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Constraints and enablers of regional environmental policy: governance challenges in England and Wales

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ABSTRACT

It is increasingly recognised that regional environmental policy is important not just for implementing national or international targets but also for policy innovation and leadership. However, international progress is limited by significant variation, with many regions failing to deliver effective environmental governance. In this paper, we argue that one important explanation of this variation is the power dynamics within multi-level governance systems. Specifically, using the UK as a case study, we identify the constraints and enablers of regional environmental policy that emanate from power asymmetries in the wider governance system. Through semi-structured interviews and document analysis, we identify the constraints and enablers faced by three UK regions: the West Midlands, the Humber and the Cardiff Capital Region. We find that while enablers tend to be isolated and region-specific, constraints are consistent across regions and form interlocking webs that significantly limit the effectiveness of regional environmental governance in the UK. This implies that attempts to implement holistic, long-term environmental transitions need to look to more fundamental reforms to the structure of political systems, paying particular attention to the constraining effects of asymmetric power dynamics.

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Introduction

Increasingly, regions play a leading role in environmental governance (Bache et al., 2015; Díaz-Pont, 2021), especially in the implementation of international climate change agreements (Galarraga et al., 2011). Traditionally, subnational governments have been considered ‘policy implementers’, but they are increasingly also seen as drivers of policy (Jänicke & Quitzow, 2017), with a tendency towards ‘policy experimentation’ and ‘institutional innovation’ (Hausknot et al., 2018, p. 372). Ostrom (2010) argues that the collective action problems that currently limit environmental policymaking at the international level can be overcome at the local level within polycentric systems of environmental governance. However, the local and regional institutions tasked with delivering environmental governance often face several organisational challenges, meaning that in some countries they are highly active as leaders or pioneers, while in others they fail to deliver even the most basic adaptations (Balme & Qi, 2014; Wurzel et al., 2020).

The explanations for this divergence variously emphasise the structure of governance systems (Ostrom, 2010), the power dynamics within those systems (Morrison et al., 2017, 2019), and the agency of particular organisations and their leaders (Beer et al., 2019; Sancino et al., 2022). In this paper, we interweave these strands of explanation to focus on how local institutions and local leaders are *enabled and constrained* by the power dynamics of governance systems. We mobilise Morrison et al.’s (2017, 2019) three-part framework

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of power in polycentric environmental governance to consider how ‘system framing’, ‘system design’, and ‘system participation’ limit regional agency in the UK.

The empirical contribution of the paper is therefore the identification of the constraints and enablers faced by the UK’s regional institutions in the development of environmental strategy. This analysis feeds back into our theoretical framework, with the insight that constraints emanating from the power dynamics of the governance system tend to be *consistent across different regions* and tend to *interlock to form webs of constraints*, while enablers tend to be region-specific and more isolated. This points towards the need for more fundamental reform of governance systems to realise the potential of regional environmental policy.

As one of the most centralised developed democracies in the world (Newman & Kenny, 2023), the UK represents a context in which power dynamics are at their most prevalent in relation to regional environmental governance. This asymmetric system of regional governance offers a particularly interesting context to consider how governance systems affect the agency of the organisations tasked with delivering environmental policy at the regional level. Based on qualitative interviews and document analysis in three UK regions, we draw wider lessons for countries characterised by asymmetric regional governance and contribute to the literature exploring the link between environmental governance and institutional power asymmetries (Morrison et al., 2017, 2019; Rousselin, 2016).

Asymmetric environmental governance

In the literature on environmental governance, there are various explanations for regional divergence. These rest on various theoretical frameworks, the most common of which are *network governance*, *multi-level governance*, and *polycentric systems*.

The theory of ‘network governance’ suggests that the role of governing is performed not by a single organisation but by a multiplicity of agencies regularly interacting in a self-organising network (Rhodes, 1996; Sørensen & Torfing, 2007), representing ‘a shift from government by a unitary state to governance through and by networks’ (Rhodes, 2007, p. 199). Building on these developments, the ‘multi-level governance’ framework theorises an interdependence across two dimensions: vertical ‘interdependence of governments operating at different territorial levels’; horizontal interdependence between governments and non-governmental actors (Bache & Flinders, 2004, p. 3). Marks and Hooghe (2004) identify two types of multi-level governance: Type 1 are symmetrical systems with a small number of territorial levels, organised to ensure the consistent ‘nesting’ of geographical areas; Type 2 are asymmetrical systems in which jurisdictions are created ad hoc, at various overlapping scales, to perform particular policy functions. As we discuss below, the UK is much closer to a Type 2 system.

Another strand of the literature focuses on ‘polycentric systems’, defined by Ostrom (2010, p. 552) as systems ‘characterized by multiple governing authorities at differing scales’, where each authority ‘exercises considerable independence to make norms and rules within a specific domain’ but is also part of a self-organising system with other authorities adjusting in response to one another. According to Pahl-Wostl and Knieper (2014, p. 140), polycentric systems are defined by two essential criteria: ‘the presence of multiple centres of decision making’ and ‘coordination by an overarching system of rules’.

