be reviewed in a standardised way, and this was supported by carrying out detailed qualitative analysis through interviews.

Following the policy review, 19 organisations were approached with a request for an interview. They were selected to cover a wide range of organisation type, focus and geographical distribution, through the application of the expert knowledge of the team and assessment of organisations listed in the policy documents. Twelve interviews were completed across England, Wales and Scotland, comprising local authorities and regional governmental organisations, energy industry representation and environmental organisations, to gather practitioner perceptions on these issues and variations in approaches between the GB nations.

In England the focus was with organisations in Norfolk and Suffolk as these counties have a substantial number (15) of current energy-related Nationally Significant Infrastructure Project (NSIP) applications. Interview questions were devised to obtain insights into both policy and practise (see Appendix 2 for questionnaire and research protocol).

[1] Global Regular Expression Print – a tool that searches plain-text data sets for lines that match a search term or regular expression. Using a regular expression enables e.g. two words that occur near to each other e.g. 'environment' and 'risk' to be returned as a result. The context can then be reviewed for relevance.

Full details relating to the methodological approach and results are recorded in internal research reports and spreadsheets which will be made available as supplementary information to UKERC (Dockerty, 2023, 2024, see reference list).

2. Insights on Policy Integration from Document Review

Insights on the degree to which energy policy considers environment and vice versa were examined by reviewing the policy documents regarding risks and impacts, and barriers and drivers for the integration of energy infrastructure transformation and environmental policies. Additionally, the documents were searched to identify organisations with roles and responsibilities for implementation and delivery, and named funds to do so, for more specific insights on integration of environment and net zero within the delivery programmes.

2.1 Risks and impacts

The extent to which potential environmental **risks and impacts** associated with the infrastructure transformation for net zero are considered in energy and environmental policy, provides an insight into the degree of integration of these policy areas.

The policy review revealed many references acknowledging the existence of potential environmental impacts in energy policy documents and the intent and need to mitigate them, but generally without specifics. In fact, some documents were focussed on internal risk to operation from environmental factors, rather than the other way around.

However, the National Policy Statement (NPS) for nuclear power generation, ([13] – now superseded), highlighted concerns about flood risk, specifically: potential climate change effects on nuclear sites which will be at greater risk of coastal flooding (sea level rise, flood surge and tsunami). It also highlighted concerns of drought which could lead to shortage of cooling water for nuclear plant operation.

Additionally, the Biomass Policy Statement [14], lays out a range of potential environmental risks from biomass expansion, as does the Net Zero Strategy in relation to BECCS [1].

Of all the energy technologies, offshore wind plans seem to be most well developed in environmental risk consideration [15], [16], [17]. The Scottish Sectoral Marine Plan for Offshore Wind Energy [18] also has a detailed appraisal of environmental risk factors. This describes 15 ‘Plan Options’ (POs) across four regions within Scottish Waters and flags the potential for cumulative negative effects from multiple POs, particularly where POs are concentrated in a region.

Several documents mention 'carbon leakage' – this relates to concerns that decarbonisation happening in the UK at a faster pace than elsewhere could lead to externalising GHG emissions, transferring environmental impacts abroad.

The environmental policy documents, conversely, exhibited little awareness of potential impacts from energy infrastructure, though the issue may simply have been outside of their scope.

The ‘take home’ message from the narrative on the question of risks and impacts is that there seems to be a language shift taking place. In the latest UK Government publications (i.e. ‘Powering up Britain’, [4], [33]) and the ‘Energy Security Strategy’ [34] mention of 'environmental impact' has been avoided and replaced with phrases such as 'environmental consideration’, improvements, benefits, or commitments. However, there is also clear intention for these not to derail renewables deployment, with energy security and net zero targets overriding all other factors.

2.2 Barriers and drivers

In addition to awareness of environmental risk, the literature review examined what might be the barriers and drivers for integration of infrastructure transformation for net zero and environmental policies.

However, there were few mentions of environmental factors or policies as being barriers to energy system transformation. Where these exist, they tend to be related to deployment of offshore wind. Scotland’s Renewable Energy Policy for Offshore wind [18] cites several environmental siting constraints for offshore wind - bird populations, benthic habitats, cetaceans, navigational safety, seascape/landscape and commercial fisheries. The Regional Energy Strategy for mid-Wales [17] also identifies environmental constraints to offshore wind development along with *“existing leases and military presence, seascape and visual impact, port and transport infrastructure and more significantly lack of access to the transmission network”*. It states: *“In the timescales of the strategy, offshore wind is unlikely to be developed in the region. Considerable investment in the region’s grid infrastructure would be needed to enable offshore wind to connect.”*

Across the publications reviewed, there is appreciation that environmental barriers to deployment of energy infrastructure exist, but less elaboration of what the explicit barriers are. Mostly, barriers 'need research' or ‘are being investigated’ but are not at the stage where measures or solutions are widely offered.

Removing consenting barriers to enable deployment of renewables seems to be the main priority. The National Infrastructure Strategy: fairer, faster, greener [19] mentions Project Speed, and a new ‘Nationally Significant Infrastructure Project (NSIP) action plan’ to enable this has recently been published[2] [20].

The ESO RIIO-2 Business Plan 2023–2025 [21] states *"Rapid development of new technologies – advances in low carbon technologies, such as battery storage, wind and solar, are reducing costs and barriers to entry, changing the way energy is*

[2] This was published beyond the review cut-off date and has not been included in the review.

generated and consumed. This has led to a massive increase in requests to access the energy market and to connect to the distribution and transmission networks. Therefore, increasing their interactions with us across the board, driving a huge increase in workload."

However, there are also frequent mentions of capacity constraints within the electricity grid. Using technology to manage the grid more flexibly, better matching supply and demand, thereby reducing the extent of physical grid infrastructure expansion needed, is also an area of policy focus. For example, in 2017, the government and Ofgem published the first Smart Systems and Flexibility Plan which aims to remove barriers to energy storage, *"enabling smart homes and businesses and properly rewarding providers of flexibility services."* The plan was updated in 2021 [22] [23].

In relation to barriers to decarbonising through carbon capture, [10, p5] BEIS notes "*The main barriers now are not technological: rather, government and the sector need to work together to build the frameworks to enable CCUS to deploy at scale."*

Regarding drivers of change, apart from the over-arching driver of 'addressing climate change' there are no mentions of other environmental factors (e.g. air quality) as drivers of decarbonisation of the energy system. *"Decarbonisation, decentralisation, digitalisation and democratisation"* are outlined in the ESO RIIO-2 Business Plan 2023–2025 [21] as the '4Ds' (drivers) of the energy transition. This listed as key drivers, the UK government accelerated drive to fully decarbonise the electricity system by 2035; changes delivered to keep the energy system stable during the COVID-19 pandemic; rising energy costs driving energy efficiency; rapid technological developments e.g. battery storage; changing markets and a need for 'Whole Electricity System coordination', and BREXIT driving new EU Trade Cooperation Agreements (TCA). Following the 2024 election, the new UK government has announced revised climate goals, with a target to reduce emission by 81% by 2035, and an accelerated drive to deliver clean power by 2030 [8], including a new Great British Energy bill which will provide the legislative foundation for a new publicly-owned Great British Energy company to invest in clean energy [24].

2.3 Implementation and delivery

The 'deep dive' examined the term 'role' and found many self-references to the authoring organisation's own role in elements of the strategies and plans they set out. There are generic mentions of 'others' such as local authorities, industry, suppliers, and a few mentions of collaborations /committees, which is presumably where the detail for operationalisation of the policies is managed – e.g. Future System Operator, UK Hydrogen Champion, Energy Efficiency Taskforce, SMOTG

(System Management and Optimisation Task Group), Scottish National Public Energy Agency, etc. There was also mention of the role of certain mechanisms e.g. the UK Emissions Trading Scheme and the Public Sector Decarbonisation Scheme, and reference to the roles of various committees or regulators.

The focus of policy discussion at the delivery level is on the need for planning reforms to speed up consenting for the roll-out of renewables. Improved coordination between local authorities is highlighted in relation to policy implementation needs and was also reflected in the interviews, both in relation to speeding up consenting and also to ensuring potential environmental impacts are given full consideration. Facilitating decarbonisation by speeding up consenting is likely to be an area where energy and environment policy objectives will clash in the next few years.

