Regional Studies

ISSN: 0034-3404 (Print) 1360-0591 (Online) Journal homepage: www.tandfonline.com/journals/cres20

Orchestrating place-based micro-missions: the grand challenge of decarbonisation at Shoreham Port

Kyle S. Herman, Andrew Davies & Stephan Manning

To cite this article: Kyle S. Herman, Andrew Davies & Stephan Manning (2026) Orchestrating place-based micro-missions: the grand challenge of decarbonisation at Shoreham Port, Regional Studies, 60:1, 2688957, DOI: 10.1080/00343404.2026.2688957

To link to this article: https://doi.org/10.1080/00343404.2026.2688957

REGIONAL STUDIES
2026, VOL. 60, NO. 1, 2688957
https://doi.org/10.1080/00343404.2026.2688957

Regional Studies Association
Routledge Taylor & Francis Group

Orchestrating place-based micro-missions: the grand challenge of decarbonisation at Shoreham Port

Kyle S. Herman [a], Andrew Davies [b*] and Stephan Manning [c]

[a]Department of Business and Management, Libera Università Internazionale degli Studi Sociali Guido Carli (LUISS), Rome, Italy; [b]Science Policy Research Unit, University of Sussex Business School, Brighton, UK; [c]Department of Strategy and Marketing, University of Sussex Business School, Brighton, UK

ABSTRACT

Climate change has led governments to adopt mission-oriented policies targeting net-zero greenhouse gas emissions. Heavy industry accounts for almost one-sixth of global emissions, making industrial decarbonisation central to this agenda. Though emissions impacts are global, decarbonisation unfolds locally. Yet how place-based micro-missions – small-scale experimental initiatives targeting concrete, localised challenges – are orchestrated in practice remains poorly understood. Examining Shoreham Port, an English industrial cluster in West Sussex, we show how local actors coordinate multi-scalar governance through spatially embedded micro-missions, demonstrating that their coordinated orchestration is essential for place-based industrial transformation, advancing mission-oriented innovation theory by establishing orchestration as a constitutive governance capacity and clarifying how grand challenges can be effectively addressed in local contexts.

ARTICLE HISTORY
Received 30 September 2025
Accepted 8 June 2026

KEYWORDS
Industrial decarbonisation; grand challenges; micro-missions; place-based policy; orchestration; mission-oriented innovation

JEL
L5; L52; Q; Q52; R; R1; R11; Q5

1. Introduction

The urgency to meet net-zero greenhouse gas (GHG) emissions, as enshrined in the 2015 Paris Climate Agreement, has led many governments to respond with mission-driven innovation policies to tackle grand challenges (GCs) (Mazzucato, 2018b). GCs are characterised by their resistance to simple solutions and require coordinated, multi-actor efforts and system-building strategies that bridge global ambitions with local realities (Ferraro et al., 2015; George et al., 2016, 2024; Howard-Grenville et al., 2014). Such policies deliver targeted investments in energy, transport and resource-efficient manufacturing (Mazzucato, 2018a; Wanzenböck et al., 2020), and have considerably reshaped the range, scope and direction of regional industrial policies (Bailey et al., 2025) – particularly in the UK (McCann et al., 2023).

Given that heavy industry accounts for almost one-sixth of total global GHGs (International Energy Agency (IEA), 2025), industrial decarbonisation policies are being rolled out across advanced economies worldwide (World Economic Forum (WEF), 2024). This approach is considered indispensable to sustainability transitions (Bailey, 2024), industrial renewal (Baumgartinger-Seiringer et al., 2022), and especially important when coupled with place-based industrial policies (Bailey et al., 2026; Baranova, 2023; Beer et al., 2020; Gansauer, 2025). The alignment of broader climate goals with targeted local initiatives is what connects GCs to mission-driven policies within local contexts (Hassink et al., 2019; Pontikakis et al., 2022).

Yet the regional implications of mission-led policies remain underexplored, with limited understanding of how local actors can align place-based strategies with national missions (Bailey, 2024; Bailey et al., 2023). The concept of micro-missions offers a promising new research direction (Uyarra et al., 2025). Micro-missions are experimental initiatives that translate broader mission-oriented goals into context-specific interventions at the local level, created to address 'specific place-based issues at subnational scales' whilst contributing toward 'multi-scalar challenges and larger regional and national goals' (Henderson et al.,

CONTACT Kyle S. Herman ksh82@scarletmail.rutgers.edu; kherman@aus.edu
*Present affiliation: Adjunct Professor in Strategy, Department of Strategy and Entrepreneurship, BI Norwegian Business School, Norway
Supplemental data for this article can be accessed online at https://doi.org/10.1080/00343404.2026.2688957

2024b, pp. 1–2). They have three distinguishing characteristics: they engage local actors – firms, municipalities and research institutions – possessing contextual knowledge about regional capabilities, infrastructure and constraints; they operate through an experimentation logic, setting interim goals that enable adaptive learning and systematic comparison of alternative pathways; and they embed within existing regional development trajectories, aligning global climate imperatives with place-specific economic and social priorities (Bugge et al., 2022; Henderson et al., 2024a).

Micro-missions offer a practical pathway for addressing GCs, particularly in industrial decarbonisation, which demands a coordinated response to a multi-dimensional challenge (Hayward et al., 2024; Ritala, 2024). This approach builds on emerging scholarship on missions (Hekkert et al., 2020), ecosystem theories (Thomas & Ritala, 2022) and place-based strategies targeting GCs (Froy et al., 2022; Kythreotis et al., 2020; McCann et al., 2023), whilst advancing sustainability transitions scholarship by revealing how global environmental imperatives can be operationalised via territorially embedded governance arrangements (Fuenfschilling et al., 2019).

The UK was the first major economy to commit to achieving net-zero emissions by 2050 (Herman et al., 2025a; Sovacool et al., 2024b). To understand how this is coordinated in practice, we investigate Shoreham Port's decarbonisation mission, contributing to four key debates. First, by showing how specific actors actively shape, coordinate and sustain place-based micro-missions, we extend research on local intermediaries in low-carbon transitions (Bailey et al., 2026; Gibbs & Jensen, 2022; Johnstone et al., 2020; Kivimaa et al., 2019). Second, by unpacking how institutional legacies, heterogeneous stakeholder landscapes, and organisational boundaries condition micro-mission design and implementation, we contribute to debates on regional mission-driven strategies (Brown, 2021; Bugge et al., 2022; Henderson et al., 2024b). Third, by demonstrating how micro-missions generate positive spillovers through strategic coordination, bottom-up engagement and multi-actor collaboration, we advance multi-scalar governance research (Atienza et al., 2025; Sunley et al., 2022, 2023; Uyarra et al., 2016). Finally, we empirically show how place-based industrial strategies operationalised through coordinated micro-missions can overcome spatial and organisational constraints whilst delivering actionable net-zero pathways – demonstrating how smaller industrial clusters can pursue ambitious climate goals without undermining economic viability, with transferable insights for industrial regions more broadly. Collectively, these contributions advance regional studies on place-based missions and industrial policy (Baumgartinger-Seiringer et al., 2022; Beer et al., 2023; Carvalho & Vale, 2018; Flanagan et al., 2023; Isaksen, 2015).

The paper proceeds as follows. Section 2 discusses our conceptual and theoretical approaches. Section 3 examines UK policy and Shoreham Port's approach. Section 4 presents the findings. Section 5 discusses implications. Section 6 concludes.

2. Conceptual approaches and theoretical background

This section develops the conceptual foundation for our analysis by situating micro-missions within broader debates on GCs, mission-oriented policies and the spatial dimensions of industrial decarbonisation.

2.1. Aligning local missions with grand challenges

2.1.1. Grand challenges (GCs)

GCs represent complex, systemic problems – such as climate change, environmental degradation or achieving the United Nations' Sustainable Development Goals (SDGs) – that resist straightforward solutions (Fastenrath et al., 2023; Ferraro et al., 2015; George et al., 2024; Tödtling et al., 2022). Due to their scale and complexity, GCs cannot be addressed by single organisations, sectors or policy instruments alone, but instead demand collective problem-solving (Hekkert et al., 2020; Mazzucato, 2016). Mission-oriented policies are developed in response to GCs, drawing inspiration from transformative missions like the Apollo Moon landing (Mazzucato et al., 2024).

2.1.2. Mission-oriented policies and the role of place

To translate broader GCs into practical solutions, mission-oriented innovation policies break down overarching challenges into clear, targeted missions with specific goals and timeframes (Mazzucato &

McPherson, 2018), drawing together a 'network of agents and set of institutions that contribute to the development and diffusion of innovative solutions [to pursue] a societal mission' (Hekkert et al., 2020, p. 77). For instance, the GC of environmental sustainability might be translated into specific green missions directing investments in energy transition, low-carbon transport or resource-efficient manufacturing (Mazzucato et al., 2024). By setting ambitious goals that shape long-term strategies, these policies help mobilise diverse constellations of actors and foster cross-sector experimentation and bottom-up project portfolios (Fuenfschilling et al., 2019). Nevertheless, places have fundamentally different capacities to achieve missions due to variation in regional knowledge, industrial, organisational and socio-cultural contexts (Beer et al., 2020; Foray, 2018). Mission-oriented policies must therefore account for the spatial embeddedness of innovation and production systems – a place-sensitive rather than 'place-blind' policy approach (Coenen & Morgan, 2020, p. 6) – recognising that 'societal challenges require place-specific instead of one-size-fits-all solutions' (Walker, 2024, p. 3). Overlooking spatial dimensions risks creating 'space-blind missions [that generate] unrealistic expectations that regions can act like mini nation-states in terms of industrial policy' (Flanagan et al., 2023, p. 1006). Integrating mission-driven policies with GCs therefore requires not only reflecting on place-specific conditions but also building governance capacity and coordination processes to orchestrate multi-actor collaboration across scales (Brown, 2021; Brownlow & Budd, 2024; Frenken, 2017; Gansauer, 2025). These considerations are particularly salient in industrial decarbonisation, where pre-existing infrastructure and large sunk costs are territorially anchored.

2.1.3. Micro-missions

Despite growing policy attention on GCs and mission-oriented innovation, prevailing approaches remain fundamentally ill-suited to local domains (Brown, 2021). This limitation stems from two interconnected features of contemporary mission design. First, missions targeting GCs are typically framed as technological challenges (Mazzucato et al., 2020), overlooking the social, political, and spatial dimensions that shape transition pathways (Foray, 2018). Such technological framing creates a reductive understanding of sustainability challenges, abstracting them from the place-specific contexts in which they must ultimately be addressed. Shifting beyond technology-focused views of regional industrial policy opens new scope for intervention by foregrounding local demand, capacities and markets (Flanagan et al., 2023).

Second, missions have been predominantly conceptualised at the national level, with the Apollo Moonshot programme serving as the dominant paradigm (Mazzucato & Semieniuk, 2018). This national-scale orientation institutionalises top-down approaches that privilege large-scale technology-push solutions over locally responsive strategies (McCann & Soete, 2020). Together, these features produce a mission paradigm that systematically excludes the local knowledge and spatial specificities proven more effective for place-based sustainability transitions (Baranova, 2023; Walker, 2024). Addressing the climate emergency demands a fundamentally different approach that prioritises bottom-up, decentralised strategies (Brett et al., 2023; Hargadon, 2010).