These three overlapping frameworks – *governance networks*, *multi-level governance*, and *polycentric systems* – each offer important tools in the analysis of environmental governance, but each has faced a similar critique for underemphasising asymmetric power relations. Network governance has faced criticism for underplaying power dynamics and structured inequalities (Marsh et al., 2003), and the multi-level governance framework for underplaying traditional state hierarchies (Peters & Pierre, 2005). The polycentric systems approach has faced a recent line of criticism, which highlights the underemphasis of power dynamics within research on polycentric systems (Morrison et al., 2017, 2019).

In relation to our current concern with identifying the constraints and enablers of regional environmental policy, it is important to consider not just the *processes* of governance and the *structure* of governance systems, but also the *power dynamics* between different institutions within those systems. One approach, specifically designed to analyse the inter-institutional power dynamics of environmental governance, comes from

Morrison et al. (2017; 2019), who propose a framework focused on three types of power: the power to frame systems (e.g. through the use of discourse), the power to design systems (e.g. through regulation), and the pragmatic power to operate within systems (e.g. through influencing other actors). The framework closely aligns with another major attempt to theorise power dynamics in governance networks: Sørensen and Torfing’s (2005) ‘tools of metagovernance’ include network framing, network design, and network participation and management. This three-part framework (set out in Table 1) underpins the analysis of this paper. Specifically, we consider how these three dynamics of power constrain and enable the agency of regional institutions in their attempt to deliver environmental policy.

The benefits and risks of regional environmental governance

At the national scale, the quality of central-local relations is seen to shape a region’s capacity to meet environmental challenges (Qi & Zhang, 2014), as is the strength of the national government’s commitment (Jänicke & Quitzow, 2017). Delivery of multi-level environmental commitments through effective central-local relations is crucial given a common ‘deficit of compliance mechanisms, including controlling, monitoring, reporting, information disclosure, evaluation, sanctioning and litigation’ (Balme & Qi, 2014, p. 150). Where these challenges can be met, Balme and Qi (2014, pp. 150–151) identify the strengths of decentralised systems: regional governments are well-placed to ‘marshal compromises among social interests’, to cooperate with NGOs, to enable public participation, and to respond to ‘local environmental circumstances’. Similarly, Galarraga et al. (2011) and Poupeau (2014) argue that subnational governments are more flexible, closer to citizens, and tend to be responsible for environmentally-impactful policy areas, including energy, transport, industry, and housing. They can also be ‘testing grounds’ for new policies, which can then be rolled out to other regions (Galarraga et al., 2011).

In their study of environmental regulation in China, Qi and Zhang (2014, p. 204) conclude that the main reason regional governments fail to meet environmental obligations is the ‘national institutional environment that defines central–local relations’, and specifically performance evaluation, information supply, and local revenue generation. Díaz-Pont (2021, p. 18) argues that a region’s ‘capacity to steer transformative climate action often collide[s] with the fact that they lack resources or real power’. Even where power is decentralised, regions rely heavily on environmental commitments at higher governance levels (Aall et al., 2007). For example, while ‘the EU system of multi-level climate and energy governance is relatively robust’ (Jänicke & Quitzow, 2017, p. 133), both the US and Canada have seen periods of ‘federal government inaction, which has placed the onus on subnational governments’ (Jordaan et al., 2019, p. 220).

At the regional and local scale, various policy instruments have been used, including ‘carbon taxation, subsidies, cap and trade systems, public procurement, energy and efficiency standards’ (Galarraga et al., 2011, p. 181). These policies have focused particularly on ‘energy efficiency, renewable energy, transport, sustainable agriculture, forestry and land-use policy, and waste management’ (Galarraga et al., 2011, p. 174). However,

Table 1. Power dynamics in governance systems.

System framing	System design	System participation
<p>Framing power: ‘... capacity to develop codified rules and knowledge, to frame problems, construct issues and set norms. Includes discursive and epistemic power’ (Morrison et al., 2017, p. 8)</p> <p>Network framing ‘seeks to determine the political goals, fiscal conditions, legal basis and discursive story-line of the networks’ (Sørensen & Torfing, 2007, p. 246)</p>	<p>Power by design: ‘Formal authority with capacity to make rules, allocate resources, [including] legal power, political power, administrative power, and institutional power.’ (Morrison et al., 2017, p. 8)</p> <p>Network design ‘aims to influence the scope, character, composition and institutional procedures of the network’ (Sørensen & Torfing, 2007, p. 246)</p>	<p>Pragmatic power: ‘... informal authority with capacity to ... monitor rules, influence other actors, control information, [including] practical power, social power, reputational power, and mediating power’ (Morrison et al., 2017, p. 8)</p> <p>Network management ‘attempts to reduce tensions [and] resolve conflicts’. And network participation ‘endeavours to influence the policy agenda [and] the range of feasible options’ (Sørensen & Torfing, 2007, p. 247).</p>

many regions are not pursuing such ambitious environmental policy programmes. Betsill and Bulkeley (2007, p. 452) explain this through ‘the presence of political champions, access to financial resources, local government competencies and capacity, local issue framing, and political will to address emerging conflicts’.