Indeed, facilitating decarbonisation seems to be the direction of travel for the new administration. As DESNZ notes, *"unprecedented amounts of nationally significant solar – 2GW – more than the last 14 years combined"* have been approved in the period between July 2024 and November 2024 [8].

The 'deep dive' also examined the terms 'local government' and 'planning system'. Where 'local government' was mentioned, this was mostly non-specific, alluding to the need for improved 'partnership working' across local government and other stakeholders. The focus of discussion around the term 'planning system' once again emphasised the need for reform to speed up consenting for the delivery of the energy infrastructure needed to achieve net zero.

The objective for examining targets and delivery processes in this literature review was to consider these in terms of net zero and environment policy integration. However, the number and breadth of policy documents included in the review, and the sheer complexity of interlinkages across government legislation, indicates the challenges of providing a synthesis of the state of integration. The CCC's Annual Progress report to Parliament on its Net Zero Strategy [25], makes 327 policy recommendations alone. (Appendix Table 3 [ESCN05]). This complexity suggests a widespread difficulty in attributing ownership for net zero and environmental policy integration. Nevertheless, Table 1, adapted from *Powering Up Britain – The Net Zero Growth Plan* [4], documents how current strategies and plans fit together, providing an insight about the previous government's intention for integration of net zero and environmental policies. Further detailed examination of each listed document would be needed to assess the degree to which they do actually relate to each other.

Table 1: What 'Powering Up Britain – The Net Zero Growth Plan" says about how strategies and plans fit together

Powering Up Britain – The Net Zero Growth Plan * (HMGov 2023a) [4]	"…focuses on our long-term decarbonisation trajectory and how it can improve the UK's competitiveness, deliver an industrial renaissance and level up the whole of the United Kingdom." (p22)
Powering Up Britain – Energy Security Plan * (HMGov 2023b) [33]	"…is focused on changing decades of reliance on imported fossil fuels, by reducing demand and boosting home grown energy, giving energy resilience the priority it deserves." (p22)
Net Zero Strategy (BEIS 2021a) [1]	"…set out the government's vision for a ***market-led***, ***technology-driven*** transition to decarbonise the UK economy and reach net zero by 2050." (p6)
Third National Adaptation Programme (HMGov, 2023c) [35]	"…will set out the actions we are taking across government to increase our resilience to climate change." (p6)
Environmental Improvement Plan (DEFRA, 2023b) [6]	"…As a principle, we will pursue options that leave the environment in a better state for the next generation and benefit our health by improving biodiversity, air quality, water quality, natural capital, and resilience to climate change." (p7)
Nature Markets Framework (HMGov 2023e) [5]	"…sets out government's approach to supporting and accelerating growth in ***nature markets***, a key mechanism to help deliver our joint nature and climate goals." (p7) "Protecting our natural environment and adapting to climate change, including through investing in nature-based solutions such as tree planting and peatland restoration, goes hand in hand with our net zero future and government will continue to take an integrated approach to ensure co-benefits are maximised." (p7)
Independent Review of Net Zero report (Skidmore, 2023) [36]	"…responds to the expert recommendations made in the Independent Review…" (p7)
Green Finance Strategy (HMGov, 2023f) [38]	"…setting out how Government will utilise all the levers available to mobilise the private investment needed to deliver net zero as well as how the UK will deliver on its ambition to become the world's first Net Zero-aligned Finance Centre, and how government will help cement the UK's status as a world-leading green finance centre." (p15)
Progress Report to Parliament (CCC, 2022a, 2022b) [25, 37]	"Many of the policy announcements have been informed by the CCC analysis of government's progress, contained in their 2022 Progress Report to Parliament**.** A full response to the CCC recommendations in their 2022 Progress Report to Parliament is covered in a separate annex.[3] " (p23)

***** *"These are complementary and should be read together. "While comprehensive, they will continue to evolve and be flexible to adapt to changing circumstances"* (p22)

In terms of funding for the energy transition, there are many references to named funds (see Box 1), but the terms of the individual funding schemes would need to be

[3] https://www.gov.uk/government/publications/committee-on-climate-change-2022-progress-report-government-response/responding-to-the-climate-change-committees-ccc-annual-progress-report-2022-recommendations (There are 327 recommendations listed in this Annex).

examined for any more specific insights on integration of environment and net zero within the delivery programmes, which was outside of the scope of this research.

Box 1: Funding schemes mentioned in review documents

Most frequently mentioned funds	Other funds -
Industrial Energy Transformation Fund	Circular Economy Fund
Net Zero Hydrogen Fund	Clean Steel Fund
Advanced Nuclear Fund	Cleantech venture capital fund
CCUS Infrastructure Fund	Community benefit funds
European Regional Development Fund	Economy Future's Fund
Green Heat Network Fund	Future Nuclear Enabling Fund
Industrial Decarbonisation Challenge Fund	Green Distilleries Fund
Industrial Strategy Challenge Fund	Heat Network Efficiency Scheme
Net Zero Innovation Portfolio	National Lottery Community Fund (for climate change action)
Social Housing Decarbonisation Fund	National Skills Fund
	Net Zero Hydrogen Production Fund
	Nuclear Fuel Fund
	Offshore Wind Growth Partnership (OWGP)
	Public Sector Decarbonisation scheme
	Strength in Places Fund

3. Insights on policy integration from practitioners

This section highlights key points raised during interviews, and presents them below under a series of headings.

3.1 Compatibility of energy and environment policy

The insights from the policy documents indicate consideration of integration issues are, in general, too high level and broad in scope to provide understanding for how these translate in practice in terms of opportunities, trade-offs, costs or other consequences for local communities and places. The interviews carried out for this research therefore focussed on practitioner perceptions around decision-making processes, specifically on whether local environmental impacts are taken into consideration.

Practitioners were asked the following questions:

- In your experience, to what extent are energy and environment policies typically **compatible** with each other?
- What do you see as currently **missing from** energy and environmental **policy integration**?
- In your experience, to what extent does current energy and environment policy identify the key **opportunities and trade-offs** in the delivery of respective priorities?

The overwhelming consensus from the interviewees was that although they could see the intention at high-level to make energy and environmental policies align, in reality *"net zero trumps the environment"*, environmental impact isn't 'joined up'*; and that "these are two quite different worlds"* where *"energy people and environment people have different mindsets".*

One respondent voiced concern about the potential for a shift in impacts across different ecosystem services. *"With the transition to net zero, there will be greater alignment between environment and energy objectives with respect to [clean air and stable climate] but this brings a shift in tensions from these ecosystem services, primarily to clashes over land use, visual amenity, and potentially + or – with respect to biodiversity. It is not clear to me that we are necessarily on course for those implications to be wholly positive".*

Additionally, due to the different ways policy is implemented in England, Wales and Scotland, interviewees at the local and regional level felt that a whole energy system view of Great Britain doesn't exist, making policy implementation more complicated and costly than it should be. A key concern for the environment sector voiced by one

respondent is the divergence happening between policies in England, Wales and Scotland. *"There are a lot of different policies and stakeholders to consider which makes it more difficult to get consensus e.g. for cross-boundary infrastructure such as transmission lines. Also, there are different approaches to Biodiversity Net Gain in England, Wales and Scotland, and onshore and offshore which makes it more complicated. Investors have choices where to invest. There is no onshore wind happening in England, so investment is going to onshore wind in Wales and Scotland in less optimal places, which means more transmission infrastructure is needed. Infrastructure is ending up where the regime is beneficial to investors rather than where it should be optimally sited."*

A lack of coordination or awareness of who has overall oversight of policy direction and decisions on energy infrastructure developments, and difficulty recruiting, building, and retaining skilled teams who have the expertise to lead cost effective delivery were also key concerns.