Rather than a single technological moonshot, demand-driven solutions can be adapted to and cultivated within local contexts (Mowery et al., 2010). Such missions can coexist simultaneously across diverse place-based configurations (Fastenrath et al., 2023), and may need to be orchestrated at sub-national scales – broadly in line with the notion of 'local experiments' from the sustainability transitions literature (Coenen & Morgan, 2020). The novelty of micro-missions lies in their role as small-scale, place-based initiatives that translate broader mission-oriented goals into context-specific interventions (Henderson et al., 2024a, 2024b).

Whereas GC-focused missions set ambitious goals at national or supranational scales, micro-missions focus on solving concrete, geographically bounded problems, such as decarbonising a specific industrial cluster with hydrogen energy and storage infrastructure (Hine et al., 2024). Three features distinguish micro-missions from conventional mission-oriented approaches. First, they are developed through bottom-up engagement with local actors who possess contextual knowledge about regional capabilities, infrastructure and constraints (Bugge et al., 2022; Tödtling et al., 2022). Second, they operate through an experimentation logic, setting interim goals that allow for adaptive learning and systematic comparison across alternative pathways rather than predetermined technological solutions (Doganova & Karnøe, 2015). Third, they embed mission-oriented objectives within existing regional development trajectories,

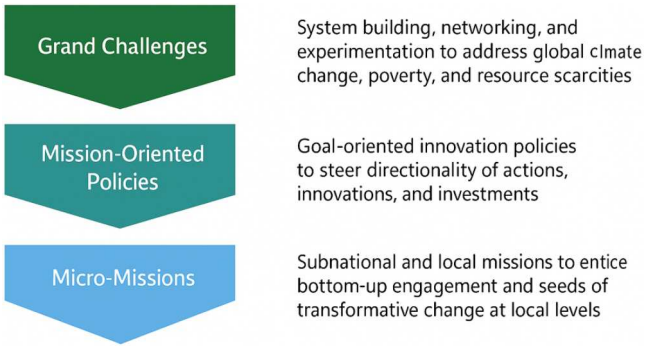

Figure 1. A nested hierarchy of innovation governance: from grand challenges addressed through national system-building, to mission-oriented policies steering sectoral directionality, to locally led micro-missions seeding transformative change from the bottom up.
Source: Authors.

aligning global climate imperatives with place-specific economic and social priorities (Uyarra et al., 2025) (Figure 1 and Table 1).

Beyond these three features, micro-missions link local innovation efforts to broader systemic shifts through the accumulation of 'small wins' that collectively generate 'seeds of transformative change' (Termeer & Metze, 2019b). Rather than expecting rapid or comprehensive solutions, this logic embraces incremental progress and maintains flexibility for ongoing experimentation (Davies et al., 2009; Hanna et al., 2022; Iammarino, 2005). Translating this potential into practice, however, requires coordinating complex relationships and mobilising key intermediaries (Johnstone et al., 2020; Kivimaa, 2014), as discussed further below.

2.2. Place-based orchestration of industrial clusters

Orchestration involves building legitimacy, managing tensions, resolving conflicts, and coordinating complementary capabilities across actor networks, typically led by a focal organisation (Paquin & Howard-Grenville, 2013; Weller & Beer, 2023). Orchestrators establish governing frameworks, foster innovation, and coordinate projects toward clearly defined goals (Ansell et al., 2017; Davies et al., 2023; Roehrich et al., 2023). These roles become particularly demanding in multi-scalar governance contexts (Jacobides et al., 2018; Labory & Bianchi, 2021), where orchestrators must simultaneously secure local stakeholder buy-in, maintain coherence with national policy frameworks, and translate between global climate imperatives and site-specific operational constraints (Johnstone et al., 2020; Kivimaa et al., 2019).

Orchestration challenges become particularly acute within industrial clusters, which are geographically concentrated networks of interconnected firms, suppliers and institutions within specific sectors (Porter,

Table 1. Comparison table of grand challenges, mission-oriented policies and micro-missions.

Category	Definition	Key features	Challenges	Policy and governance implications	Sample references
Grand challenges (GCs)	Complex systemic problems requiring multi-sectoral coordination	Multi-actor collaboration embedded in institutional contexts	Operationalisation difficulties. Multilevel coordination challenges	Requires regional embedding to avoid misalignment	Ferraro et al. (2015); George et al. (2016); Howard-Grenville et al. (2014)
Mission-oriented policies	Goal-directed transformation coordinating actors toward missions	Structured initiatives mobilising innovation for systemic change	Risks overlooking regional differences. Requires coordination	Emphasises place-based adaptation aligned with regional capacities	Mazzucato and McPherson (2018); Coenen and Morgan (2020); Flanagan et al. (2023); Brown (2021)
Micro-missions	Place-based interventions aligning global ambitions locally	Experimental solutions tailored to regional capacities	Scaling challenges. Balancing flexibility with coherence	Bridges policy objectives and regional adaptation	McCann et al. (2023); Davies et al. (2023); Doganova and Karnøe (2015); Fastenrath et al. (2023); Brown (2021)

2000). Decarbonising such clusters is especially complex because their shared infrastructure, co-located supply chains, and sectoral interdependencies mean that no single firm can transition in isolation (Bækkelund, 2021; Trippl et al., 2020). Coordinating this collective transition is further complicated by long time horizons: since industrial infrastructure typically operates for at least 20 years, investment decisions made today fundamentally shape progress toward 2050 net-zero targets (Balland et al., 2016; Cooper & Hawkes, 2024; Sovacool et al., 2024b). This may create path-dependent effects that extend well beyond initial implementation (Baranova, 2023; Bataille et al., 2018; Beer et al., 2023). Orchestrating diverse actors across different scales and timescales under these conditions is therefore especially demanding, requiring simultaneous attention to the structural, spatial, and temporal dimensions of industrial decarbonisation (Davies et al., 2025; Herman & Sovacool, 2024; Sovacool et al., 2024a).

2.3. Industrial decarbonisation in clusters and regions

As discussed, addressing the GC of climate change has spurred the emergence of mission-driven industrial policies designed to achieve transformative economic and environmental change (Ansari et al., 2013; Baranova, 2023; Ritala, 2024). The mission to achieve net-zero GHGs signifies a radical shift in industrial policy – one that emphasises rapid decarbonisation alongside careful integration of policy mixes (Lockwood et al., 2025; Sovacool et al., 2026), departing from incremental environmental gains toward integrated, mission-driven strategies for transformative change inside industrial clusters (Herman et al., 2025b, 2025c).

Achieving net-zero involves reimagining not only environmental strategies but also the underlying economic and social structures of regional systems (McCann & Soete, 2020). This often gives rise to competing imaginaries, where contestation occurs between incumbent interests and 'less powerful local actors clinging to their regional imaginary against sociotechnical imaginaries imposed top-down by powerful institutions' (Hine et al., 2024, p. 5). Such contestation shapes whether stakeholders accept or resist decarbonisation pathways and technologies (Beer et al., 2020; Sovacool et al., 2018). Place-based intermediaries – referred to as 'place-based leaders' (Grillitsch & Sotarauta, 2020) and 'systematic intermediaries' (Kivimaa et al., 2019) – coordinate multi-stakeholder networks and bridge scales to advance mission-oriented goals in territorial contexts (Flanagan et al., 2023), constructing and sustaining local imaginaries that align local needs with broader decarbonisation (Eckersley et al., 2023; Geels et al., 2023).

Local missions are typically better positioned than national missions to leverage such intermediaries (Gibbs & Jensen, 2022), emerging from arrangements between regional governments, firms, and investors (Reypens et al., 2021). Nevertheless, local intermediaries must navigate complex policy landscapes and the layered, sometimes competing jurisdictions of local, regional, and national governance (Jakobsen et al., 2022; Steen & Hansen, 2018; Uyarra et al., 2016). These challenges are especially pronounced where industrial decarbonisation depends on place-sensitive policy mixes: locally tailored combinations of instruments and incentives needed to steer firms toward green reorientation within specific industrial and institutional contexts (Deutz & Gibbs, 2008; Sjøtun & Njøs, 2019; Trippl et al., 2020).

Intermediaries are embedded in institutional fields that shape their agency and constraints (Zietsma et al., 2017), and their capacity to construct place-based imaginaries depends on the structural conditions within which they operate (Davies et al., 2025; Devine-Wright, 2022). The role of intermediaries as part of micro-missions, however, remains poorly understood (Bush et al., 2017). Decarbonisation pathways unfold across multi-scalar systems demanding flexibility in response to regulatory shifts, technological uncertainties and institutional constraints (MacKinnon et al., 2019; Vosman et al., 2023), with transformation possibilities shaped by dynamics beyond the local level (Barnes et al., 2024; Binz et al., 2016; Breul et al., 2021), while local expertise remains decisive in overcoming structural and technological barriers (Breschi & Lissoni, 2009; Cortinovis & Van Oort, 2019). Understanding how intermediaries navigate these multi-scalar dynamics is therefore fundamental to assessing how micro-missions can function effectively within existing governance structures (Geels et al., 2023; Lai & Devine-Wright, 2024; Skidmore, 2024; Sovacool et al., 2024b). This is particularly evident where national frameworks and local implementation generate tensions, as illustrated by the UK's evolving mission-driven industrial policy landscape, to which we now turn.

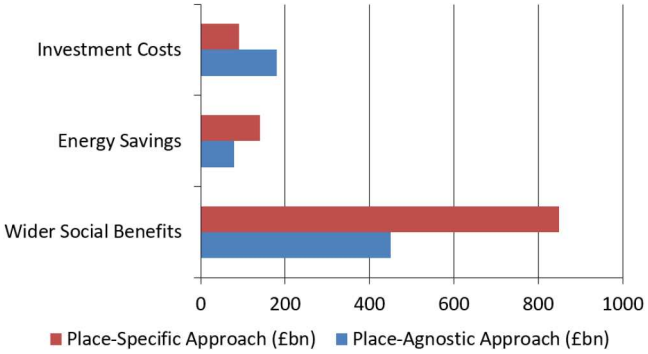

Figure 2. Monetary benefits of place-based approaches in the UK.
Source: Adapted from PwC/Innovate UK (2022).

3. Mission-driven industrial policy in the UK: the case of Shoreham Port

Industrial clusters in the UK present a compelling context for studying mission-driven industrial decarbonisation. Early mission-oriented policy was largely nationally coordinated: the 2017 Industrial Strategy focused on fuel switching and low-carbon technologies for legacy industrial operations (Department for Business, Energy and Industrial Strategy (BEIS), 2022a, 2022b; Tomlinson & Branston, 2018), with priorities subsequently shifting toward 'levelling up' and post-Brexit growth agendas (Garvey, 2020; Sunley et al., 2022).