Eckersley (2017) argues that the historical development of a country’s multi-level system produces some institutions with significant capacities and freedoms, and others that act merely as ‘delivery agencies’ of the central state. The latter, as in the UK, are associated with loose, overlapping multi-level governance, while the former tend to sit within organised multi-level systems (Eckersley, 2017). Partly as a result, regions and localities face other structural challenges. Firstly, they are more exposed to pressure from interests unaligned with environmental policy, as in French energy policy, where ‘powerful national operators such as EDF and GDF-Suez limit the room for manoeuvre of local authorities’ (Poupeau, 2014, p. 165). Secondly, they often need to rely on their own (usually restricted) budgets, which can, as in China, lead local governments to ‘maximize tax revenue, by attracting external investment and protecting polluting businesses’ (Qi & Zhang, 2014, p. 204). Overall, regions face major governance challenges in the delivery of environmental policy, while simultaneously being well-placed to affect positive change. This contributes to a major divergence in regional environmental policy, with some creating innovative interventions alongside national and even international policy leadership, while others fail to implement even basic environmental protections. The constraints and enablers of regional environmental policy are summarised in Table 2.

Case study context

The UK Climate Change Impact Programme was established in 1997 to enable a joined-up, stakeholder-led assessment of the impacts of climate change in the UK. These regional partnerships soon became formalised and led the regional response to climate change for the next decade, supported by England’s Regional Development Agencies (RDAs) (Bauer & Steurer, 2014). In 2008, the UK Climate Change Act set legally binding targets for reducing GHG emissions by at least 30% by 2020 and 80% by 2050 of 1990 levels. The Carbon Plan published in 2011 set out the UK’s need ‘to dramatically increase energy efficiency and to decarbonise electricity’ (Uyarra et al., 2016, p. 266). In 2019, the 2050 target was increased to 100%.

Despite the 2007/08 economic crash, the green economy continued to grow and establish itself as a key sector in the UK’s economic recovery (Britton & Woodman, 2014). The Conservative-led government in 2010, which promised to be the ‘greenest government ever’ and a ‘world leader’ in low carbon energy (Uyarra et al., 2016), introduced major changes to the climate strategy. These were influenced by a shift in the structure of sub-national governance and a new devolution agenda in England that would give local areas new freedoms and flexibilities and a more central role in reducing carbon emissions (DECC, 2013).

Table 2. How governance power dynamics constrain and enable environmental governance.

	System framing	System design	System participation
Constraints	Absence of national climate policy framework Unclear goals and strategy Lack of local issue framing (Aall et al., 2007; Jänicke & Quitzow, 2017)	Fragmented central-local relations Deficit of compliance mechanisms Lack of local resources and authority (Balme & Qi, 2014; Díaz-Pont, 2021; Eckersley, 2017; Poupeau, 2014)	Lack of political will Limited flow of information Lack of local policymaking capacity Limited opportunities to learn from other regions (Betsill & Bulkeley, 2007; Qi & Zhang, 2014)
Enablers	Prominent and consistent national climate policy Environmental policy linked to local issues Environmental issues prioritised in key policy sectors (Aall et al., 2007; Galarraga et al., 2011; Jänicke & Quitzow, 2017; Poupeau, 2014)	Coherent central-local relations Significant local revenue generation Institutions at a scale to respond to local environmental challenges (Eckersley, 2017; Jordaan et al., 2019)	Local political champions Local leaders able to influence and convene non-state actors Local capacity to form lasting partnerships with non-state actors (Balme & Qi, 2014; Betsill & Bulkeley, 2007; Qi & Zhang, 2014)

However, these promises of greener and more localised governance remain largely undelivered. The government's pledged transformation sat within the context of austerity and a 'rebalancing growth' agenda. This led to the dismantling of RDAs and the creation of business-led Local Enterprise Partnerships (LEPs) and a partial roll-out of Combined Authorities (CAs). Research has emphasised the limited effectiveness of LEPs (Hildreth & Bailey, 2013), specifically in their contribution to the UK's climate strategy (Scott, 2011). Unlike RDAs, LEPs receive limited funding, lack statutory powers, and have no explicit remit to support sustainable development (Uyarra et al., 2016). At the local level, the austerity agenda led to a significant decline in local expertise and policy capacity related to environmental governance (Eckersley & Tobin, 2019). Furthermore, progress became 'highly variable due to uncertainties regarding the national decarbonisation agenda' (Britton & Woodman, 2014, p. 617).