This issue of coordination was also the key response to the question about opportunities and trade-offs. Respondents cited lack of strategic overview, piecemeal delivery of energy infrastructure projects hampering the ability to deliver co-benefits for the environment and society. One respondent from the East of England stated *"I think our big trade-off is that our area is hosting on behalf of the UK a significant proportion of national infrastructure, and yet we have areas with no power. Our growth is stifled. How can it possibly be that we've got power flowing through us, but not to us?"*

3.2 Strategic Spatial Energy Plan

The issues around energy and environment policy compatibility reflect the current experiences of practitioners, which the government is aware of and seeking to address. The Electricity Networks Commissioner proposed the development of a national Strategic Spatial Energy Plan (SSEP), to determine what energy infrastructure needs to be built, where and when, to deliver improved decision-making [26]. The government has now committed to the production of this plan, and Ofgem via the National Energy System Operator (NESO) will take on responsibility for Regional Energy System Planners across Great Britain [27]. Interviewees were asked:

- What do you feel will be the main challenges in creating this plan?
- What are your views on how environmental and community costs and benefits should be factored in?
- What are your views on how local through to global impacts should be balanced?

The proposition of a GB SSEP was generally well supported by interviewees. Achieving co-ordination between organisations and having one leading authority for each sub-area, were common calls, along with a request for the sharing of datasets.

Having a recognised process for applications, decisions and construction, as for housing development was also mentioned, and another respondent from the East of England said – *"If we could approach it to say that actually we want this renewable energy, we want it delivered to the right place, the right time at the at a reasonable cost but we're going to do it in the context of supporting communities and the environment at the same time. If we start from that point, then we stand a much better chance of achieving different ways of working. [A good example is] Water Resources East, over the development of effectively the same thing [strategic spatial plan] for the water industry, [they] have involved a much wider audience in the development and consultation of their infrastructure plans…"* [See 28].

The main challenges foreseen are coordinating stakeholders with different interests and mindsets, and particularly the lack of essential skills. There were frequent mentions of the need for upskilling within government bodies tasked with delivering infrastructure change; for having appropriate funding for recruiting, training and retaining skilled staff and building long-lasting teams to engender trust between developers and local communities.

In terms of the environment and community costs and benefits, the prevailing view was that these need to be raised to be on equal terms with energy development, with communities more involved in both design of energy schemes and allocation of benefit funding. There were calls for these funds to be pooled across projects to provide more meaningful benefits to local communities, extending to those affected by new transmission infrastructure as well as those local to new energy generation sites.

In terms of balancing local versus wider needs and impacts, in the East of England, interviewees highlighted the trade-offs between onshore and offshore environmental impacts of offshore wind developments. In addition, the lack of coordination between individual offshore wind developments was also raised as creating the potential for unnecessary onshore environmental impacts.

3.3 Reducing energy transmission infrastructure delivery time

An Action Plan published by DESNZ [29] seeks to halve the build time of electricity transmission infrastructure from 14 years to 7 years, resulting from a recommendation in the Electricity Network Commissioner's report [26]. Interviewees were asked their views on the challenges of achieving this. Several commented on the immediate need to resolve the current backlog of applications waiting for connection to the grid, and the need to deal with these more strategically, giving priority to those projects delivering greatest benefit, but also to manage demand through more innovative solutions and flexibility options rather than over-focussing on increasing capacity. One said *"...no-one has visibility of what the local [energy] need/requirements are to feed into energy planning for the next 10 - 15 years. We [currently] ... make a case to the DNO at the point of need, for getting a connection."*

The development of regional and local energy plans was welcomed, to enable a more strategic approach to aid in the halving of delivery time. Mention was made of conferring a duty on local authorities to deliver net zero to ensure it is properly resourced and could be given the appropriate attention.

Engaging the public was felt both to be important but also a potential challenge that might slow delivery, so again, the issue of skills and resourcing of delivery teams in local authorities to help build relationships and facilitate community benefits were flagged: *"Because we've got so many [NSIPs in our area] we're getting good at it now, but it's only come through a steep learning curve of looking at how other people have managed the monies they're receiving and turning that into teams because it's officers actually there at their desks looking at these applications, looking at the projects, reading all the documentation and having the time to provide meaningful comments and engagement. We've been upskilling the wider team in digital skills, looking at our neighbours and we want to share learning and upskill as part of this to build the capacity of the team for the next project that comes along."*

3.4 Environmental risk; direction of travel

Some specific environmental risks were mentioned during interviews – lack of a developed evidence base for offshore environmental impacts compared to onshore, lack of understanding of potential impacts of untried technologies, pressure on water availability (e.g. for hydrogen CCS), lack of understanding of new processes, or of potential new pollutants (e,g. associated with battery technologies), developments being sub-optimally sited or not coordinated so that more infrastructure (e.g. transmission) is needed, and unnecessarily increasing the overall level of impact on the environment.

Interviewees were asked if they felt that the integration of energy and environmental policy or practice has changed over recent years. The responses varied. Some felt that integration has stalled or even rolled back, and that there are difficulties, for example in getting local authorities to link energy and environment. The need for a coherent approach to mediate between objectives in the different policy areas was also expressed. There was a perceived need to upskill, inform and engender trust between local authorities and other organisations working in these areas and energy infrastructure developers, but also a sense that there is a willingness to find ways to make this happen.

DEFRA's recent Environmental Improvement Plan (EIP23) appears to recognise these issues at a higher governmental level, stating – *"The cross-government 25 Year Environment Plan Board… has recently been strengthened, establishing its role as the central cross-government authority to ensure environmental principles are being applied… developing cross-departmental practice and guidance and embedding the required skills, capacity, and capability for delivery across government."* [6]. The EIP23 points to the publication of a Land Use Framework, for which a 12 week government consultation has just been launched (31/01/2025), that

aims to support strategic land use planning to help deliver environmental improvements. The impact of the Nature Markets Framework [5] and measures such as Biodiversity Net Gain, are currently too new for any understanding of how they may contribute to offsetting environmental impacts from energy developments.

3.5 Recommendations from practitioners

The final question to interviewees was: If you had the power to make one change to policy or practice regarding environment and energy, what would it be? It is perhaps appropriate at this point, to let these practitioners speak for themselves:

- *Re: the Regional Energy Planner role, if we could create a regional forum [to bring] together the promoters of different [energy] schemes, to help them to coordinate the way that they're approaching environmental mitigation and enhancement, that would be a massive thing.*
- *Longer term consistency over funding [several mentions]. If you only allocate money on an annual basis, you get projects that can be delivered in a few months. It determines what you do instead of having long term strategic foresight and saying 'this is what's needed.*
- *You need both capital and revenue to put the infrastructure in or whatever the change is and then have the wrap-around services – the skills stuff, the innovation stuff, the connecting business support stuff. And I would make sure it's fair across the country. If you look at the investment in the East of England on the energy side of things, we have zilch compared to everywhere else in the country. There is the local industrial decarbonisation money but there's nothing, nothing at all in the East of England.*
- *One thing that I would do would be to speed up the ability to deliver nuclear power stations. The density of the fuel that you use is just so much greater. And increasingly you can do them on a smaller scale. Small, localised, reduces any issues around visual amenity and supports the low carbon [transition] quickly and lasts longer.*
- *Give Local Authorities a Statutory Duty to develop net zero plans, Energy plans. Without a Duty and this being properly resourced, these remain a 'nice to have' element. Only so much you can do if no one is resourced to engage with you.*
- *Obvious one is resource – more people in my role across organisations, and training so that the energy-environment interface is embedded. [Frequent mentions of the need for upskilling and improved retention of staff with the necessary expertise].*
- *Demonstrators [circular economy] would be a game changer. And I would make sure [capital allocation] is fair across the country.*

- *It would be to view nature as part of regulating the carbon cycle and remove the false ideologies currently being presented (e.g. you can have nature or food-farmer-led campaign against taking land out of production for nature).*
- *Remove constraints on onshore wind in England, and enable associated solar and battery storage - that would be the dream, wouldn't it?*

4. Impact of devolution

Finally, as major elements of net zero/energy policy are largely controlled by the UK government, whereas environmental policy is fully devolved to the UK nations, this research also sought to understand differences between England, Wales and Scotland in evaluating or managing potential environmental risks relating to energy policy or infrastructure deployment (Northern Ireland was not included in the study).

As part of this, a more detailed examination of three selected energy policy documents was carried out, searching a total of 40 key terms.

A narrative summary of the conclusions is provided in Table 2. It should be noted that, as each nation takes its own approach in the documents it produces, it is difficult to select strictly 'comparable' publications. However, the subject of the selected documents is delivery of net zero. 'Powering Up Britain' is the overarching UK strategy, however Scotland and Wales each have their own plan.