Over time, however, policy has moved toward more targeted, place-based missions, including the Industrial Energy Transformation Fund, the Industrial Decarbonisation Programme (BEIS, 2024; Climate Change Committee (CCC), 2024), the Clean Maritime Demonstration Competition, and maritime and manufacturing initiatives such as the British Industry Supercharger (Department for Business & Trade (DBT), 2024). This shift reflects a growing recognition that nationally coordinated missions often generate tensions with local implementation, and that place-sensitive approaches may be more effective (DBT, 2025). As the Skidmore Report argues:

> Local action is key to delivering net-zero in the cheapest and most effective way possible. … Taking a more locally led, place-based approach can deliver a net-zero transition with more local support, better tailoring to local needs, and bring economic and social benefits.
>
> (Skidmore, 2024, pp. 184, 193, 196)

These missions aim to attract investment, foster innovation, and create employment across regional contexts (Baranova, 2023; Ogwumike et al., 2024; Rattle et al., 2024) (Figure 2).

3.1. Shoreham Port's decarbonisation mission

Shoreham Port represents a distinctive case of industrial decarbonisation in action. Established in 1760, this centuries-old maritime hub in West Sussex currently handles 2 million tonnes of cargo annually – including timber, steel, aggregates and petroleum – serving as a critical economic hub for Sussex and the South East. Unlike major industrial clusters, Shoreham sits adjacent to the urban populations of Brighton & Hove, creating a unique context where industrial operations must balance decarbonisation with community proximity (Figure 3). As a Trust Port, it operates as a self-governing entity that reinvests all profits into port development. This institutional structure, combined with its strategic role, positioned Shoreham to recently secure public funding through UK Research & Innovation (UKRI) and the Department for Energy Security and Net Zero's (DESNZ) Local Industrial Decarbonisation Plan (LIDP) (DESNZ, 2024). Its net-zero by 2040 plan was developed in collaboration with Adur and Worthing councils, Brighton & Hove City Council, Barrett Steel Ltd, Cemex UK, Local Fuels Ltd, Ricardo UK and the University of Sussex.

3.2. Data collection

A mixed-methods approach was employed to address our main research question: How are *place-based micro-missions* orchestrated to meet GCs such as decarbonisation and climate change? Our primary source

Figure 3. Shoreham Port industrial cluster partners.
Source: Shoreham Port Authority (SPA) (2024).

of data was 45 semi-structured interviews, which occurred from January to June 2024, and centred on planning, technologies, orchestration, implementation, challenges and regulatory complexity (see Appendix A1 in the supplemental data online). We drew on a range of constituents, including representatives from local and national government, non-governmental organisations (NGOs) as well as industry (small, medium and large enterprises). We focused on sampling and snowball techniques to add depth and relevance, while theoretical frameworks guided data coding and analysis (Baumgartinger-Seiringer et al., 2022; Glaser & Strauss, 2017). To anonymise respondents, each was coded as R1–R45. To ensure reliability across stakeholder groups while allowing flexibility to address context-specific themes (Kallio et al., 2016), we used a semi-structured interview guide (see Appendix A2 online). Ethics approval was granted by the University of Sussex Social Sciences and Arts C-REC board (reference ER/BS289/6).

Two surveys complemented the interviews: one targeting the 14 industrial tenants, and the other surveying 72 smaller tenants at the port. These surveys captured perspectives of actors directly engaged with or impacted by the port's transition. Twelve monthly site visits occurred at the port during 2024, with additional site visits to the Port of Poole and Newhaven Port. Finally, we conducted document analysis on 32 policy reviews and industry publications (see Appendix A3 online). This triangulated approach is consistent with best practices in regional innovation systems research (Balland et al., 2015), and offers insights into strategic planning, operational challenges and the broader implications for place-based industrial decarbonisation.

3.3. Data analysis

We employed abductive thematic analysis, iterating between empirical data and theoretical frameworks to generate insights from emergent patterns (Denzin & Lincoln, 2011; Timmermans & Tavory, 2012). Thematic coding identified stakeholder coordination challenges and policy interactions (Beer et al., 2023; Coenen et al., 2021; Eckersley et al., 2023). Initial coding suggested Shoreham Port Authority's (SPA) orchestration role was primarily administrative – convening stakeholders and securing funding.

Deeper analysis revealed active orchestration wherein SPA coordinated and shaped micro-mission legitimacy, functioning as a conduit between local firms and policymakers (R17, R21). Triangulation across interviews, policy documents and industry reports identified how SPA performed this orchestration role.

Drawing on its Trust Port credibility, SPA secured funding and advocated for micro-missions within national structures, bridging local and centralised governance (R21, R24). Simultaneously, SPA successfully steered through competing institutional logics, balancing private-sector cost concerns, regulatory constraints and community environmental priorities (R12, R19).

4. Findings: orchestrating industrial decarbonisation at Shoreham Port

This section details our findings from the interviews along three dimensions: multi-scalar orchestration; micro-missions in action; and challenges and structural barriers.

4.1. Multi-scalar orchestration: place-based decarbonisation

Shoreham Port's decarbonisation mission illustrates orchestration in place-based transitions, where a lead actor coordinates public, private and third-sector efforts to advance shared objectives. SPA plays a central role as 'the glue holding everything together' (R17). SPA's orchestration operates across three scales: upward (securing UKRI and DESNZ funding), horizontal (coordinating local tenants and stakeholders) and downward (translating national net-zero targets into site-specific interventions).

Working alongside local authorities, NGOs, and industry partners, SPA harmonises technical expertise, regulatory processes and local priorities with national net-zero targets. SPA's long-standing role as port operator enables mediation between regulatory, commercial and sustainability priorities (R23) – aligning diverse stakeholder interests, shaping local governance frameworks, and ensuring industrial decarbonisation remains strategic, feasible and place-sensitive (R21). Rather than top-down mandates, this involves coordination across multiple public and private stakeholders (R5), leveraging political influence and engagement with local communities (R4, R9).

Operating as both orchestrator and change agent, SPA bridges investment flows, industrial tenants and community stakeholders to advance projects such as onshore wind expansion and energy storage (R21). It has become 'a positive force within the local political infrastructure, capable of driving large-scale projects' (R23), operating at the 'frontline' of the net-zero transition to facilitate place-based adaptation of national policy (R10). Strong local buy-in has followed, with respondents emphasising the practical and theoretical advantages of structuring decarbonisation locally and the key role of local leadership in advancing net-zero ambitions (R30, R43). Relationships with the Greater South East Net Zero Hub and Energy Systems Catapult have proven instrumental in bridging public, private and research-sector initiatives (R37).

Yet this orchestration confronts significant structural constraints. Addressing GCs at the local scale demands more than technical capacity; it requires agency to construct place-based responses and strategic planning to sustain them (Thomas & Ritala, 2022). At Shoreham, the spatial concentration of port operations created favourable conditions for exactly this: shared infrastructure, co-located supply chains, and established relationships among firms reduced coordination costs and enabled SPA to broker collective action that dispersed actors could not have achieved independently (R7, R25).

This brokering role, however, exposed a fundamental tension. Local actors possessed the contextual knowledge needed to identify feasible interventions yet lacked authority over the national funding architectures and regulatory frameworks that ultimately determined what was possible (R12, R21). SPA's Trust Port status provided an unusual capacity to operate across both levels simultaneously, securing national funding whilst maintaining local legitimacy. Yet even this privileged position could not fully resolve the persistent misalignments between centralised policy design and local implementation realities.

What emerged was a distinctly adaptive form of orchestration, less about imposing solutions than cultivating conditions for collective problem-solving. SPA facilitated deliberation around onshore wind expansion, hydrogen feasibility studies, and electrification infrastructure (R23), whilst actively building shared frameworks of ownership and trust. As one respondent put it, effective engagement means 'taking it to the people. … It's got to have an openness to it to cultivate co-creation' (R16). This also meant 'sharing information and infrastructure, such as electricity connections, [which] adds weight to local engagement' (R19). Legitimacy was constructed through practical collaboration rather than formal governance arrangements.

4.2. Micro-missions in action: translating global targets into local interventions

Micro-missions function as scale-bridging mechanisms, translating global climate imperatives into place-based interventions whilst maintaining coherence with national policy frameworks. Shoreham's decarbonisation trajectory demonstrates how micro-missions operationalise multi-scalar orchestration: its coal-driven industrial past created legacies of GHGs and air quality issues (R2), and through targeted micro-missions developed with local firms and intermediaries, SPA has purposely leveraged existing industrial assets to realign processes with national climate goals whilst addressing place-specific environmental and economic priorities. Two distinct phases embody different logics of intervention. Early deployments such as solar arrays (2520 kWp), onshore wind turbines (4 MW), and electric marine heat pumps established renewable energy infrastructure and operational credibility (Table 2). Collectively removing nearly 1100 t CO_2 annually, these investments created the technical foundation and stakeholder confidence necessary for more ambitious interventions, demonstrating SPA's capacity to deliver on commitments and building the trust essential for subsequent experimental initiatives.

Current and emerging micro-missions represent fundamentally different interventions, characterised by experimentation, multi-scalar value propositions and adaptive learning (Table 3). The £1 million Berth Zero project, with £750,000 in public funding (Department for Transport – DfT) and £250,000 from SPA, demonstrates how micro-missions create multiple value streams: commercial viability for operators, community environmental benefits, and policy demonstration for national frameworks (R4). By providing electric shore power for fishing vessels, it eliminates diesel dependence and reduces local air pollution, affecting surrounding residential communities, while advancing national objectives around maritime decarbonisation. This dual value proposition illustrates how effective micro-missions bridge scales rather than operating at a single governance level. Cemex UK's shore power installation further exemplifies the experimentation logic distinguishing micro-missions from conventional projects (R22). Funded through the Clean Maritime Decarbonisation Competition Round 4, it integrates renewable generation with storage in dynamic energy management systems (R21). The 250 kW system simulates 1.5 MW discharge capacity for aggregate vessels, testing grid integration, operational logistics and business models before committing major capital.

Sequential development has proven effective throughout. Early wind and solar deployments built operational experience essential for planning the 6 MW expansion; hydrogen feasibility studies informed infrastructure siting; Berth Zero's demonstrated feasibility enabled Cemex UK's commercial scaling. Each micro-mission reshapes stakeholder expectations, builds technical capabilities, and creates foundations for subsequent interventions, reflecting an additive logic in which projects build upon rather than duplicate prior efforts. The pipeline of nine potential micro-missions reveals how accumulated experience, LIDP funding, and established stakeholder networks create conditions for continued transformation: battery storage near demand centres; grid upgrades creating autonomous microgrids; HGV charging infrastructure; hydrotreated vegetable oil (HVO) fuelling points; green hydrogen feasibility studies; onshore wind expansion adding 6 MW; solar expansion adding 1400 kWp (R12, R21).