Against most of the success factors identified in the previous section, the shift from RDAs to LEPs and CAs represents a significant step backwards in subnational environmental governance: the unsettling of territorial identity, reduced national coordination, less effective central-local relations, insufficient resources and power, and weakened institutional capabilities. Many policy levers were moved from the regional to national level, including those, like innovation policy, that are essential to support low-carbon technology (Pike et al., 2018). The funding for low-carbon initiatives remains disjointed despite efforts to streamline departments (Uyarra et al., 2016). While the UK's devolved nations of Scotland, Wales, and Northern Ireland, have been affected by many of the problems outlined above, they have pursued more ambitious emission-reduction strategies (Tobin & Barritt, 2021), enabled by their relative autonomy. In Wales, the National Development Framework and the Wales Spatial Plan were developed to promote sustainability within the renewable sector, including the retrofitting of housing, affordable heating, and investing in green jobs through reskilling programmes.

For this paper, we selected three regions that each represent a different form of subnational governance within the UK's system: West Midlands with a metro mayor, Humber with a LEP, and Cardiff within a devolved nation. These were chosen via a detailed selection process, including the development of a regional typology drawn from proxy measures of economic prosperity, inclusivity, and sustainability that was used to compare and contrast the effectiveness of varying regional institutional forms (Hoole & Collinson, 2020). Eight regions were used in our wider project, but the three regions here were specifically selected for more in-depth analysis of their environmental governance.

The West Midlands has a Combined Authority model (WMCA), formally established in 2016 to cover seven local authorities in and around the city of Birmingham. Through a Devolution Deal, the WMCA secured an initial capital investment of £1095 m over 30-years alongside powers over transport, skills, employment, health, housing, and finance. An important historical centre for manufacturing and the automotive industry, WMCA's green transition focused on providing less-polluting forms of production and distribution. In 2019, the WMCA declared a climate emergency and committed to reach net zero by 2041, publishing a strategy to meet this target (WMCA, 2020). This strategy includes making homes energy efficient, transitioning to electric vehicles, introducing a green innovation challenge for SMEs, and active transport initiatives (WMCA, 2020).

The Humber region was governed by Humber LEP from 2011 to 2021. The LEP was officially 'business-led' and facilitated collaboration between businesses, local authorities, and educational institutions. In 2021, Humber LEP collapsed due to disagreements between local authorities and was replaced by Hull and East Yorkshire LEP and Greater Lincolnshire LEP. Both have responsibility for improving skills, infrastructure, innovation, and business engagement. They lack statutory powers and capital funding, relying instead on the development of strategic visions and local networks. In recent years, the green energy sector has boomed in the Humber, but the region remains the heaviest polluting area in the country (Humber LEP, 2019). In response, the region is aiming to reach net zero by 2040, primarily through industrial symbiosis and carbon capture. With the construction of Siemens' wind turbine facilities, the region seeks to develop a new specialism in renewable energy.

The Cardiff Capital Region (CCR) sits within Wales, which has its own devolved parliament. The CCR City Deal is one of the four regional growth agreements in Wales, providing £1.2 billion over 20 years, as agreed in 2016 between the UK government and 10 local authorities. Following the devolution of power in 2006, the Welsh government developed the Regional Economic Framework for South East Wales. This was targeted

mainly towards economic growth, inclusivity, and promoting wellbeing and sustainability, which were established as key Welsh national priorities. These priorities were embedded in the Future Generations Act 2015 and the Environment Wales Act of 2016. The Industrial and Economic Action Plan for CCR (2019) set out key priorities for the region, including decarbonisation.

Methods

Across the three regions, we conducted 34 semi-structured interviews with local leaders. Interviewees were mostly from local and regional institutions, including political leadership, public servants, local businesses, trade unions, and educational institutions. Questions were divided into five broad themes: ‘devolution’, ‘strategy’, ‘centre-local relations’, ‘capabilities’ and ‘regional-local coordination’. Interview transcripts were analysed in NVivo, with codes that identified and grouped pieces of text within and between interviews (Fielding & Thomas, 2001), leading to eight additional themes for which a further round of coding was conducted: ‘funding and investment’, ‘geography/scale’, ‘inclusivity’, ‘Local Enterprise Partnerships (LEPs)’, ‘local industrial strategy’, ‘productivity’, ‘sustainability’ and ‘trade-offs’.

The interviews and analysis were part of a wider piece of work considering economic and social issues as well as environmental ones. For this paper, we bring together the relevant findings under each theme and situate them within the three dimensions of Morrison et al.’s (2017; 2019) framework of power dynamics in polycentric environmental governance and the three tools of metagovernance outlined by Sørensen and Torfing (2007) (see Table 1 above). To consider system framing, we look at the *vision and strategy* of central and regional governments, identifying how rhetorical commitments to environmental policy are actioned across policy areas. With regard to system design, we consider *governance structures* at the regional level and how they are embedded in multi-level arrangements. Finally, for system participation, we consider how regional governments interact with *business and industry*. Across each of these, we focus on how the agency of regional governments is constrained and enabled by the wider system of environmental governance.