Table 2: Comparing the energy-environment policy interface between Scotland, Wales and the UK

Document details			
Title	**Draft Energy Strategy and Just Transition Plan – delivering a fair and secure zero carbon energy system for Scotland** (Gov.Scot, 2023) [30]	**Powering up Britain: The Net Zero Growth Plan** (HMGov, 2023a) [4]	**Working together to reach net zero: all Wales plan 2021-2025** (Gov.Wales, 2022) [31]
Nation	SCOTLAND	UK	WALES
Topic	Energy strategy	Energy strategy	Net zero
CONCLUSION	Potentially due to knowledge gained from oil & gas exploration, this document exhibits a deeper discussion of energy-environment interactions than the other documents reviewed. This includes discussion of impacts of marine renewables, land use interactions with solar expansion. It has an embedded vision to "Ensure the energy transition supports	There is a chapter on natural resources and progress to reduce emissions/ decarbonise this sector, and on 'carbon win' policies such as peat restoration. This chapter makes no mention of any risks e.g. from expansion of renewables. Whole report is very 'siloed' – no apparent risk assessment of policy	This plan takes a different approach to other policy documents reviewed in that it works from the 'ground up' by documenting policies for decarbonisation from local authorities and other organisations. In this way it provides information on approaches to decarbonisation in different areas across Wales but at the same time is very high level. There is no consideration of

	Scotland's ambitions for restoring nature and reversing biodiversity loss, including through avoidance of negative impacts and promotion of nature-based solutions."	impacts between sectors.	environmental risk due to renewable energy expansion.

With respect to energy-environment considerations, the Scottish plan exhibits a deeper discussion of potential environmental conflicts with energy, than the UK or Welsh ones, and has a clearly stated vision to ensure "*the energy transition supports Scotland's ambitions for restoring nature and reversing biodiversity loss, including through avoidance of negative impacts and promotion of nature-based solutions*" [30, p25]. The Welsh document is interesting in that it is an assembly of the policies of Welsh local authorities and organisations towards net zero: effectively a 'ground upwards' approach but there is no consideration of environmental risk due to renewable energy expansion. The UK strategy emphasis is on the roll-out of renewables and reforms to other legislation to enable this, where wider risks to the environment appear to have less emphasis. It is also notable that, although in a preliminary stage, the new 'Great British Energy Bill' has no mention of nature protection or nature recovery in the stated Objects or Strategic Priorities for the new publicly-owned company [32].

Additional insights on the impact of devolution were sought through the interviews. As previously mentioned, (see Section 3.1), one interviewee spoke about the divergence happening between policies in England, Wales and Scotland, with different approaches leading to undesirable costs and inefficiencies. For example, Wales currently permits onshore wind developments, whereas this has stalled in England for a number of years leading to decisions on siting based on politics rather than optimal siting of infrastructure. Within Wales, a single government department deals with net zero and environment, and this is viewed as a benefit. Additionally, with the process of energy planning starting at the local level and feeding through to a regional and then a national plan, policy is viewed as more cohesive than elsewhere. Scottish policy also was mentioned for being clear in its net zero objectives alongside a positive environmental agenda in relation to its own nation.

In terms of environmental policy documents, again, the review found no cross-referencing or evidence of collaboration between nations regarding environmental strategy and practice or achieving cross-boundary conservation objectives. So, whether experiences and learning between nations is being shared, or whether there is awareness in this sector of the potential risk from the roll out of new energy infrastructure, is unclear.

5. Conclusions

The policy review identified that whilst the existence of potential environmental impacts is acknowledged in energy policy documents, along with the intent and need to mitigate them, this is generally without specifics. Environmental policy documents exhibited little awareness of the potential impacts from energy infrastructure, though the issue may simply have been outside of their scope.

An examination of the latest UK Government economic growth and energy security policy documents [4], [33] revealed an apparent weakening in the language relating to environmental protection with a clear intention to compensate where environmental harm cannot be mitigated, with energy security and net zero targets overriding all other factors.

Removing consenting barriers to enable deployment of renewables and addressing capacity constraints within the electricity grid are key priorities in energy policy, which could potentially increase environmental risk if these end up overriding the 'integration principle'.

Additionally, both the review and interviews revealed that following devolution each nation is inwardly focussed, and cross-boundary processes for dealing with the deployment of new energy infrastructure and understanding potential associated environmental risk appear to be lacking. This needs to be addressed to ensure energy infrastructure is optimally situated to deliver the greatest benefit and cost efficiency.

The interviews repeatedly highlighted the different mindsets of energy and environmental professionals. There is a training and professional development need to embed environmental education and awareness within the energy sector, and to ensure environmental policy makers are aware of the scale and nature of the energy infrastructure changes approaching.

Upskilling is required, particularly in decision-making authorities to enable them to employ, train and retain the best people to ensure informed decisions are made when considering energy-environment trade-offs in new energy infrastructure developments. Mention was made of conferring a duty on local authorities to deliver net zero to ensure it is properly resourced and can be given the appropriate attention.

Current government initiatives relating to spatial energy planning, and regional and local energy plans were welcomed, and will hopefully go some way to address calls in both policy documents and by practitioners for a more strategic approach which integrates environmental impacts with energy infrastructure planning and in decision making in relation to the energy infrastructure rollout.

Following the 2024 election, the new UK government has announced revised climate goals and an accelerated drive to deliver clean power by 2030 [8]. At present it is too soon to tell whether the integration principle will be upheld, and the extent to which a balance will be achieved between clean growth and environmental protection.

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Other references (those in the review have a code at the end – see Appendix 1) **-**

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National Policy Statements for energy infrastructure have been superseded by the 2023 revised versions which came into force on 17 January 2024.]

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[37] CCC. 2022b. Progress in reducing emissions in Scotland: 2022 Report to Parliament **[ESCN05]** Access here.

[38] HMGov. 2023f. Mobilising Green Investment 2023 Green Finance Strategy Access here.

Appendix 1: Policy documents reviewed

Table A1: SOCIO-ECONOMIC FRAMEWORK PUBLICATIONS: GOV						RANK		
Title	**Nation**	**Doc Type**	**Doc Length (pages)**	**Topic**	**File Ref:**	**Type**	**Topic**	**Rank**
A National Mission with Local Impact: Infrastructure Investment Plan for Scotland 2021-22 to 2025-26 (Gov.Scot, 2021)	SCOTLAND	Plan	61	Infrastructure	**SSCG02**	A	A	AA
National Infrastructure Strategy: fairer, faster, greener (HMTreasury, 2020)	UK	Strategy	51	Infrastructure	**SUKG03**	A	A	AA
Wales Infrastructure Investment Strategy (GOV.Wales, undated 2020??)	WALES	Strategy	74	infrastructure	**SWAG02**	A	A	AA
Infrastructure Finance Plan 2022-23 to 2024-25 (GOV.Wales, 2021)	WALES	Plan	81	infrastructure	**SWAG03**	A	A	AA
National Planning Policy Framework (Gov.uk, (MHCLG), 2021) [for England]	ENGLAND	Policy	75	Planning	**SENG01**	A	B	AB
Scotland's National Strategy for Economic Transformation: Delivering Economic Prosperity (Gov.Scot, 2022)	SCOTLAND	Strategy	56	Economic	**SSCG01**	A	B	AB
National Planning Framework 4: Revised Draft: Laid before the Scottish Parliament on 8 November 2022 (Gov.Scot, 2022; approved 11/01/23 will be adopted 13/02/23)	SCOTLAND	Policy	162	Planning	**SSCG03**	A	B	AB
Land use - getting the best from our land: strategy 2021 to 2026 (Gov.Scot, 2021)	SCOTLAND	Strategy	48	Planning	**SSCG05**	A	B	AB
The ten point plan for a green industrial revolution - Building back better, supporting green jobs, and accelerating our path to net zero	UK	Plan	38	Economic	**SUKG01**	A	B	AB