Established relationships with the Greater South East Net Zero Hub and Energy Systems Catapult provide the technical expertise and policy connections needed to navigate regulatory frameworks and access funding mechanisms. The progression from early low-carbon projects to more ambitious recent interventions reflects iterative, place-based adaptation rather than wholesale transformation (R19), balancing ambition with operational feasibility. What makes this effective is the capacity to integrate local priorities – air quality, operational continuity, economic viability – with broader imperatives around emissions reduction and it is cultivated through sustained bottom-up engagement that transforms abstract climate targets into context-sensitive solutions delivering tangible community benefits (R43). As one respondent put it, such

Table 2. Current decarbonisation initiatives at Shoreham Port.

Activity	Measure	Impact
Solar array	2520 kWp	820 t CO_2 offset per year
Onshore turbines	4 MW	160 t CO_2 offset per year
Electric vehicles/fleet	Deployed January 2021	6.4 t CO_2 removed per year
Gas-to-liquids (GTL) fuel	280,000 litres used	37.5 t CO_2 removed per year
Sea bins	438 million litres displaced/year	2.8 t of debris removed per year
Marine-source heat pump	Deployed March 2021	70 t CO_2 removed per year

Source: Shoreham Port Authority (SPA).

Table 3. Shoreham Port's industrial decarbonisation micro-missions.

Micro-mission	Status	Project details
Battery storage	Potential	Installations near high-demand areas and renewable sources
Berth zero	Current	Electric shore power for fishing vessels replacing diesel. £750,000 Department for Transport (DfT) grant, £250,000 Shoreham Port Authority's (SPA) contribution
Grid upgrade	Potential	Microgrid integrating renewables to reduce grid reliance and costs
Heavy goods vehicle (HGV) zero	Potential	Electric vehicle (EV) charging for HGVs, focused on SPA's fleet
Hydrotreated vegetable oil (HVO) fuelling point	Potential	Shared facility. Supply secured, land allocated
Hydrogen production	Potential	Green hydrogen feasibility completed. Locations analysed
Onshore wind expansion	Potential	Current: 4 MW (two turbines). Expansion: 6 MW (six turbines)
Shorepower at commercial berths	Current	Cemex UK: 250 kW supply, simulating 1.5 MW discharge
Solar photovoltaic expansion	Potential	Current: 2520 kWp. Expansion: 1400 kWp at transit sheds

Source: Shoreham Port Local Industrial Decarbonisation Plan (LIDP).

collaboration becomes 'a kind of DNA, or the central backbone of the [decarbonisation] journey' (R38). Yet well-designed micro-missions and capable orchestration are necessary but not sufficient conditions for success. Structural barriers systematically constrain even promising place-based initiatives, and it is to these tensions that the following section turns.

4.3. Challenges, structural barriers and enabling conditions

While Shoreham's micro-missions demonstrate how place-based orchestration can translate global climate imperatives, implementation exposes persistent tensions between local capabilities and structural constraints. These tensions raise a fundamental question: what structural barriers systematically undermine place-based approaches to GCs, and under what conditions can orchestration overcome them? Answering this requires moving beyond what micro-missions achieve to examine what constrains and enables them, the focus of this section.

The first challenge emerges from definitional ambiguity. Even establishing what constitutes 'port emissions' sparked disputes among diverse tenants, each with distinct emissions profiles and competing interpretations of responsibility (R10, R23). Regulatory frameworks compound this ambiguity: shipping emissions cross boundaries that governance structures fail to recognise, leaving offshore operations in classification limbo (R19). Without shared emissions measurement protocols, stakeholders talk past each other. As one respondent observed, 'sharing information and infrastructure, such as electricity connections, adds weight to local engagement' (R19) – yet establishing such frameworks requires orchestration capacity many clusters lack (R2, R9).

Operational constraints impose additional barriers. Heavy machinery electrification illustrates the challenge: cranes and forklifts demand continuous power under high functionality requirements, resisting straightforward technological substitution (R2, R39). Micro-missions in industrial clusters must therefore balance decarbonisation ambitions against operational viability – a tension Shoreham navigates through incremental experimentation (R18, R24, R43). Berth Zero demonstrated feasibility under real conditions, building confidence for commercial scaling through Cemex UK's project (R2, R4, R12). This 'small wins' approach embeds innovation within ongoing operations rather than disrupting them, creating pathways where wholesale transformation would trigger resistance.

Yet the most significant barriers stem from funding architecture mismatches. Traditional models designed for incremental improvements struggle to accommodate industrial decarbonisation's scale and complexity (Gudde et al., 2021). Short project cycles clash with infrastructure requiring multi-decade planning horizons – particularly acute for port installations that must operate for 20 or more years (R12, R21, R39). Capital-intensive industrial projects such as hydrogen production and port electrification face structural barriers to scaling (Walker, 2024), requiring integration of diverse private sector contributions across spatial, institutional, and sectoral boundaries (R3, R7, R8). Traditional financing models, in short, cannot accommodate the scale and risk profiles of first-of-a-kind industrial decarbonisation projects.

Orchestration can translate mission frameworks into context-sensitive strategies, enabling targeted interventions that align local capabilities with national objectives. As one respondent observed, 'there are clear advantages to taking a place-based approach – by concentrating efforts geographically, you can reduce costs

and create focused networks of innovation' (R25). Yet these capacities repeatedly encounter a deeper structural problem: industrial decarbonisation demands governance frameworks capable of aligning actors, resources, and time horizons across scales, while current architectures neither support the orchestration work required nor the experimental orientation on which place-based missions depend.

Navigating these misalignments falls to local actors, who must improvise innovative financing mechanisms and multi-scalar coordination that existing institutions are poorly equipped to deliver. Effective micro-missions in response to GCs therefore require more than capable orchestrators, but rather depend on reconfiguring the funding architectures, regulatory frameworks, and governance structures within which orchestration takes place. Without this, even well-designed place-based initiatives risk stalling not from lack of ambition or local capacity, but from structural conditions that were never designed to support them.

5. Discussion: implications for industrial decarbonisation missions

Shoreham Port demonstrates that effective industrial decarbonisation depends on orchestrating micro-missions under structural constraints that systematically undermine both coordination and experimentation. Table 4 synthesises five mechanisms explaining how place-based actors navigate these tensions, revealing critical capacities most industrial clusters lack.

First, there is sequential intervention logic (category 1). Berth Zero's demonstrated feasibility enabled Cemex UK's commercial scaling, which in turn built the confidence and institutional momentum needed to pursue hydrogen feasibility studies and 6 MW wind expansion. Rather than deploying multiple technologies simultaneously, each intervention reshaped expectations and established the foundations for the next – an additive logic in which early wins generate the credibility and learning that make subsequent

Table 4. Mechanisms, challenges and implications for industrial decarbonisation micro-missions.

Category	Mechanism	Shoreham evidence	Key challenge	Policy implication	Supporting references
(1) Sequential intervention logic	Small wins generate momentum through additive staging, not parallel deployment	Berth Zero (R2, R4, R12) enabled Cemex UK scaling (R22), building confidence for hydrogen and 6 MW wind expansion	Prevailing frameworks emphasise portfolio approaches deploying technologies simultaneously	Mission design should incorporate explicit sequencing strategies staging interventions to build cumulative momentum	Termeer and Dewulf (2019a); Termeer and Metze (2019b); Wanzenböck et al. (2020)
(2) Temporal architecture	Funding cycles (two to three years) misaligned with infrastructure life cycles (≥ 20 years) and net-zero horizons (2050)	The Local Industrial Decarbonisation Plan (LIDP) enabled planning but not industrial-scale implementation (R12, R21, R39)	Traditional financing designed for incremental improvements cannot accommodate transformative infrastructure timescales	Require financing architectures explicitly aligning investment horizons with infrastructure life cycles	Labory and Bianchi (2021); Di Vaio et al. (2018); Pultar and Ferrier (2022)
(3) Multiple value propositions	Dual benefits construct enabling coalitions, not merely supplement decarbonisation	Shore power addressed emissions, air quality, operational costs, grid integration simultaneously (R2, R12) – aligning vessel operators, communities, policymakers	Single-objective interventions fail where actors bear costs unequally	Mission design must actively construct multiple value streams addressing diverse stakeholder priorities	Lai and Devine-Wright (2024); Ogwumike et al. (2024); Sunley et al. (2023)
(4) Orchestration capacity	Intermediaries coordinate across scales – constitutive, not derivative function	Shoreham Port Authority (SPA) mediated industrial costs, community expectations and regulatory requirements across three governance scales (R17, R21, R23)	Most clusters lack institutional positioning for simultaneous upward engagement and downward legitimacy	Recognise orchestration as specialised governance work requiring dedicated institutional support and resources	Grillitsch and Sotarauta (2020); Henderson et al. (2024a, 2024b); Roehrich et al. (2023)
(5) Multi-scalar coherence	Scaling requires building orchestration capacity across diverse contexts, not replicating pilots	National frameworks designed for uniform rollout clashed with place-specific implementation contexts (R12, R25)	Different clusters face distinct infrastructure, regulatory, stakeholder configurations shaping feasible pathways	Establish governance infrastructure coordinating portfolios whilst facilitating systematic cross-site learning	Trippl et al. (2020); Uyarra et al. (2025); Skidmore (2024)

transitions possible (Termeer & Dewulf, 2019a; Termeer & Metze, 2019b). This has implications for how mission frameworks are designed. Portfolio approaches that emphasise technology deployment (Wanzenböck et al., 2020) may nevertheless underestimate the importance of sequencing in contexts where trust, infrastructure and investment confidence must be built incrementally. Effective industrial decarbonisation, this case suggests, requires explicit staging strategies that allow cumulative transformation to unfold at a pace local governance structures can sustain.

The second mechanism is temporal architecture alignment (category 2). A persistent tension at Shoreham involved the incommensurability of overlapping timescales: funding schemes such as the Clean Maritime Competition operate on two- to three-year cycles, port infrastructure operates for 20 or more years, and net-zero targets extend to 2050. Traditional financing models cannot accommodate this mismatch because they were designed for incremental improvements within stable systems (Labory & Bianchi, 2021), rather than the transformative infrastructure investments required for industrial decarbonisation. Short funding cycles force local actors to pursue fragmented, project-by-project approaches that undermine the long-term sequencing logic on which effective micro-missions depend. What is needed, therefore, is not simply more funding but financing architectures that align investment horizons with infrastructure life cycles – a governance challenge as much as a resource allocation one (Di Vaio et al., 2018; Pultar & Ferrier, 2022).

Third, there are multiple value propositions (category 3). Micro-missions are not merely analytical constructs; they function as de facto industrial policy instruments, channelling public finance, shaping private investment expectations, and restructuring the institutional relationships through which decarbonisation pathways become viable. Berth Zero operated simultaneously as a demand-side signal to grid operators, a legitimation device for subsequent commercial investment, and a coordination mechanism aggregating stakeholder interests that conventional sectoral instruments address in isolation. By tackling emissions, air quality, operational costs, and grid integration within a single intervention, Berth Zero constructed coalitions that a single-objective approach could not have assembled. The multi-scalar value proposition is therefore not merely a co-benefit of good mission design (Lai & Devine-Wright, 2024; Ogwumike et al., 2024); it is a condition of political and operational feasibility. Assuming that environmental imperatives alone suffice to mobilise diverse stakeholders underestimates the degree to which missions must actively construct the coalitions that sustain them.