To support, corroborate, and enrich the interview analysis, we also conducted a document analysis of regional strategies. Economic, environmental and regional strategy documents (e.g. sustainability plans, local economic plans, etc.) relating to each region were systematically analysed in NVivo using the themes from the interview analysis, but with a specific focus on exploring local environmental policymaking.

Findings

System framing: vision and strategy

In June 2019, the UK government became the first major economy to enshrine into law a commitment to bring all GHG emissions to net zero by 2050. However, ‘the UK remains off track [and] there is still little evidence that the government [has] confronted the enormous scale of the task’ (Sasse et al., 2020). Our interviews highlighted how ‘[there’s a lot of] talk about carbon neutral ... but nobody’s got the roadmap’ (WM, INT6). This lack of clarity and policy direction from the centre means regional leaders spend ‘a long time waiting for government to make decisions on where things are going’, feeling unable to ‘push ahead’ and unable to ‘set the pace and policy direction’ (WM, INT5).

Where a central framework has been established and supported with industrial policies, significant progress has been made. For example, the UK is on target to achieve a capacity of 40GW in offshore wind by 2030, equivalent to over a third of the UK’s electricity demand (Sasse et al., 2020). The ‘Humber has become established as the world’s largest location ... for offshore windfarm creation and maintenance’ (H, INT3). This has now become the ‘cornerstone’ and the ‘main factor affecting the macroeconomy of the Humber’ (H, INT6). However, in other sectors, such as transport and housing, where there has been no clear plan from the centre, policies and commitments have not been met (Sasse et al., 2020). In the Humber, interviewees report that ‘public transport is an absolute mess’, which ‘really limits the potential for economic growth’ (H, INT7). Green transitions in transport rely heavily on behavioural change, and yet, without the infrastructure in

place to ‘allow behaviour change to take place’ (WM, INT8), achieving progress in these areas is unlikely to happen. Therefore, while there are sector-specific success stories, there is a failure to deliver cross-sector environmental policy.

Local politicians complained about chasing ‘central government’s flavour of the month’ (WM, INT2), and on crucial green investments finding ‘the grant that supports these activities just disappears overnight’ (H, INT1). The failure to implement a consistent and holistic plan is hindered by a lack of national policy coordination and integration. MPs have raised concerns that the UK could miss its 2050 target due to disjointed planning across government departments (House of Commons, 2021). Our interviewees agreed, explaining that ‘different departments [are] asking for different ideas for projects’ (WM, INT8) within a system operating on a ‘departmental-basis, rather than thinking more holistically’ (WM, INT2).

Therefore, the coordination needed between the centre and regions is undermined by the interface between them, with a multi-faceted civil service interacting with different regions through different fractured processes. This was part of a broader emerging theme in the interviews about insufficient coordination and partnership between central government and the devolved nations and regions. One interviewee stated that ‘... we really want to have that collaborative way of developing [environmental] policy [but it] is a difficult conversation at the moment’ (CCR, INT3).

Without better multi-level coordination, a long-term strategy is unlikely, meaning that regions will struggle to develop effective place-specific policies. Interviewees explained that local politicians are ‘still trying to get their heads around’ the green agenda (WM, INT5) and that it ‘hasn’t accelerated as quickly as ... people had hoped’ (WM, INT4). Places tend to concentrate on and adapt to what they already know, prioritising the ‘low-hanging fruit’ and ‘quick wins’ (WM, INT4). For example, the main emphasis in the West Midlands on electric vehicles is a close match to the region’s automotive industry and thus its economic interests. Similarly, in the Humber, the arrival of the renewable sector has led to a narrow focus on wind energy, with one commentator complaining that ‘you’re not going to generally achieve green growth if you’re just focusing on green energy’ (H, INT7).

Questions were also raised by interviewees about the future of investments and disinvestments in particular industries, with interviewees in the West Midlands questioning the large investments in Jaguar Land Rover, Birmingham Airport, and new road schemes. This is part of a broader concern about the role that the private sector is expected to play in supporting the transition. Across all three regions, ‘investment ... is needed from the private sector to change their method of production’ (H, INT8), but currently ‘the private sector won’t take that risk’ (WM, INT8). To address this lack of ambition, ‘there’s a very different type and scale of interaction needed between public and private sectors’ (CCR, INT7).