BUILD BACK BETTER: our plan for growth	UK	Plan	112	Economic	**SUKG02**	A	B	AB
Prosperity for All: economic action plan	WALES	Plan	48	Economic	**SWAG01**	A	B	AB
Planning Policy Wales: edition 11: February 2021 (Gov.Wales, 2021)	WALES	Policy	170	Planning	**SWAG04**	A	B	AB
FAIRER SCOTLAND ACTION PLAN (Gov.Scot, 2016)	SCOTLAND	Policy	100	Social	**SSCG04**	A	C	AC
Levelling Up the United Kingdom	UK	Policy	305	Social	**SUKG04**	A	C	AC
Making the most out of England's land: House of Lords Land Use In England Committee report of session 2022-23 (House of Lords, 2022)	ENGLAND	Advice	103	Planning	**SENG02**	B	B	BB
Well-being of Future Generations (Wales) Act 2015: The Essentials (Gov.Wales, 2015)	WALES	Act	12	Social	**SWAG05**	B	C	BC
TOTAL PUBLICATIONS IN TABLE A1	**16**							

Table A2: ENERGY PUBLICATIONS: GOV						**RANK**		
Title	**Nation**	**Doc Type**	**Doc Length (pages)**	**Topic**	**File Ref:**	**Type**	**Topic**	**Rank**
Draft Overarching National Policy Statement for Energy (EN-1) (Gov.UK (BEIS, 2021)	ENGLAND	Policy	132	Energy Infrastructure	**EENG01**	A	A	AA
Planning for New Energy Infrastructure: Draft National Policy Statements for energy infrastructure (Gov.UK (BEIS, 2021)	ENGLAND	Policy	31	Energy Infrastructure	**EENG02**	A	A	AA
National Policy Statement for Nuclear Power Generation (EN-6) (Gov.UK (DECC), 2011)	ENGLAND	Policy	44	Energy Infrastructure	**EENG03**	A	A	AA
Biomass Policy Statement (BEIS, 2021)	ENGLAND	Policy	45	Renewable energy policy [Biomass]	**EENG04**	A	A	AA
Draft Energy Strategy and Just Transition Plan – delivering a fair and secure zero carbon energy system for	SCOTLAND	Strategy	192	Energy strategy	**ESCG03**	A	A	AA

Scotland (Gov.Scot, 2023)								
Securing a green recovery on a path to net zero: climate change plan 2018–2032 - update (Gov.Scot (ECGD, 2020)	SCOTLAND	Strategy	255	Net Zero	**ESCG05**	A	A	AA
Hydrogen Action Plan (Gov.Scot, 2022)	SCOTLAND	Plan	52	Renewable energy policy [Hydrogen]	**ESCG06**	A	A	AA
Sectoral marine plan for offshore wind energy (Gov.Scot, 2020)	SCOTLAND	Plan	79	Renewable energy policy [Offshore wind]	**ESCG07**	A	A	AA
Onshore Wind Policy Statement 2022 (Gov.Scot, 2022)	SCOTLAND	Plan	78	Renewable energy policy [Onshore wind]	**ESCG09**	A	A	AA
The Hydro Nation Annual Report 2021 (Gov.Scot, 2022)	SCOTLAND	Policy	37	Renewable energy policy [Hydro]	**ESCG10**	A	A	AA
Electricity Networks Strategic Framework (BEIS & Ofgem, 2022)	UK	Strategy	91	Energy infrastructure	**EUKG01**	A	A	AA
British Energy Security Strategy Secure, clean and affordable British energy for the long term (Gov.UK, 2022)	UK	Strategy	40	Energy security	**EUKG02**	A	A	AA
Energy white paper: Powering our net zero future (Gov.UK (BEIS), 2020)	UK	Policy	170	Energy strategy	**EUKG03**	A	A	AA
Corporate report: BEIS Outcome Delivery Plan: 2021 to 2022. (BEIS, 15 July 2021)	UK	Plan	35	Energy strategy	**EUKG04**	A	A	AA
Net Zero Strategy: Build Back Greener (Gov.UK (BEIS), 2021)	UK	Strategy	368	Net Zero	**EUKG05**	A	A	AA
Clean Growth: The UK Carbon Capture Usage and Storage deployment pathway: An Action Plan (BEIS, 2018)	UK	Plan	76	Renewable energy policy [CCUS]	**EUKG06**	A	A	AA
CCUS Investor Roadmap: Capturing Carbon and a Global Opportunity (DIT, Apr 2022)	UK	Strategy	16	Renewable energy policy [CCUS]	**EUKG07**	A	A	AA
UK Hydrogen Strategy (BEIS, Aug 21)	UK	Strategy	121	Renewable energy policy [Hydrogen]	**EUKG08**	A	A	AA

Industrial Strategy: Offshore wind sector deal (Gov.UK (BEIS), 2019)	UK	Strategy	44	Renewable energy policy [offshore wind]	**EUKG09**	A	A	AA
Powering up Britain: Energy Security Plan (Gov.UK, 2023b)	UK	Plan	84	Energy security	**EUKG11**	A	A	AA
Powering up Britain: The Net Zero Growth Plan (Gov.UK, 2023a)	UK	Plan	126	Energy strategy	**EUKG12**	A	A	AA
Regional energy strategy: south west Wales (Gov.Wales, 2022)	WALES	Strategy	76	Energy strategy	**EWAG01**	A	A	AA
Regional energy strategy: north Wales (Gov.Wales, 2021)	WALES	Strategy	76	Energy strategy	**EWAG02**	A	A	AA
Regional energy strategy: mid Wales (Gov.Wales, 2021)	WALES	Strategy	60	Energy strategy	**EWAG03**	A	A	AA
Regional energy strategy: Cardiff capital region (Gov.Wales, 2021)	WALES	Strategy	73	Energy strategy	**EWAG04**	A	A	AA
Working together to reach net zero: all Wales plan 2021-2025 (Gov.Wales, 2022)	WALES	Plan	62	Net Zero	**EWAG05**	A	A	AA
Renewable energy deep dive: recommendations: Outcome of the exercise to identify opportunities to significantly scale up renewable energy in Wales. (GOV.Wales, Dec 2021)	WALES	Policy	10	Renewable energy strategy	**EWAG06**	A	A	AA
A CARBON CAPTURE, UTILISATION, & STORAGE NETWORK FOR WALES (Gov.Wales, 2021)	WALES	Policy	64	Renewable energy policy [CCUS]	**EWAG07**	A	A	AA
SEA of Sectoral Marine Plan for Offshore Wind Energy (Gov, Scot, 2019)	SCOTLAND	SEA	306	Renewable energy policy [Offshore wind]	**ESCG08**	C	A	CA
TOTAL PUBLICATIONS IN TABLE A2	**29**							

Table A3: ENERGY PUBLICATIONS: NDPB/other						**RANK**		
Title	**Nation**	**Doc Type**	**Doc Length (pages)**	**Topic**	**File Ref:**	**Type**	**Topic**	**Rank**

SEPA's Energy Framework (SEPA, November, 2018)	SCOTLAND	Strategy	10	Energy strategy	**ESCN08**	A	A	AA
Accelerating the transition to a flexible, low carbon energy system ESO RIIO-2 Business Plan 2023–2025 31 August 2022 (nationalgridESO, 2022)	UK	Plan	200	Energy Infrastructure	**EUKN07**	A	A	AA
Development Sustainability Principles (Version 3) (Crown Estate, 2019)	ENGLAND	Advice	35	Energy infrastructure	**EENN01**	B	A	BA
Low carbon subsurface technologies: identifying potential environmental impacts. Chief Scientist's Group report	ENGLAND	Advice	180	Renewable energy policy [Fracking]	**EENN03**	B	A	BA
NATIONAL INFRASTRUCTURE ASSESSMENT (NIC, July 2018)	UK	Advice	163	Energy Infrastructure	**EUKN03**	B	A	BA
Guidance: RIIO-2 Environmental Reporting Guidance Version 1.0 (Ofgem, 2021)	UK	Advice	44	Energy Infrastructure	**EUKN04**	B	A	BA
Review of GB energy system operation (Ofgem, 2020)	UK	Advice	143	Energy Infrastructure	**EUKN05**	B	A	BA
Pathway to 2030 A holistic network design to support offshore wind deployment for net zero (nationalgridESO, July 2022)	UK	Advice	63	Energy Infrastructure	**EUKN08**	B	A	BA
Independent Assessment: The UK's Net Zero Strategy (CCC, 2021)	UK	Advice	53	Net Zero	**EUKN09**	B	A	BA
Mission Zero: Independent Review of Net Zero (Chris Skidmore, 2023)	UK	Advice	340	Net Zero	**EUKN10**	B	A	BA
UKCS Energy Integration: Final report (Oil and Gas Authority, 2020)	UK	Advice	36	Energy Infrastructure	**EUKN11**	B	A	BA
Sixth Carbon Budget (CCC, 2020)	UK	Advice	448	Emissions targets	**EUKN01**	B	C	BC
Sixth Carbon Budget and Welsh emissions targets – Call for Evidence Summary (CCC, 2020)	WALES	Advice	20	Emissions targets	**EWAN01**	B	C	BC
Advice Report: The path to Net Zero and progress	WALES	Advice	162	Emissions targets	**EWAN02**	B	C	BC