Orchestration as a constitutive capacity is a fourth mechanism (category 4). SPA's ability to mediate simultaneously between industrial costs, community expectations, and regulatory requirements – operating across three governance scales – was not merely incidental. Shoreham's status as a Trust Port provided an unusual institutional position: the capacity for upward engagement to secure national funding whilst maintaining downward legitimacy with local stakeholders, a combination most industrial clusters lack (Grillitsch & Sotarauta, 2020; Henderson et al., 2024b; Roehrich et al., 2023). Recognising orchestration as an industrial policy capability, rather than a managerial by-product of mission design, has direct implications for how governments allocate resources and design institutions. Funding intermediary organisations, Trust Ports, and regional energy hubs to perform sustained multi-stakeholder coordination is itself a form of industrial policy, one that existing frameworks systematically underprovide relative to direct technology subsidies.

Finally, there is multi-scalar coherence for scaling (category 5). Where pilot-to-adoption transitions stalled at Shoreham, the obstacle was rarely technical inadequacy but rather governance misalignment. National frameworks designed for uniform rollout repeatedly clashed with place-specific contexts shaped by distinct infrastructure configurations, regulatory environments and stakeholder landscapes. Scaling micro-missions therefore requires orchestration capacity enabling contextual adaptation whilst maintaining strategic coherence across governance levels (Trippl et al., 2020). Rather than identifying and replicating 'winning' technologies, effective scaling means coordinating portfolios of diverse micro-missions that can each respond to the particularities of place (Cowling & Brown, 2025).

Rather than treating missions as goal-specification problems solved through target-setting and technology selection, the Shoreham case suggests they are fundamentally coordination problems requiring layered institutional design: financing instruments aligned with infrastructure life cycles, intermediary organisations with sustained cross-scalar mandates, and staging strategies that allow cumulative capability-building

rather than isolated deployment. Policy architecture that lacks these features may generate ambitious targets but underwhelming delivery in practice.

In light of these mechanisms, five priorities emerge. First, investment in intermediary capacities beyond project funding is required. The Greater South East Net Zero Hub and Energy Systems Catapult proved essential for translating national goals into actionable local strategies (R37), enabling the kind of sustained multi-stakeholder coordination individual actors alone rarely can provide.

Second, ongoing experimentation should be prioritised over premature commitment to single pathways. BerthZero's £1 million demonstration proved feasibility before Cemex UK's commercial scaling (R22), with solutions varying by context in ways that uniform national rollout frequently overlooks (R2, R4, R12).

Third, workforce development must be aligned with infrastructure timescales. Training programmes require three to five years whilst funding operates on two- to three-year cycles, creating systematic skills shortages (R21, R25). Long-term policy commitment is needed to signal sustained demand to educational institutions.

Fourth, financing should be staged to match asset life cycles. Although LIDP funding supported planning, industrial-scale implementation requires 20 or more year horizons. Funding should enable iterative capability-building across multiple rounds as learning accumulates, rather than operating through discrete project cycles.

Fifth, governance infrastructure should be established to coordinate portfolios of diverse micro-missions whilst facilitating systematic cross-site learning. Policy should enable comparative analysis informing both local implementation and national strategy – in particular to maintain place-based adaptation whilst achieving systemic impact (Skidmore, 2024).

Taken together, these mechanisms advance mission-oriented policy by highlighting that success depends on orchestration capacities and governance architectures most industrial clusters lack. Effective industrial decarbonisation requires institutional innovation alongside technological transformation, building place-based capacity to coordinate experimentation under structural constraints that existing institutions struggle to accommodate.

6. Conclusions: locally embedded problem framing and solutions

Mission-led industrial policy has emerged as a central instrument for addressing the GC of decarbonisation, yet how such missions are operationalised in the places where emissions are produced remains poorly understood (Bailey et al., 2025). This study shows how micro-missions at Shoreham Port translate this policy ambition into locally coordinated action, revealing orchestration as the constitutive governance capacity underpinning place-based industrial transformation. Shoreham Port demonstrates that addressing climate imperatives locally requires orchestrated integration of three interdependent mechanisms: place-based intermediaries constructing governance conditions, micro-missions enabling experimentation, and collective problem-solving that builds momentum over time. Treating these as separate implementation tracks misses how their purposeful integration creates transformative potential. Shoreham's progression shows this integration in practice.

What makes micro-missions theoretically interesting is that they are ongoing, emergent, and shaped by the contexts in which they unfold (Henderson et al., 2024a). But this also means that they are difficult to study. Unlike national missions, which can be evaluated against predetermined targets and timelines, micro-missions generate their own criteria of success as they proceed (Uyarra et al., 2025). The goalposts move, not because of poor planning, but because each intervention reshapes what actors believe is possible, who is willing to collaborate, and what the next problem worth solving actually is. This iterative quality distinguishes micro-missions from conventional policy instruments, and demands analytical frameworks capable of capturing process and emergence rather than simply inputs and outputs (Henderson et al., 2024b).

The paper's first theoretical contribution is to show that contextual embeddedness is not a background condition for micro-missions but their operative mechanism. The capacity to translate global imperatives into locally actionable interventions depends on intimate knowledge of place: its industrial legacies, institutional architectures, stakeholder landscapes, and particular frictions that make coordination difficult (McCann et al., 2025). This knowledge cannot be imported from elsewhere or specified in advance by

national frameworks. It is produced through sustained presence, accumulated trust, and the willingness to let local problems rather than national targets define the terms of engagement. In this sense, micro-missions represent a genuinely different epistemology of policy, one that begins with place rather than arriving at it (Trippl & Tödtling, 2025).

The second contribution concerns the generative role of sequencing. The additive logic through which early interventions reshape expectations and create foundations for subsequent ones has not been adequately theorised in existing mission scholarship, which has tended to privilege portfolio breadth over temporal depth (Priebe & Herberg, 2024). What the Shoreham case reveals is that momentum is not simply a product of resources or political will. It is manufactured, incrementally, through the careful staging of interventions that build credibility. The implication for missions is that scaling is not achieved by replicating successful interventions uniformly across sites, but by building the orchestration capacity that allows each place to construct its own additive sequence. In turn, this helps to produce a portfolio of diverse micro-missions that are individually place-specific but still remain consistent with national frameworks and goals.

The third contribution is to reframe orchestration as constitutive rather than merely facilitative. In the facilitative view, orchestration speeds up missions that could, in principle, proceed without it. In the constitutive view, by contrast, the mission only exists because of the particular work of coordination, legitimation, and coalition-building that orchestrators perform. This reframes how both scholars and policymakers should think about the governance of place-based industrial change: not as a problem of aligning willing actors behind clear objectives, but as a problem of producing the conditions under which actors become willing and objectives become shared.

These contributions carry a broader implication for how GCs are understood. The dominant paradigm treats them as problems in search of solutions, defined at the global or national level and delivered through institutional and technological mechanisms to local contexts that receive them (Bours et al., 2022). What micro-missions suggest is something more unsettling: that for challenges as spatially and socially complex as industrial decarbonisation, the problem and the solution must be co-produced at the local level, simultaneously and iteratively, by actors who are themselves transformed by the process.

Governments investing in industrial decarbonisation cannot treat place-based delivery as an implementation detail to be resolved after national targets are set. Effective micro-mission systems require dedicated intermediary organisations with sustained cross-scalar mandates, financing architectures aligned with infrastructure life cycles rather than short funding cycles, and explicit staging strategies that allow cumulative capability-building to precede scaled deployment. These are not refinements to existing instruments; they are preconditions for mission success that current frameworks systematically underprovide. Important questions remain: how do experimental projects transition to widespread adoption, and what differentiates sustained orchestration from dissipating momentum? How do governance structures enable effective orchestration in the absence of unified institutional authorities, and what distinguishes publicly controlled from privately fragmented clusters?

The relationship between orchestration capacity and workforce development also warrants investigation, since skills development both enables and constrains transition pathways in ways that existing frameworks rarely capture (Hearne et al., 2025; Sjøtun & Njøs, 2019). And as regional imaginaries increasingly contest top-down sociotechnical visions (Lai & Devine-Wright, 2024), understanding how competing narratives are reconciled, suppressed or transformed becomes central to any adequate account of place-based industrial change. Net-zero will not be delivered by national strategy alone. Industrial decarbonisation is, at heart, a local challenge: it unfolds in places with particular infrastructures, institutional histories and stakeholder configurations that no uniform framework can adequately specify in advance. What Shoreham demonstrates is that place-based implementation is not merely a delivery mechanism for missions designed elsewhere; it is the site at which missions become real, where abstractions are converted into coordinated action, and where the governance capacities on which systemic transformation depends are built. Recognising this demands a fundamental reorientation of mission policy: from target-setting at the centre to capacity-building at the place.

Author contributions

CRediT: **Kyle S. Herman:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing; **Andrew Davies:** Funding

acquisition, Project administration, Supervision, Writing – original draft, Writing – review & editing; **Stephan Manning:** Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This research received funding as part of Innovate UK's Local Industrial Decarbonisation Plan (LIDP) Competition [Innovate UK project number 10089784].

Ethics statement

This study received ethical approval from the University of Sussex Social Sciences and Arts Cross-Schools Research Ethics Committee [reference number ER/BS289/6]. All research participants provided informed consent prior to participation. They were informed of the nature and purpose of the study, and consent was given voluntarily.

ORCID

Kyle S. Herman http://orcid.org/0000-0002-0070-2390
Andrew Davies http://orcid.org/0000-0002-5785-8548
Stephan Manning http://orcid.org/0000-0002-9575-4168

References

Ansari, S., Wijen, F., & Gray, B. (2013). Constructing a climate change logic: An institutional perspective on the 'tragedy of the commons'. *Organization Science*, *24*(4), 1014–1040. https://doi.org/10.1287/orsc.1120.0799

Ansell, C., Sørensen, E., & Torfing, J. (2017). Improving policy implementation through collaborative policymaking. *Policy & Politics*, *45*(3), 467–486. https://doi.org/10.1332/030557317X14972799760260

Atienza, M., Lufin, M., & Breul, M. (2025). (Un)linking industrial path development and development outcomes through asset mobilisation: The decline of the territorial embeddedness of labour in mining regions. *Regional Studies*, *59*(1), 1–14. https://doi.org/10.1080/00343404.2024.2342445

Bailey, D. (2024). The comparative political economy of sustainability transitions: Varying obstacles, accelerants and power in national capitalisms. *Environmental Innovation and Societal Transitions*, *51*, 100853. https://doi.org/10.1016/j.eist.2024.100853

Bailey, D., De Propris, L., Dimos, C., Fai, F. M., Hardy, S., & Tomlinson, P. R. (2026). A critical review of the UK's *modern industrial strategy*: Lessons for 'place-based' policy. *Regional Studies*, *60*(1), 2597466. https://doi.org/10.1080/00343404.2025.2597466

Bailey, D., De Propris, L., Gansauer, G., & Tomlinson, P. R. (2025). Industrial strategy reborn: Global trends, tensions and trajectories. *Contemporary Social Science*, *20*(2–3), 159–174. https://doi.org/10.1080/21582041.2025.2599054