System design: governance structures

Although interviewees recognised the need for transformational change at the regional level to meet the challenges of the environmental crisis, regional institutions largely lack the powers, resources, and expertise to deliver this change. The transport sector is an important example here. It is the most significant contributor to the UK’s carbon emissions (Committee on Climate Change, 2020), as well as being a key aspect of devolution deals. For example, the CCR City Deal pre-allocated over three-quarters of its budget to the South East Wales Metro project, which seeks to electrify, integrate, and expand the region’s public transport network to reduce emissions and improve air quality (Welsh Government, 2021), though it is important to note that environmental outcomes are not measured as part of CCR’s socio-economic targets from the UK government.

In the West Midlands, the WMCA devolution deal stated that ‘the transport network ... underpins economic growth and the whole of the local industrial strategy’ (HM Treasury and WMCA, 2017, p. 8). Interviewees report having ‘some highways powers and some traffic powers’ but they say that ‘if we really want to go to net zero, we need ambitious plans around model-shift and getting people out of their cars and onto public transport. It’s really difficult to do that if we don’t have access to all of the levers we might need.’ (WM, INT1). In the Humber, where no transport powers have been devolved, the regional ‘Clean Growth White Paper’ fails to offer transport solutions, and regional leaders explain that ‘there’s never been a history of

that kind of level of transport planning in the region' (H, INT3). This is a result of significant variations in budgets, powers, and expertise across the UK.

Interviewees explained that the funding system is key. All CAs have access to an Investment Fund, and some (including WMCA) to a Transport Grant and Adult Education Budget. LEPs have access to a Local Growth Fund. However, spending is subject to a central framework of project appraisal and evaluation based on economic rather than environmental criteria, limiting flexibility and undermining the ability to target local interventions. Regions are heavily reliant on ad hoc funding pots, creating uncertainty about future funding. One of the main consequences is that environmental projects become central to regional strategies only to be abandoned because of funding criteria. In CCR, local politicians report that 'the Swansea Bay Tidal Lagoon has not progressed ... because central government kept changing its mind or moving deadlines, and they couldn't agree on [the subsidies]' (CCR INT9). This project has also failed to pass the government's cost-benefit analysis and has faced further disagreements over private-sector involvement.

The centralised and inefficient structure of funding relates to the UK's unstable and uneven system of sub-national governance, which is based on 'devolution deals' rather than system-wide architecture. The clearest example is in the Humber region, where a high-carbon cluster of heavy industry and energy production straddles the banks of the Humber Estuary. Between 2011 and 2021, the Humber LEP sought to create decarbonisation strategies, but the LEP split in 2021, creating a border through the middle of an economic area. One local politician asked 'if you take decarbonisation as the big stride of the regional agenda, well how can you do it when you've got industries on two sides [of the regional boundary]?' (H, INT8). Interviewees from both sides explained that the split was caused by the electoral calculations based on perceived regional identities. This in turn links to the wider and longer-term failure of the UK to establish a stable subnational territorial settlement. Where boundaries are more settled, environmental policy is further advanced. In Wales, the Environment Wales Act of 2016 and the Future Generations Act 2015 have emphasised the wellbeing of future generations through sustainability alongside the reduction of emissions.

In the UK, a lack of system-wide architecture has created fractured governance arrangements between the centre and the regions. As one interviewee explained, 'we need to create an environment that encourages clean business to grow [and] we have to do that with the UK Government' (CCR, INT3). The lack of central-local coordination impacts the success of the major industry and infrastructure projects that are crucial to a green transition. In the Humber, insufficient communication between central government and the region was said to have limited growth in the renewables sector. One regional leader said that 'the first I heard of a major investment ... was from Siemens. They'd been talking to central government for six months ... The government wanted to keep us completely out of it' (H, INT6). The consequence was 'a drip feed of investment propositions ... and not a long-term pipeline of opportunities', which has meant the region now 'imports a lot of components' and does 'a bit of manufacturing' but 'could have had a lot more.' (H, INT3). This not only had an impact on the regional economy but on environmental policy more widely, because 'you can't necessarily call the Wind Farm Project green if it's shipping in most of its components from Indonesia and elsewhere' (H, INT7).

System participation: business and industry

One of the main challenges in the transition to a net-zero economy is the lack of economic stimulus from the centre. Investment could facilitate green procurement, shorter supply chains, and green R&D. However, in the UK, funds are insufficient to make these interventions: 'there are things that we need to do at every level [to] support green [business]' (CCR, INT2). While the economics of the green transition are complex, regional governments lack the resources to facilitate an economic context 'that encourages clean business to grow' (CCR, INT3). In the West Midlands, the intensive production of diesel vehicles creates an opportunity for R&D investment to facilitate the transition to environmentally sustainable products and production, but '... there is certainly not enough investment in R&D going on locally' (WM, INT3). While 'a lot of that is about the private sector investing to make changes in their processes' (H, INT8), subsidies are needed to make the transition economically viable. In the Humber, 'offshore wind [initially] required substantial

state subsidies and support. As time has gone on, that's reduced. Now offshore wind competes with oil in terms of its capacity' (H, INT6). Businesses need targeted incentives to invest in green equipment and infrastructure. The wider use of green subsidies will require central funding, but if regions are given the power to target those subsidies on particular sectors, products, and processes, those subsidies will work more efficiently in the transition of regional economies, enabling central investment to be withdrawn (or redirected) sooner.