on reducing emissions in Wales (CCC, 2020)								
Offshore Wind Evidence and Change Programme: Annual Report 2021 (Crown Estate, 2021)	ENGLAND	Progress report	7	Renewable energy policy [Offshore wind]	**EENN04**	C	A	CA
Phase 1: Key findings report. A blueprint for Scotland (ICS, Jan 2020)	SCOTLAND	Progress report	137	Energy infrastructure	**ESCN06**	C	A	CA
Phase 2: Delivery Findings Report A blueprint for Scotland (ICS, Jul 2020)	SCOTLAND	Progress report	80	Energy infrastructure	**ESCN07**	C	A	CA
Progress in reducing emissions in Scotland: 2022 Report to Parliament (CCC, 2022b)	SCOTLAND	Progress report	164	Emissions targets	**ESCN05**	C	C	CC
2022 Progress Report to Parliament: The CCC's annual assessment of UK progress in reducing emissions (CCC, 2022a)	UK	Progress report	619	Emissions targets	**EUKN02**	C	C	CC
TOTAL PUBLICATIONS IN TABLE A3	**20**							

Table A4: ENVIRONMENT PUBLICATIONS: GOV						**RANK**		
Title	**Nation**	**Doc Type**	**Doc Length (pages)**	**Topic**	**File Ref:**	**Type**	**Topic**	**Rank**
Biodiversity 2020: A strategy for England's wildlife and ecosystem services (Gov.UK (DEFRA, 2011)	ENGLAND	Strategy	48	Biodiversity strategy	**VENG01**	A	A	AA
Coastal Concordat for England (Gov.UK, revised 2019)	ENGLAND	Policy	11	Coast & marine policy	**VENG05**	A	A	AA
25 Year Environment Plan (Gov.UK (DEFRA), 2018)	ENGLAND	Plan	151	Environment plan	**VENG06**	A	A	AA
Environmental Improvement Plan 2023: First revision of the 25 Year Environment Plan (Defra, 2023)	ENGLAND	Plan	262	Environment plan	**VENG07**	A	A	AA
Biodiversity strategy to 2045: tackling the nature emergency (DRAFT PLAN, Gov.Scot, December 2022)	SCOTLAND	Strategy	85	Biodiversity strategy	**VSCG01**	A	A	AA
The Environment Strategy for Scotland: vision and outcomes (Gov.Scot, 2020)	SCOTLAND	Strategy	21	Environment strategy	**VSCG02**	A	A	AA

A Strategy for Marine Nature Conservation in Scotland's Seas (2012 - 2020) (Gov.Scot (MSD), undated)	SCOTLAND	Strategy	29	Coast & marine strategy	**VSCG03**	A	A	AA
Blue Economy Vision for Scotland (Gov.Scot; Marine Scotland, 2022)	SCOTLAND	Strategy	38	Coast & marine strategy	**VSCG04**	A	A	AA
Scotland's National Marine Plan: A Single Framework for Managing Our Seas (Gov.Scot, 2015)	SCOTLAND	Plan	144	Marine plan	**VSCG05**	A	A	AA
Scottish Crown Estate strategic management plan (Gov.Scot, 2020)	SCOTLAND	Strategy	60	Land management	**VSCG07**	A	A	AA
UK Marine Policy Statement (HMGov, 2011)	UK	Policy	51	Coast & marine policy	**VUKG01**	A	A	AA
Marine Strategy Part One: UK updated assessment and Good Environmental Status (DEFRA, October 2019)	UK	Strategy	107	Coast & marine strategy	**VUKG02**	A	A	AA
Corporate report: Department for Environment, Food and Rural Affairs Outcome Delivery Plan: 2021 to 2022 (DEFRA, 15 July 2021)	UK	Plan	35	Environment plan	**VUKG04**	A	A	AA
Technical Advice Note (TAN) 14: Coastal Planning (Wales.Gov, 2021)	WALES	Policy	18	Coast & marine planning	**VWAG02**	A	A	AA
Welsh National Marine Plan (Gov.Wales, 2019)	WALES	Plan	180	Marine plan	**VWAG04**	A	A	AA
The Nature Recovery Action Plan for Wales 2020 - 21 (Gov.Wales, 2020)	WALES	plan	27	Biodiversity strategy	**VWAG07**	A	A	AA
The Action Plan for Pollinators in Wales (Gov.Wales, 2013)	WALES	plan	28	Pollinator strategy	**VWAG09**	A	A	AC
England Peat Action Plan (Gov.UK, 2021)	ENGLAND	Plan	40	Peatland management	**VENG03**	A	B	AB
UK Peatland Strategy 2018 - 2040 (IUCN National Committee UK Peatland Programme, 2018)	UK	Strategy	48	Peatland management	**VUKG06**	A	B	AB
Technical Advice Note (TAN) 5: Nature Conservation and Planning (Wales.Gov, 2009)	WALES	Policy	130	Nature conservation planning	**VWAG01**	A	B	AB

National Peatland Action Programme, 2020-2025 (Gov.Wales, 2020)	WALES	plan	36	Peatland management	**VWAG08**	A	B	AB
The England Trees Action Plan 2021-2024 (Gov.UK, 2021)	ENGLAND	Plan	38	Tree management	**VENG02**	A	C	AC
The National Pollinator Strategy: for bees and other pollinators in England (Gov. UK, 2014)	ENGLAND	Strategy	36	Pollinator strategy	**VENG04**	A	C	AC
Future Water: The Government's water strategy for England (Gov.UK (DEFRA) 2008)	ENGLAND	Strategy	98	Water strategy	**VENG08**	A	C	AC
Scotland's Forestry Strategy 2019 - 2029 (Gov.Scot, 2019)	SCOTLAND	Strategy	60	Tree management	**VSCG06**	A	C	AC
Science and innovation strategy for forestry in Great Britain (Gov.UK (DEFRA, Scottish Forestry, Forestry Commission, 2020)	UK	Strategy	32	Tree management	**VUKG05**	A	C	AC
Water Strategy for Wales: Supporting the sustainable management of our natural resources (Gov.Wales, 2015)	WALES	strategy	82	Water strategy	**VWAG05**	A	C	AC
Woodlands for Wales: The Welsh Government's Strategy for Woodlands and Trees (Gov.Wales, 2018)	WALES	strategy	60	Tree management	**VWAG06**	A	C	AC
Environment Act 2021 (Gov.UK, 2021)	UK	Act	264	Environment strategy	**VUKG03**	B	A	BA
Scottish Crown Estate strategic management plan: strategic environmental assessment - post adoption statement (Gov.Scot, 2020)	SCOTLAND	SEA	25	Land management	**VSCG08**	C	A	CA
Environment Wales ACT 2016 (Gov.Wales, 2016)	WALES	Act	67	Environment strategy	**VWAG03**	C	A	CA
TOTAL PUBLICATIONS IN TABLE A4	**31**							