Bailey, D., Pitelis, C. N., & Tomlinson, P. R. (2023). Place-based industrial and regional strategy – Levelling the playing field. *Regional Studies*, *57*(6), 977–983. https://doi.org/10.1080/00343404.2023.2168260

Bækkelund, N. G. (2021). Change agency and reproductive agency in the course of industrial path evolution. *Regional Studies*, *55*(4), 757–768. https://doi.org/10.1080/00343404.2021.1893291

Balland, P.-A., Belso-Martínez, J. A., & Morrison, A. (2016). The dynamics of technical and business knowledge networks in industrial clusters: Embeddedness, status, or proximity? *Economic Geography*, *92*(1), 35–60. https://doi.org/10.1080/00130095.2015.1094370

Balland, P.-A., Boschma, R., & Frenken, K. (2015). Proximity and innovation: From statics to dynamics. *Regional Studies*, *49*(6), 907–920. https://doi.org/10.1080/00343404.2014.883598

Baranova, P. (2023). Place-based business support towards net zero: Enabling through the place-policy-practice nexus. *Journal of the British Academy*, *11*, 57–95. https://doi.org/10.5871/jba/011s4.057

Barnes, J., Hansen, P., Kamin, T., Golob, U., Darby, S., Van Der Grijp, N. M., & Petrovics, D. (2024). Creating valuable outcomes: An exploration of value creation pathways in the business models of energy communities. *Energy Research & Social Science*, *108*, 103398. https://doi.org/10.1016/j.erss.2023.103398

Bataille, C., Åhman, M., Neuhoff, K., Nilsson, L. J., Fischedick, M., Lechtenböhmer, S., Solano-Rodriquez, B., Denis-Ryan, A., Stiebert, S., Waisman, H., Sartor, O., & Rahbar, S. (2018). A review of technology and policy deep

decarbonization pathway options for making energy-intensive industry production consistent with the Paris agreement. *Journal of Cleaner Production*, *187*, 960–973. https://doi.org/10.1016/j.jclepro.2018.03.107
Baumgartinger-Seiringer, S., Fuenfschilling, L., Miörner, J., & Trippl, M. (2022). Reconsidering regional structural conditions for industrial renewal. *Regional Studies*, *56*(4), 579–591. https://doi.org/10.1080/00343404.2021.1984419
Beer, A., Barnes, T., & Horne, S. (2023). Place-based industrial strategy and economic trajectory: Advancing agency-based approaches. *Regional Studies*, *57*(6), 984–997. https://doi.org/10.1080/00343404.2021.1947485
Beer, A., McKenzie, F., Blažek, J., Sotarauta, M., & Ayres, S. (2020). *Every place matters: Towards effective place-based policy*. Routledge. https://doi.org/10.4324/9781003110118
Binz, C., Truffer, B., & Coenen, L. (2016). Path creation as a process of resource alignment and anchoring: Industry formation for on-site water recycling in Beijing. *Economic Geography*, *92*(2), 172–200. https://doi.org/10.1080/00130095.2015.1103177
Bours, S. A. M. J. V., Wanzenböck, I., & Frenken, K. (2022). Small wins for grand challenges. A bottom-up governance approach to regional innovation policy. *European Planning Studies*, *30*(11), 2245–2272. https://doi.org/10.1080/09654313.2021.1980502
Breschi, S., & Lissoni, F. (2009). Mobility of skilled workers and co-invention networks: An anatomy of localized knowledge flows. *Journal of Economic Geography*, *9*(4), 439–468. https://doi.org/10.1093/jeg/lbp008
Brett, N., Magnusson, T., & Andersson, H. (2023). From global climate goals to local practice – Mission-oriented policy enactment in three Swedish regions. *Science and Public Policy*, *50*(4), 603–618. https://doi.org/10.1093/scipol/scad010
Breul, M., Hulke, C., & Kalvelage, L. (2021). Path formation and reformation: Studying the variegated consequences of path creation for regional development. *Economic Geography*, *97*(3), 213–234. https://doi.org/10.1080/00130095.2021.1922277
Brown, R. (2021). Mission-oriented or mission adrift? A critical examination of mission-oriented innovation policies. *European Planning Studies*, *29*(4), 739–761. https://doi.org/10.1080/09654313.2020.1779189
Brownlow, G., & Budd, L. (2024). Place-based industrial strategies in the context of the Northern Ireland protocol. *Regional Studies*, *58*(2), 409–421. https://doi.org/10.1080/00343404.2023.2194332
Bugge, M. M., Andersen, A. D., & Steen, M. (2022). The role of regional innovation systems in mission-oriented innovation policy: Exploring the problem-solution space in electrification of maritime transport. *European Planning Studies*, *30*(11), 2312–2333. https://doi.org/10.1080/09654313.2021.1988907
Bush, R. E., Bale, C. S. E., Powell, M., Gouldson, A., Taylor, P. G., & Gale, W. F. (2017). The role of intermediaries in low carbon transitions – Empowering innovations to unlock district heating in the UK. *Journal of Cleaner Production*, *148*, 137–147. https://doi.org/10.1016/j.jclepro.2017.01.129
Carvalho, L., & Vale, M. (2018). Biotech by bricolage? Agency, institutional relatedness and new path development in peripheral regions. *Cambridge Journal of Regions, Economy and Society*, *11*(2), 275–295. https://doi.org/10.1093/cjres/rsy009
Climate Change Committee (CCC). (2024). *Progress in reducing emissions 2024 report to parliament*. https://www.theccc.org.uk/publication/progress-in-reducing-emissions-2024-report-to-parliament/
Coenen, L., Hansen, T., Glasmeier, A., & Hassink, R. (2021). Regional foundations of energy transitions. *Cambridge Journal of Regions, Economy and Society*, *14*(2), 219–233. https://doi.org/10.1093/cjres/rsab010
Coenen, L., & Morgan, K. (2020). Evolving geographies of innovation: Existing paradigms, critiques and possible alternatives. *Norsk Geografisk Tidsskrift – Norwegian Journal of Geography*, *74*(1), 13–24. https://doi.org/10.1080/00291951.2019.1692065
Cooper, J., & Hawkes, A. (2024). Life cycle environmental trade-off of decarbonising UK industrial clusters – A cradle to gate approach. *Science of the Total Environment*, *954*, 176101. https://doi.org/10.1016/j.scitotenv.2024.176101
Cortinovis, N., & Van Oort, F. (2019). Between spilling over and boiling down: Network-mediated spillovers, local knowledge base and productivity in European regions. *Journal of Economic Geography*, *19*(6), 1233–1260. https://doi.org/10.1093/jeg/lby058
Cowling, M., & Brown, R. (2025). Intra- and interregional flows of business angel investment: Mapping the winners and losers across UK regions and core urban economies. *Regional Studies*, *59*(1), 2355990. https://doi.org/10.1080/00343404.2024.2355990
Davies, A., Gann, D., & Douglas, T. (2009). Innovation in megaprojects: Systems integration at London Heathrow Terminal 5. *California Management Review*, *51*(2), 101–125. https://doi.org/10.2307/41166482
Davies, A., Herman, K. S., Harvey, L., Islam, S., King, A. A., MacLean, G., Nieto, M. P., & Willis, T. (2025). Navigating decarbonization at Shoreham Port industrial cluster. *Nature Reviews Clean Technology*, *1*(5), 313–319. https://doi.org/10.1038/s44359-024-00007-z
Davies, A., Lenfle, S., Loch, C. H., & Midler, C. (2023). Introduction: Building bridges between innovation and project management research. In A. Davies, S. Lenfle, C. H. Loch, & C. Midler (Eds.), *Handbook on innovation and project management* (pp. 1–34). Edward Elgar. https://doi.org/10.4337/9781789901801.00006
Denzin, N. K., & Lincoln, Y. S. (2011). *The SAGE handbook of qualitative research*. SAGE.
Department for Business & Trade (DBT). (2024). *Invest 2035: The UK's modern industrial strategy*. https://www.gov.uk/government/consultations/invest-2035-the-uks-modern-industrial-strategy/invest-2035-the-uks-modern-industrial-strategy