The balance of interests in regional government is particularly important, because there are concerns that businesses push strategy towards short-term economic outcomes at the expense of long-term environmental ones. In the West Midlands, the manufacture of petrol and diesel cars is a major industry, with specialisation in SUVs, the only sector where global GHG emissions are on the rise (IEA, 2020). 'One of the reasons Jaguar Land Rover (a big employer in the West Midlands) is struggling is because they're still very diesel-oriented and they haven't done the work on the electrification of motor manufacturing' (WM, INT5). The importance of heavy industry to regional economies creates a major decarbonisation challenge, because a green transition is seen to come at a high economic cost. 'I think the trade-off on the industry side [is] how can we decarbonise the industrial base when we've got a very heavy set of energy users' (WM, INT6.2).

In the Humber, a partnership with major industrial companies has developed a plan for a hydrogen-based industrial cluster and major carbon capture and storage facilities (Zero Carbon Humber, 2020). However, this approach puts the responsibility for environmental policy with the major polluters, resulting in protections for these businesses in the environmental strategy. Thus, the plan of the Humber partnership is not to transition away from carbon-emitting and energy intensive industry, but rather to capture and store emissions. Humber LEP's Clean Growth White Paper promises to work 'with sectors that are strategically important, like steel, chemicals and oil refining, and exploring the potential for diversification and industrial symbiosis' (Humber LEP, 2019). The reliance on 'industrial symbiosis' is a further cause for concern, with one academic study finding that the process would reduce yearly CO₂ emissions among the Humber's four biggest polluters by only 4kt (Cervo et al., 2019), compared to the region's annual industrial CO₂ emissions of 12,400kt (Humber LEP, 2019, p. 4).

Interviewees emphasised the importance of reskilling employees from polluting industries and diverting them to green businesses; 'in the just transition to a zero-carbon society, skills have a big role, especially in the field of automation and digital innovation' (CCR, INT1). However, devolved regional institutions currently lack the powers and resources to intervene effectively in skills: 'we're saying we need to train people into high-level green-economy jobs, and unless we start having an honest conversation with employers around how we can design jobs (succession planning and workforce planning) we will not be able to bring about change' (CCR, INT1). In Wales, emerging partnerships between regional governments and trade unions seek to 'make sure that any heavy industry jobs, wherever possible, are replaced with equally good quality jobs in the green economy' (CCR, INT1). However, there is currently a failure to plan skills effectively in all regions, especially where governance structures are weak.

Discussion

The constraints and enablers identified in the UK (see Table 3) bear a strong resemblance to those identified in the international literature.

Reflecting first on the power dynamics of 'system framing' – the control of information, norms, and narratives – we can see how asymmetries in 'framing power' create constraints on regional environmental governance in the UK. There is a national climate change agenda, but this lacks consistency and clarity of implementation, leaving regional leaders chasing changing central government narratives, rather than developing concrete local plans. This siloed nature of policymaking trickles down from the centre, leading to the deprioritisation of environmental issues across key policy sectors. Regions frame their environmental strategy in terms of quick wins and economic specialisms instead of addressing local environmental issues or the needs of local people. These failings link closely to the international literature, which emphasises the importance of a prominent and consistent national climate policy that has clear goals and enables local issue-framing.

Table 3. How the UK's regional environmental policy is constrained by its governance power dynamics.

System framing constraints	System design constraints	System participation constraints
National targets exist without a delivery plan. Local areas wait for the centre.	All institutions lack the budgets, powers, and expertise to deliver in key policy areas (e.g. transport).	Institutions lack control over public investment that would allow them to create environmental incentives and disincentives.
Lack of cross-sector strategy. Disjointed planning across central government departments.	Some are better placed than others, meaning that there are differences between capacities across the UK.	There are some success stories (e.g. offshore wind) where there is R&D investment and business support.
Short-term central policy agendas that local institutions struggle to keep up with.	Funding is limited by a central framework of appraisal and evaluation.	Institutions lack the powers and funding to support key businesses to transition to greener ways of working.
Local areas follow central system framing, rather than collaborating on a clear strategy.	Short-term funding undermines the capacity of institutions to deliver long-term projects.	Institutions align their strategies with the immediate economic interests of the private sector. These strategies are often influenced by major polluting companies.
Places are adapting to what they know and prioritising quick wins.	Shifting boundaries of territorial government contributes to instability.	There is a lack of coordination on the greening of skills and the long-term skills planning for a green transition.
Local institutions do not frame a green policy environment for the private sector. They struggle to mobilise private sector investments.	There is a lack of central-local coordination on projects that depend on collaboration.	