Table A5: ENVIRONMENT PUBLICATIONS: NDPB/other					RANK			
Title	**Nation**	**Doc Type**	**Doc Length (pages)**	**Topic**	**File Ref:**	**Type**	**Topic**	**Rank**
National Flood and Coastal Erosion Risk Management Strategy for England (EA, 2020)	ENGLAND	Strategy	118	Land management	**VENN05**	A	A	AA
South West Inshore and South West Offshore Marine Plan (HMGOV, June 2021)	ENGLAND	Plan	68	Marine plan	**VENN06**	A	A	AA
South West Inshore and Offshore Marine Plan Sustainability Appraisal. Sustainability Appraisal Statement.(MMO, 2020)	ENGLAND	Plan	47	Marine plan	**VENN07**	A	A	AA
South East Inshore Marine Plan (HMGOV, June 2021)	ENGLAND	Plan	62	Marine plan	**VENN08**	A	A	AA
South East Inshore Marine Plan Sustainability Appraisal. Sustainability Appraisal Statement. (MMO, 2020)	ENGLAND	Plan	43	Marine plan	**VENN09**	A	A	AA
North West Inshore and North West Offshore Marine Plan (HMGOV, June 2021)	ENGLAND	Plan	64	Marine plan	**VENN10**	A	A	AA
North West Inshore and Offshore Marine Plan Sustainability Appraisal. Sustainability Appraisal Statement.(MMO, 2020)	ENGLAND	Plan	47	Marine plan	**VENN11**	A	A	AA
North East Inshore and North East Offshore Marine Plan (HMGOV, June 2021)	ENGLAND	Plan	62	Marine plan	**VENN12**	A	A	AA
North East Inshore and Offshore Marine Plan Sustainability Appraisal. Sustainability Appraisal Statement.(MMO, 2020)	ENGLAND	Plan	47	Marine plan	**VENN13**	A	A	AA
Crown Estate Scotland's Biodiversity Statement (SBS 2020 Challenge: Crown Estate Scotland Delivery Statement) (Crown Estate Scotland, 2017)	SCOTLAND	Policy	9	Land management	**VSCN01**	A	A	AA
Crown Estate Scotland Corporate Plan 2020_23 (Crown Estate Scotland, 2020)	SCOTLAND	Plan	58	Land management	**VSCN02**	A	A	AA

Crown Estate Scotland Draft Corporate Plan 2020- 2023 SEA Environmental Report (LUC, 2019)	SCOTLAND	Plan	250	Land management	**VSCN03**	A	A	AA
Corporate Plan 2022-2026 - A nature-rich future for all (NatureScot, 05 April, 2022)	SCOTLAND	Plan	16	Biodiversity strategy	**VSCN07**	A	A	AA
SEPA's Biodiversity Delivery Agreement with Scottish Government Scottish Biodiversity Strategy: 2020 Challenge for Scotland's Biodiversity (SEPA, circa 2013)	SCOTLAND	Plan	4	Biodiversity strategy	**VSCN09**	A	A	AA
Nature Positive 2030 - evidence report: investing for healthy nature, people and economy (JNCC, 2021)	UK	Strategy	90	Biodiversity strategy	**VUKN02**	A	A	AA
Land use: Policies for a Net Zero UK (Climate Change Committee, 2020)	UK	Policy	123	Land management	**VUKN04**	A	A	AA
Corporate report: Environment Agency: EA2025 creating a better place (EA, 2022) [Goals to 2025]	ENGLAND	Plan	15	Biological resources management	**VENN01**	A	B	AB
Corporate report: Natural England action plan 2022 to 2023 (Applies to England). (Natural England, 27 July 2022)	ENGLAND	Plan	35	Biological resources management	**VENN02**	A	B	AB
Natural England's climate change risk assessment and adaptation plan (2021) (NE761) (NE, December, 2021)	ENGLAND	Plan	56	Biological resources management	**VENN03**	A	B	AB
Scotland's National Peatland Plan: Working for our future (NatureScot, 2015)	SCOTLAND	Plan	21	Peatland management	**VSCN11**	A	B	AB
One Planet Prosperity – A Waste to Resources Framework (SEPA, undated)	SCOTLAND	Policy	10	Biological resources management	**VSCN05**	A	B	AB
SEPA's Energy Framework (SEPA, 2018)	SCOTLAND	Policy	10	Biological resources management	**VSCN06**	A	B	AB

NatureScot Net Zero Plan (NatureScot, 16 July 2021)	SCOTLAND	Plan	25	Biological resources management	**VSCN10**	A	B	AB
A Guide to Habitats Regulations Assessment (HRA) for Offshore Wind Leasing Round 4 (Crown Estate, 2022) [Appears to be GB wide] [could be confusing as about both themes]	UK	Policy	6	Biological resources management	**VUKN01**	A	B	AB
The Biodiversity and Resilience of Ecosystems Report 2019	WALES	Plan	7	Biological resources management	**VWAN01**	A	B	AB
One Planet Prosperity - A Framework for Water (SEPA, December 2019)	SCOTLAND	Policy	9	Water strategy	**VSCN04**	A	C	AC
Pollinator Strategy for Scotland 2017 – 2027 (NatureScot 24 July 2017)	SCOTLAND	Strategy	16	Pollinator strategy	**VSCN08**	A	C	AC
Managing the land in a changing climate – Adaptation Sub-Committee progress report 2013 (CCC, 2013)	UK	Advice	137	Land management	**VUKN03**	B	A	BA
TOTAL PUBLICATIONS IN TABLE A5	**28**							

Table A6: RANKING PUBLICATIONS FOR 'DEEP DIVE' REVIEW

PUBLICATIONS BY TYPE	**No.**	**RANK**
PLAN	42	A
STRATEGY	34	A
POLICY	23	A
ADVICE	14	B
ACT	3	B
PROGRESS REPORT	5	C
SEA	2	C
	123	

PUBLICATIONS BY TOPIC		
Socio-economic framework	**No.**	**RANK**
Economic	4	B
Infrastructure	4	A
Planning	5	B
Social	3	C
	16	
Net Zero Policy		
Emissions targets	5	C

Energy infrastructure	13	A
Energy security	2	A
Energy strategy	9	A
Net Zero	5	A
Renewable energy strategy	1	A
Renewable energy policy [Biomass]	1	A
Renewable energy policy [CCUS]	3	A
Renewable energy policy [Fracking]	1	A
Renewable energy policy [Hydro]	1	A
Renewable energy policy [Hydrogen]	2	A
Renewable energy policy [offshore wind]	4	A
Renewable energy policy [onshore wind]	1	A
	48	
Environmental Policy		
Biological resources management	8	B
Biodiversity strategy	6	A
Coast & marine planning	1	A
Coast & marine policy	2	A
Coast & marine strategy	3	A
Environment plan	3	A
Environment strategy	3	A
Land management	8	A
Marine plan	10	A
Nature conservation planning	1	B
Peatland management	4	B
Pollinator strategy	3	C
Tree management	4	C
Water strategy	3	C
	59	
TOTAL	**123**	

Appendix 2: Interview questions and ethics form

Energy & Environment Interview questions

ABOUT THE INTERVIEWEE

1. Brief biog of person being interviewed – current post, responsibilities and connection to (Net Zero) energy and environment policies.

INTRO TO QUESTIONS

Thank you for agreeing to take part in this research which is examining the issues around integration of energy transition (Net Zero) policies and environmental policies in the UK at a national, regional and local level. Our overall aim is identifying key barriers and drivers to successful integration that can help inform future policy developments and implementation.

Through these interviews we hope to gain more insight into the translation of policy into practice and to identify whether there are any differences in approach between England, Wales and Scotland.

SECTION 1: Energy and environment **policy**

2. In your experience, to what extent are energy and environment policies typically **compatible** with each other?
    a. have you found this to differ across England, Scotland, Wales, or
    b. between national and local policy?

3. In your experience, to what extent does current energy and environment policy identify the key **opportunities and trade-offs** in the delivery of respective priorities?
    a. Can you give a specific example of an area where they are **mutually supportive or reinforcing**?
    b. Can you give a specific example of an area where there are **tensions, &/or trade-offs** that need to be made?

4. What do you see as currently **missing from** energy and environmental **policy integration**?

5. There are plans for a national **Strategic Spatial Energy Plan**.
    a. What do you feel will be the main challenges in creating this plan?
    b. What are your views on how environmental and community costs and benefits should be factored in?
    c. What are your views on how global v national v regional v local impacts should be balanced?

SECTION 2: Energy and environment **practice**

6. Based on your experience, can you give an **example of best practice** in constructive **management** of any tensions or trade-offs between an energy infrastructure project and environmental concerns?

7. And conversely, can you give an example of tensions or conflicts, where for example, an energy infrastructure development has proved particularly controversial?