Department for Business and Trade (DBT). (2025). *The UK's Modern Industrial Strategy, White Paper*. https://assets.publishing.service.gov.uk/media/68595e56db8e139f95652dc6/industrial_strategy_policy_paper.pdf
Department for Business, Energy and Industrial Strategy (BEIS). (2022a). *Cluster sequencing Phase-2: Eligible projects (power CCUS, hydrogen and ICC)*, March 2022. https://www.gov.uk/government/publications/cluster-sequencing-phase-2-eligible-projects-power-ccus-hydrogen-and-icc/cluster-sequencing-phase-2-eligible-projects-power-ccus-hydrogen-and-icc
Department for Business, Energy and Industrial Strategy (BEIS). (2022b). *Net zero strategy: Build back greener*. https://www.gov.uk/government/publications/net-zero-strategy
Department for Business, Energy and Industrial Strategy (BEIS). (2024). *British industry supercharger gives huge boost to UK businesses*. https://www.gov.uk/government/news/huge-boost-for-uk-industry-as-government-supercharger-rolls-out
Department for Energy Security and Net Zero (DESNZ). (2024). *Local industrial decarbonisation plans competition: Winning projects*. https://www.gov.uk/government/publications/local-industrial-decarbonisation-plans-competition/local-industrial-decarbonisation-plans-competition-winning-projects
Deutz, P., & Gibbs, D. (2008). Industrial ecology and regional development: Eco-industrial development as cluster policy. *Regional Studies*, *42*(10), 1313–1328. https://doi.org/10.1080/00343400802195121
Devine-Wright, P. (2022). Decarbonisation of industrial clusters: A place-based research agenda. *Energy Research & Social Science*, *91*, 102725. https://doi.org/10.1016/j.erss.2022.102725
Di Vaio, A., Varriale, L., & Alvino, F. (2018). Key performance indicators for developing environmentally sustainable and energy efficient ports: Evidence from Italy. *Energy Policy*, *122*, 229–240. https://doi.org/10.1016/j.enpol.2018.07.046
Doganova, L., & Karnøe, P. (2015). Building markets for clean technologies: Controversies, environmental concerns and economic worth. *Industrial Marketing Management*, *44*, 22–31. https://doi.org/10.1016/j.indmarman.2014.10.004
Eckersley, P., Flynn, A., Lakoma, K., & Ferry, L. (2023). Public procurement as a policy tool: The territorial dimension. *Regional Studies*, *57*(10), 2087–2101. https://doi.org/10.1080/00343404.2022.2134850
Fastenrath, S., Tavassoli, S., Sharp, D., Raven, R., Coenen, L., Wilson, B., & Schraven, D. (2023). Mission-oriented innovation districts: Towards challenge-led, place-based urban innovation. *Journal of Cleaner Production*, *418*, 138079. https://doi.org/10.1016/j.jclepro.2023.138079
Ferraro, F., Etzion, D., & Gehman, J. (2015). Tackling grand challenges pragmatically: Robust action revisited. *Organization Studies*, *36*(3), 363–390. https://doi.org/10.1177/0170840614563742
Flanagan, K., Uyarra, E., & Wanzenböck, I. (2023). Towards a problem-oriented regional industrial policy: Possibilities for public intervention in framing, valuation and market formation. *Regional Studies*, *57*(6), 998–1010. https://doi.org/10.1080/00343404.2021.2016680
Foray, D. (2018). Smart specialization strategies as a case of mission-oriented policy – A case study on the emergence of new policy practices. *Industrial and Corporate Change*, *27*(5), 817–832. https://doi.org/10.1093/icc/dty030
Frenken, K. (2017). A complexity-theoretic perspective on innovation policy. *Complexity, Governance & Networks*, *3*(1), 35–47. https://doi.org/10.20377/cgn-41
Froy, F., Heroy, S., Uyarra, E., & O'Clery, N. (2022). What drives the creation of green jobs, products and technologies in cities and regions? Insights from recent research on green industrial transitions. *Local Economy: The Journal of the Local Economy Policy Unit*, *37*(7), 584–601. https://doi.org/10.1177/02690942231170135
Fuenfschilling, L., Frantzeskaki, N., & Coenen, L. (2019). Urban experimentation & sustainability transitions. *European Planning Studies*, *27*(2), 219–228. https://doi.org/10.1080/09654313.2018.1532977
Gansauer, G. (2025). For growth or equity: A taxonomy of 'bidenomics' place-based policies and implications for US regional inequality. *Regional Studies*, *59*(1), 2399802. https://doi.org/10.1080/00343404.2024.2399802
Garvey, A. (2020). *Industrial decarbonisation policies for a UK net zero target*. CREDS.
Geels, F. W., Sovacool, B. K., & Iskandarova, M. (2023). The socio-technical dynamics of net-zero industrial megaprojects: Outside-in and inside-out analyses of the Humber industrial cluster. *Energy Research & Social Science*, *98*, 103003. https://doi.org/10.1016/j.erss.2023.103003
George, G., Fewer, T. J., Lazzarini, S., McGahan, A. M., & Puranam, P. (2024). Partnering for grand challenges: A review of organizational design considerations in public–private collaborations. *Journal of Management*, *50*(1), 10–40. https://doi.org/10.1177/01492063221148992
George, G., Howard-Grenville, J., Joshi, A., & Tihanyi, L. (2016). Understanding and tackling societal grand challenges through management research. *Academy of Management Journal*, *59*(6), 1880–1895. https://doi.org/10.5465/amj.2016.4007
Gibbs, D., & Jensen, P. D. (2022). Chasing after the wind? Green economy strategies, path creation and transitions in the offshore wind industry. *Regional Studies*, *56*(10), 1671–1682. https://doi.org/10.1080/00343404.2021.2000958
Glaser, B., & Strauss, A. (2017). *Discovery of grounded theory: Strategies for qualitative research*. Routledge. https://doi.org/10.4324/9780203793206
Grillitsch, M., & Sotarauta, M. (2020). Trinity of change agency, regional development paths and opportunity spaces. *Progress in Human Geography*, *44*(4), 704–723. https://doi.org/10.1177/0309132519853870
Gudde, P., Oakes, J., Cochrane, P., Caldwell, N., & Bury, N. (2021). The role of UK local government in delivering on net zero carbon commitments: You've declared a Climate Emergency, so what's the plan? *Energy Policy*, *154*, 112245.
Hanna, R., Heptonstall, P., & Gross, R. (2022). *Green job creation, quality, and skills: A review of the evidence on low carbon energy*. https://doi.org/10.5286/UKERC.EDC.000953

Hargadon, A. (2010). Technology policy and global warming: Why new innovation models are needed. *Research Policy*, *39*(8), 1024–1026. https://doi.org/10.1016/j.respol.2010.05.009
Hassink, R., Isaksen, A., & Trippl, M. (2019). Towards a comprehensive understanding of new regional industrial path development. *Regional Studies*, *53*(11), 1636–1645. https://doi.org/10.1080/00343404.2019.1566704
Hayward, L., Mesher, K., Vannucci, J., & Tapie, N. (2024). *Industrial decarbonisation challenge evaluation*.
Hearne, D., Bailey, D., & de Ruyter, A. (2025). Regions and just transitions: Worker perspectives on electrification in two automotive regions. *Regional Studies*, *59*(1), 2488205. https://doi.org/10.1080/00343404.2025.2488205
Hekkert, M. P., Janssen, M. J., Wesseling, J. H., & Negro, S. O. (2020). Mission-oriented innovation systems. *Environmental Innovation and Societal Transitions*, *34*, 76–79. https://doi.org/10.1016/j.eist.2019.11.011
Henderson, D., Morgan, K., & Delbridge, R. (2024a). Delivering micro-missions in public food transitions: Harnessing tensions for creative outcomes. *Environmental Innovation and Societal Transitions*, *52*, 100873. https://doi.org/10.1016/j.eist.2024.100873
Henderson, D., Morgan, K., & Delbridge, R. (2024b). Putting missions in their place: Micro-missions and the role of universities in delivering challenge-led innovation. *Regional Studies*, *58*(1), 208–219. https://doi.org/10.1080/00343404.2023.2176840
Herman, K. S., Hall, J. K., Sovacool, B. K., & Iskandarova, M. (2025c). The industrial decarbonization paradigm: Carbon lock-in or path renewal in the United Kingdom? *Ecological Economics*, *235*, 108628. https://doi.org/10.1016/j.ecolecon.2025.108628
Herman, K. S., Iskandarova, M., & Sovacool, B. K. (2025a). Imagining a net-zero Teesside: Actors, networks, and expectations in industrial decarbonisation megaprojects. *Environmental Research Communications*, *7*(1), 015007. https://doi.org/10.1088/2515-7620/ad8f99
Herman, K. S., & Sovacool, B. K. (2024). Reinventing the global oil capital: The sociotechnical dynamics of industrial net-zero megaprojects in Texas. *The Extractive Industries and Society*, *20*, 101518. https://doi.org/10.1016/j.exis.2024.101518
Herman, K. S., Sovacool, B. K., Geels, F. W., & Iskandarova, M. (2025b). Navigating reconfiguration and systems disruption: Decarbonization pathways for UK industrial clusters. *Energy*, *328*, 136464. https://doi.org/10.1016/j.energy.2025.136464
Hine, A., Gibson, C., & Carr, C. (2024). Green hydrogen regions: Emergent spatial imaginaries and material politics of energy transition. *Regional Studies*, *58*(8), 1618–1635. https://doi.org/10.1080/00343404.2024.2314553
Howard-Grenville, J., Buckle, S. J., Hoskins, B. J., & George, G. (2014). From the editors: Climate change and management. *Academy of Management Journal*, *57*(3), 615–623. https://doi.org/10.5465/amj.2014.4003
Iammarino, S. (2005). An evolutionary integrated view of regional systems of innovation: Concepts, measures and historical perspectives. *European Planning Studies*, *13*(4), 497–519. https://doi.org/10.1080/09654310500107084
International Energy Agency (IEA). (2025). *CO_2 emissions – Global energy review 2025 – Analysis*. IEA. https://www.iea.org/reports/global-energy-review-2025/co2-emissions
Isaksen, A. (2015). Industrial development in thin regions: Trapped in path extension? *Journal of Economic Geography*, *15*(3), 585–600. https://doi.org/10.1093/jeg/lbu026
Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, *39*(8), 2255–2276. https://doi.org/10.1002/smj.2904
Jakobsen, S.-E., Uyarra, E., Njøs, R., & Fløysand, A. (2022). Policy action for green restructuring in specialized industrial regions. *European Urban and Regional Studies*, *29*(3), 312–331. https://doi.org/10.1177/09697764211049116
Johnstone, P., Rogge, K. S., Kivimaa, P., Fratini, C. F., Primmer, E., & Stirling, A. (2020). Waves of disruption in clean energy transitions: Sociotechnical dimensions of system disruption in Germany and the United Kingdom. *Energy Research & Social Science*, *59*, 101287. https://doi.org/10.1016/j.erss.2019.101287
Kallio, H., Pietilä, A.-M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, *72*(12), 2954–2965. https://doi.org/10.1111/jan.13031
Kivimaa, P. (2014). Government-affiliated intermediary organisations as actors in system-level transitions. *Research Policy*, *43*(8), 1370–1380. https://doi.org/10.1016/j.respol.2014.02.007
Kivimaa, P., Hyysalo, S., Boon, W., Klerkx, L., Martiskainen, M., & Schot, J. (2019). Passing the baton: How intermediaries advance sustainability transitions in different phases. *Environmental Innovation and Societal Transitions*, *31*, 110–125. https://doi.org/10.1016/j.eist.2019.01.001
Kythreotis, A. P., Jonas, A. E. G., & Howarth, C. (2020). Locating climate adaptation in urban and regional studies. *Regional Studies*, *54*(4), 576–588. https://doi.org/10.1080/00343404.2019.1678744
Labory, S., & Bianchi, P. (2021). Regional industrial policy in times of big disruption: Building dynamic capabilities in regions. *Regional Studies*, *55*(10–11), 1829–1838. https://doi.org/10.1080/00343404.2021.1928043
Lai, H.-L., & Devine-Wright, P. (2024). Imagining and emplacing net zero industrial clusters: A critical analysis of stakeholder discourses. *Geo: Geography and Environment*, *11*(1), e00139. https://doi.org/10.1002/geo2.139
Lockwood, M., Herman, K., Iskandarova, M., Pultar, A., Ferrier, J., & Sovacool, B. (2025). Beyond industrial decarbonisation strategy: Lessons from the bottom-up policy mix in the United Kingdom, 2021–2023. *Energy Research & Social Science*, *130*, 104431. https://doi.org/10.1016/j.erss.2025.104431