Turning to the second power dynamic in our theoretical framework, we can see constraints emerging from ‘system design’ – the making and remaking of rules, institutions, and other formal structures. In the UK, there is significant variation between regions in terms of governance structures and available budgets, but all regions lack the necessary policy levers and budgetary control to deliver transformative environmental policy. Instability and fragmentation of both budgets and territory undermine the build-up of expertise and the development of long-term environmental strategy, while failures in central-local communication often hamper key projects. Again, there are strong similarities with the existing international literature, which emphasises the need for coherent central-local relations, appropriate territorial scale, and significant authority and resources at the regional level. However, while the international literature emphasises the need for strong compliance mechanisms, we found that the existence of too many compliance mechanisms prevented cross-sector policymaking. The key point being that, in the UK, compliance is focused on ‘value for money’ rather than environmental protection, suggesting that effective environmental compliance mechanisms need to be accompanied by fewer economic ones.

Finally, in terms of ‘system participation’ – where power is exercised through direct involvement in the governance system to influence other actors – our analysis showed that the three UK regions lack the necessary economic levers to instigate green transitions in the local economy, often influenced by the businesses that have more clout in the region. Often they have been the biggest polluters. There is evidence of growing partnerships between non-state actors but these do not seem able to deliver transformative change, such as the greening of skills or the use of R&D to instigate green transitions of industrial processes. There is some alignment here with the international literature, which points to the need to convene and partner with non-state actors and ensure effective policymaking capacity, though our findings suggest that it is not just the forming of these partnerships that is important but the power dynamics within them and the outcomes they produce (or fail to produce). Further research is needed to explore how system-wide power dynamics affect public-private partnerships at the local level.

Conclusion

The existing literature on regional environmental governance highlights a range of benefits of more localised environmental policymaking (e.g. Galarraga et al., 2011; Balme & Qi, 2014), especially when framed by theories of polycentric systems (Ostrom, 2010). However, there is also a significant outstanding question about the variation of regional environmental governance, why some are leaders and pioneers, while others are laggards (Wurzel et al., 2020). This paper has sought answers to this question by analysing the UK’s asymmetrical system of environmental governance.

Building on the existing literature on multi-level governance (Bache & Flinders, 2004; Marks & Hooghe, 2004), governance networks (Rhodes, 1996; Sørensen & Torfing, 2007), and polycentric systems (Ostrom, 2010), we argue that explaining variation in environmental governance depends upon analysis of *how local and regional institutions are enabled and constrained by the power dynamics inherent in the governance system*. On this basis, explaining variation in regional environmental policy entails considering how ‘regional agency’ is constrained and enabled by the power dynamics of system framing, system design, and system participation (Morrison et al., 2017, 2019; Sørensen & Torfing, 2007).

Analysis of three UK regions has revealed numerous constraints on regional agency in the delivery of environmental policy. These constraints were found to be common to all three regions, despite notable differences in their institutional forms and spatial-economic contexts. Where there were enablers, these tended to be region-specific, and either narrowly targeted, as with the Humber’s offshore wind industry, or lacking implementation mechanisms, as with the Future Generations Act in Wales. While it is important to acknowledge the possibility that our methodological approach, especially in its focus on interviewing regional leaders, may have led to an emphasis on constraints over enablers, our analysis of the interview data shows that the constraints that do exist *interlock* to limit regional environmental policy, while the enablers are often *isolated* features that do not connect into broader strategies. This is an important contribution to the existing literature because it suggests that existing constraints are harder to remove, requiring more radical restructuring of governance systems, but also that there may be a positive feedback loop once enablers are connected.

To consider how constraints reinforce one another, it is worth considering an example from our findings. One key constraint that comes from the *framing* of the governance system relates to the short-term policy agendas of central government that trickle down into inconsistent regional strategies. In terms of *system design*, short-term funding pots mean that regions struggle to plan investments, services, and policy interventions into the future. When they *participate* in local governance networks, regional institutions face pressures from businesses to realise short-term economic goals at the expense of longer-term environmental ones. These constraints reinforce one another to create short-termism in regional environmental policy that undermines planning for a green transition and economically devalues environmental initiatives.

Overall, the unusually asymmetric power dynamics of the UK system are significantly limiting the agency of regional governance institutions and thus limiting the development of regional environmental policy. Successful multi-level environmental policy depends on several key factors: policy has to be long-term; it has to align across multiple levels of government; it has to empower regions, municipalities, and communities; and it requires a network of institutional partnerships within regions based on trust and co-operation. Each of these enablers is more difficult to realise within an asymmetric governance system. While each region requires place-specific responses, the clearest cross-cutting lesson to learn is that the agency of regions to deliver transformative environmental policy is limited by multiple reinforcing constraints, exaggerated by asymmetric power relations in multi-level systems.

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