8. Can you foresee any **additional challenges** in the drive to halve energy transmission infrastructure delivery time from 14 year to 7 years and if so, what are they?
    a. In your opinion can supply chain and skilled labour needs be met?

9. Are you aware of any differences between England, Scotland or Wales in evaluating or managing potential environmental **risks** relating to energy/electricity infrastructure?
    a. If so, has this resulted in any differences in the translation of energy and environment policies into practice?

10. Do you feel that integration of energy and environmental policy or practice has changed over recent years and if so, how?
    a. Do you think this will improve or become more challenging in the future, and if so, why?

11. Are you aware of any examples (anywhere in the world) of particularly successful strategies for securing co-benefits of new electricity infrastructure for nature/bio-diversity improvements?

12. If you had the power to make one change to policy or practice regarding environment and energy, what would it be?

Environmental Risks and Impacts Associated with Decarbonisation: The Tensions and Trade-offs Between Net Zero and Environmental Policy
[ETH2324-0873]

PARTICIPANT INFORMATION SHEET

(1) What is this study about?

You are invited to take part in a research study about the issues around integration of energy transition (Net Zero) policies and environmental policies in the UK at a national, regional and local level. The research has the overall aim of identifying key barriers and drivers to successful integration that can help inform future policy developments and implementation.

Through these interviews we hope to gain more insight into the translation of policy into practice and to identify whether there are any differences in approach between England, Wales and Scotland.

You have been invited to participate in this study because of your role and expertise in this area. This Participant Information Sheet tells you about the research study. Knowing what is involved will help you decide if you want to take part in the study. Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

Participation in this research study is voluntary. By giving consent to take part in this study you are telling us that you:

- ✓ Understand what you have read.
- ✓ Agree to take part in the research study as outlined below.
- ✓ Agree to the use of your personal information as described.
- ✓ You have received a copy of this Participant Information Sheet to keep.

(2) Who is running the study?

The study is being carried out by the following researcher(s): Dr Trudie Dockerty, Prof Andrew Lovett, School of Environmental Sciences, Prof Nicola Beaumont, Plymouth Marine Laboratory, Prof Jan Webb, University of Edinburgh, Dr Jess Britton, University of Edinburgh.

This study is being funded by UK Energy Research Council.

(3) What will the study involve for me?

Interviews will take place online (MS Teams or similar) at a mutually convenient date and time, and will last approximately one hour.

Interview questions will relate to current energy and environment policy, and how these translate into practice in your experience.

An audio/video recording will be taken.

You will not have the opportunity to review information generated about your answers prior to publication.

(4) How much of my time will the study take?
Total time commitment: approximately one hour.

(5) Do I have to be in the study? Can I withdraw from the study once I have started?

Being in this study is completely voluntary and you do not have to take part.

Your decision whether to participate will not affect your current or future relationship with the researchers or anyone else at the University of East Anglia (or The University of Edinburgh, and Plymouth Marine Laboratory.) now or in the future.

If you decide to take part in the study, you can withdraw your consent at any pointup to 31st December 2023, after which point your answers will be incorporated in the analysis. You can do this by emailing or telephoning the research contact provided.

(6) What are the consequences if I withdraw from the study?

You are free to stop the interview at any time. Unless you say that you want us to keep them, any recordings will be erased and the information you have provided will not be included in the study results. You may also refuse to answer any questions that you do not wish to answer during the interview. If you decide at a later time (up to 31st December 2023) to withdraw from the study your information will be removed from our records and will not be included in any results. After this date we will have analysed and prepared to publish the results.

(7) Are there any risks or costs associated with being in the study?

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

(8) Are there any benefits associated with being in the study?

This study will contribute to broadening understanding of the key barriers and drivers to successful integration of energy and environment policy, that will help inform future policy developments and implementation.

Results will feed back to the UK Energy Research Centre, to help determine the action needed in the next 10 years in the transition to Net Zero.

(9) What will happen to information provided by me and data collected during the study? Interview responses will be summarised and anonymised, to identify key themes and messages to inform the overall research. Individual responses will be held in accordance with UEA's research data management policy.

Your personal data and information will only be used as outlined in this Participant Information Sheet, unless you consent otherwise. Data management will follow the Data Protection Act 2018 (DPA 2018) and UK General Data Protection Regulation (UK GDPR), and the University of East Anglia's Research Data Management Policy.

The information you provide will be stored securely and your identity will be kept strictly confidential, except as required by law. Study findings may be published and may also be used for other scholarly and educational purposes such as in teaching, but you will not be identified if you decide to participate in this study. The data will be kept for at least 10 years beyond the last date the data were used. The study findings may be deposited in a repository to allow it to facilitate its reuse. The deposited data will not include your name or any identifiable information about you.

(10) What if I would like further information about the study?

When you have read this information, Prof Andrew Lovett (a.lovett@uea.ac.uk, 01603 593126) will be available to discuss it with you further and answer any questions you may have.

(11) Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study.

You can tell us that you wish to receive feedback by emailing the research contact provided.

This feedback will be in the form of a one page lay summary or link to the relevant UKERC publication.

This feedback will be at the end of the study.

(12) What if I have a complaint or any concerns about the study?

If there is a problem please let me know. You can contact me via the University of East Anglia at the following address:

Dr Trudie Dockerty

School of Environmental Sciences

University of East Anglia

NORWICH NR4 7TJ

t.dockerty@uea.ac.uk

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the Head of School of Environmental Sciences: Professor Ian Renfrew (i.renfrew@uea.ac.uk, 01603 592557).

(13) How do I know that this study has been approved to take place?

To protect your safety, rights, wellbeing and dignity, all research in the University of East Anglia is reviewed by a Research Ethics Body. This research was approved by the SCI S-REC (Faculty of Science Research Ethics Subcommittee).

(14) What is the general data protection information I need to be informed about?

According to data protection legislation, we are required to inform you that the legal basis for processing your data as listed in Article 6(1) of the UK GDPR is because this allows us to process personal data when it is necessary to perform our public tasks as a University.

In addition to the specific information provided above about why your personal data is required and how it will be used, there is also some general information which needs to be provided for you:

- The data controller is the University of East Anglia.
- For further information, you can contact the University's Data Protection Officer at dataprotection@uea.ac.uk
- You can also find out more about your data protection rights at the Information Commissioner's Office (ICO).
- If you are unhappy with how your personal data has been used, please contact the University's Data Protection Officer at dataprotection@uea.ac.uk in the first instance.

(15) OK, I want to take part – what do I do next?

You need to fill in one copy of the consent form and return it to the contact provided. Please keep the letter, information sheet and the second copy of the consent form for your information.

(16) Further information

This information was last updated on 15 November 2023.

If there are changes to the information provided, you will be notified by email.

This information sheet is for you to keep.

PARTICIPANT CONSENT FORM [ETH2324-0873]
(First Copy to Researcher/Second copy to Participant)

I, ... [PRINT NAME], **am** willing to participate in this research study.

In giving my consent I state that:

- I understand the purpose of the study, what I will be asked to do, and any risks/benefits involved.
- I have read the Participant Information Sheet, which I may keep, for my records, and have been able to discuss my involvement in the study with the researchers if I wished to do so.
- The researchers have answered any questions that I had about the study and I am happy with the answers.
- I understand that being in this study is completely voluntary and I do not have to take part. My decision whether to be in the study will not affect my relationship with the researchers or anyone else at the University of East Anglia (or The University of Edinburgh, and Plymouth Marine Laboratory.) now or in the future.
- I understand that I may stop the interview at any time if I do not wish to continue, and that unless I indicate otherwise any recordings will then be erased and the information provided will not be included in the study results. I also understand that I may refuse to answer any questions I don't wish to answer.
- I understand that the results of this study will be used in the way described in the information sheet.
- I understand that personal information about me that is collected over the course of this project will be stored securely and will only be used for purposes that I have agreed to. I understand that information about me will only be told to others with my permission, except as required by law.

I consent to:

Audio-recording YES ☐ NO ☐

Would you like to receive feedback about the overall results of this study?

YES ☐ NO ☐

If you answered **YES**, please indicate your preferred form of feedback and address:

☐ Postal: _____

_____

☐ Email: _____

.....

Signature

....

PRINT name **Date**