MacKinnon, D., Dawley, S., Pike, A., & Cumbers, A. (2019). Rethinking path creation: A geographical political economy approach. *Economic Geography*, *95*(2), 113–135. https://doi.org/10.1080/00130095.2018.1498294
Mazzucato, M. (2016). From market fixing to market-creating: A new framework for innovation policy. *Industry and Innovation*, *23*(2), 140–156. https://doi.org/10.1080/13662716.2016.1146124
Mazzucato, M. (2018a). Mission-oriented innovation policies: Challenges and opportunities. *Industrial and Corporate Change*, *27*(5), 803–815. https://doi.org/10.1093/icc/dty034
Mazzucato, M. (2018b). *Mission-oriented research & innovation in the European Union: A problem-solving approach to fuel innovation-led growth*. Publications Office of the European Union.
Mazzucato, M., Doyle, S., & Kuehn von Burgsdorff, L. (2024). *Mission-oriented industrial strategy: Global insights*. UCL Institute for Innovation and Public Purpose. https://discovery.ucl.ac.uk/id/eprint/10196036/
Mazzucato, M., Kattel, R., & Ryan-Collins, J. (2020). Challenge-driven innovation policy: Towards a new policy toolkit. *Journal of Industry, Competition and Trade*, *20*(2), 421–437. https://doi.org/10.1007/s10842-019-00329-w
Mazzucato, M., & McPherson, M. (2018). *The green new deal: A bold mission-oriented approach*.
Mazzucato, M., & Semieniuk, G. (2018). Financing renewable energy: Who is financing what and why it matters. *Technological Forecasting and Social Change*, *127*, 8–22. https://doi.org/10.1016/j.techfore.2017.05.021
McCann, P., Erdős, K., Georghiou, L., & Rodriguez-Pose, A. (2025). *The fundamental case for a place-based approach to transformative innovation policies*. JRC Publications Repository. https://doi.org/10.2760/3790894
McCann, P., Ortega-Argilés, R., Sevinc, D., & Cepeda-Zorrilla, M. (2023). Rebalancing UK regional and industrial policy post-Brexit and post-COVID-19: Lessons learned and priorities for the future. *Regional Studies*, *57*(6), 1113–1125. https://doi.org/10.1080/00343404.2021.1922663
McCann, P., & Soete, L. (2020). *Place-based innovation for sustainability*. JRC Publications Repository. https://doi.org/10.2760/250023
Mowery, D. C., Nelson, R. R., & Martin, B. R. (2010). Technology policy and global warming: Why new policy models are needed (or why putting new wine in old bottles won't work). *Research Policy*, *39*(8), 1011–1023. https://doi.org/10.1016/j.respol.2010.05.008
Ogwumike, C., Akponeware, A., Oyewole, A., Dawood, H., Pinedo-Cuenca, R., Ling-Chin, J., Roskilly, A. P., & Dawood, N. (2024). Transitioning or tinkering at a net-zero economy? Introducing an assessment framework for industrial cluster decarbonisation in the United Kingdom. *Energy Research & Social Science*, *110*, 103459. https://doi.org/10.1016/j.erss.2024.103459
Paquin, R. L., & Howard-Grenville, J. (2013). Blind dates and arranged marriages: Longitudinal processes of network orchestration. *Organization Studies*, *34*(11), 1623–1653. https://doi.org/10.1177/0170840612470230
Pontikakis, D., González Vázquez, I., Bianchi, G., Ranga, M., Marques Santos, A., Reimeris, R., Mifsud, S., Morgan, K., Madrid, C., Stierna, J., & European Commission (Eds.). (2022). *Partnerships for regional innovation: Playbook*. Publications Office. https://doi.org/10.2760/775610
Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly*, *14*(1), 15–34. https://doi.org/10.1177/089124240001400105
Priebe, M., & Herberg, J. (2024). Regioning mission-oriented innovation policy: The articulation of directionality between federal and regional arenas in the German high-tech strategy. *Environmental Innovation and Societal Transitions*, *52*, 100899. https://doi.org/10.1016/j.eist.2024.100899
Pultar, A., & Ferrier, J. (2022). *Next steps for decarbonising UK industry*. Industrial Decarbonisation Research and Innovation Centre, Heriot-Watt University. https://doi.org/10.17861/6RKQ-ZF92
PwC. (2022). *Accelerating net zero delivery: Unlocking the benefits of climate action in UK city-regions*. Report commissioned by Innovate UK, Prospering from the Energy Revolution programme. https://iuk-business-connect.org.uk/perspectives/accelerating-net-zero-delivery-unlocking-the-benefits-of-climate-action-in-uk-city-regions/
Rattle, I., Gailani, A., & Taylor, P. G. (2024). Decarbonisation strategies in industry: Going beyond clusters. *Sustainability Science*, *19*(1), 105–123. https://doi.org/10.1007/s11625-023-01313-4
Reypens, C., Lievens, A., & Blazevic, V. (2021). Hybrid orchestration in multi-stakeholder innovation networks: Practices of mobilizing multiple, diverse stakeholders across organizational boundaries. *Organization Studies*, *42*(1), 61–83. https://doi.org/10.1177/0170840619868268
Ritala, P. (2024). Grand challenges and platform ecosystems: Scaling solutions for wicked ecological and societal problems. *Journal of Product Innovation Management*, *41*(2), 168–183. https://doi.org/10.1111/jpim.12682
Roehrich, J. K., Kalra, J., Squire, B., & Davies, A. (2023). Network orchestration in a large inter-organizational project. *Journal of Operations Management*, *69*(7), 1078–1099. https://doi.org/10.1002/joom.1237
Shoreham Port Authority (SPA) (2024). *Shoreham Port industrial cluster: Local industrial decarbonisation plan*. Shoreham Port Authority with Adur & Worthing Councils, Brighton & Hove City Council, Barrett Steel, Cemex UK, Local Fuels, Ricardo UK and University of Sussex. https://www.shoreham-port.co.uk/fileadmin/uploads/shorehamport/Documents/Sustainability/Shoreham_Port_Industrial_Cluster/Shoreham_Port_Industrial_Cluster_Local_Industrial_Decarbonisation_Plan.pdf
Sjøtun, S. G., & Njøs, R. (2019). Green reorientation of clusters and the role of policy: 'The normative' and 'the neutral' route. *European Planning Studies*, *27*(12), 2411–2430. https://doi.org/10.1080/09654313.2019.1630370
Skidmore, C. (2024). *MISSION ZERO – Independent review of net zero*.

Sovacool, B. K., Del Rio, D. F., Herman, K., Iskandarova, M., Uratani, J. M., & Griffiths, S. (2024a). Reconfiguring European industry for net-zero: A qualitative review of hydrogen and carbon capture utilization and storage benefits and implementation challenges. *Energy & Environmental Science*, *17*(10), 3523–3569. https://doi.org/10.1039/D3EE03270A

Sovacool, B. K., Griffiths, S., Herman, K., & Iskandarova, M. (2026). A critical meta-survey of the lifecycle greenhouse gas emissions of hydrogen energy systems. *Energy Research & Social Science*, *133*, 104461. https://doi.org/10.1016/j.erss.2025.104461

Sovacool, B. K., Herman, K. S., Iskandarova, M., & Hall, J. K. (2024b). 'Oh yes! net-zero': Sociotechnical capabilities and regional innovation systems for British industrial decarbonization. *Environmental Innovation and Societal Transitions*, *51*, 100852. https://doi.org/10.1016/j.eist.2024.100852

Sovacool, B. K., Lovell, K., & Ting, M. B. (2018). Reconfiguration, contestation, and decline: Conceptualizing mature large technical systems. *Science, Technology, & Human Values*, *43*(6), 1066–1097. https://doi.org/10.1177/0162243918768074

Steen, M., & Hansen, G. H. (2018). Barriers to path creation: The case of offshore wind power in Norway. *Economic Geography*, *94*(2), 188–210. https://doi.org/10.1080/00130095.2017.1416953

Sunley, P., Evenhuis, E., Harris, J., Harris, R., Martin, R., & Pike, A. (2023). Renewing industrial regions? Advanced manufacturing and industrial policy in Britain. *Regional Studies*, *57*(6), 1126–1140. https://doi.org/10.1080/00343404.2021.1983163

Sunley, P., Harris, J. L., Pike, A., Harris, R., Martin, R., & Evenhuis, E. (2022). Industrial policies, strategy and the UK's levelling up agenda. *Local Economy: The Journal of the Local Economy Policy Unit*, *37*(5), 403–418. https://doi.org/10.1177/02690942221149007

Termeer, C. J. A. M., & Dewulf, A. (2019a). A small wins framework to overcome the evaluation paradox of governing wicked problems. *Policy and Society*, *38*(2), 298–314. https://doi.org/10.1080/14494035.2018.1497933

Termeer, C. J. A. M., & Metze, T. A. P. (2019b). More than peanuts: Transformation towards a circular economy through a small-wins governance framework. *Journal of Cleaner Production*, *240*, 118272. https://doi.org/10.1016/j.jclepro.2019.118272

Thomas, L. D. W., & Ritala, P. (2022). Ecosystem legitimacy emergence: A collective action view. *Journal of Management*, *48*(3), 515–541. https://doi.org/10.1177/0149206320986617

Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological Theory*, *30*(3), 167–186. https://doi.org/10.1177/0735275112457914

Tödtling, F., Trippl, M., & Desch, V. (2022). New directions for RIS studies and policies in the face of grand societal challenges. *European Planning Studies*, *30*(11), 2139–2156. https://doi.org/10.1080/09654313.2021.1951177

Tomlinson, P. R., & Robert Branston, J. (2018). Firms, governance and development in industrial districts. *Regional Studies*, *52*(10), 1410–1422. https://doi.org/10.1080/00343404.2017.1324199

Trippl, M., Baumgartinger-Seiringer, S., Frangenheim, A., Isaksen, A., & Rypestøl, J. O. (2020). Unravelling green regional industrial path development: Regional preconditions, asset modification and agency. *Geoforum; Journal of Physical, Human, and Regional Geosciences*, *111*, 189–197. https://doi.org/10.1016/j.geoforum.2020.02.016

Trippl, M., & Tödtling, F. (2025). Place-based transformative innovation policies: Exploring the role of challenge-oriented regional innovation systems. In J. Karlsen, J. O. Rypestøl, & M. Trippl (Eds.), *Sustainable regional restructuring* (pp. 11–26). Edward Elgar. https://www.elgaronline.com/edcollchap/book/9781035330799/chapter2.xml

Uyarra, E., Bugge, M. M., Coenen, L., Flanagan, K., & Wanzenböck, I. (2025). Geographies of mission-oriented innovation policy. *Environmental Innovation and Societal Transitions*, *56*, 100970. https://doi.org/10.1016/j.eist.2025.100970

Uyarra, E., Shapira, P., & Harding, A. (2016). Low carbon innovation and enterprise growth in the UK: Challenges of a place-blind policy mix. *Technological Forecasting and Social Change*, *103*, 264–272. https://doi.org/10.1016/j.techfore.2015.10.008

Vosman, L., Coenen, T. B. J., Volker, L., & Visscher, K. (2023). Collaboration and innovation beyond project boundaries: Exploring the potential of an ecosystem perspective in the infrastructure sector. *Construction Management and Economics*, *41*(6), 457–474. https://doi.org/10.1080/01446193.2023.2165695

Walker, B. (2024). Place-based allocation of R&D funding: Directing the German innovation system for hydrogen technologies in space. *Environmental Innovation and Societal Transitions*, *52*, 100878. https://doi.org/10.1016/j.eist.2024.100878

Wanzenböck, I., Wesseling, J. H., Frenken, K., Hekkert, M. P., & Weber, K. M. (2020). A framework for mission-oriented innovation policy: Alternative pathways through the problem–solution space. *Science and Public Policy*, scaa027. https://doi.org/10.1093/scipol/scaa027

Weller, S., & Beer, A. (2023). State structures and the limits of agency: Governing the transformation from coal in Australia. *Regional Studies*, *57*(8), 1415–1427. https://doi.org/10.1080/00343404.2022.2047918

World Economic Forum (WEF). (2024). *20 industrial clusters from 10 countries commit to reach net zero*. https://www.weforum.org/press/2024/01/wef24-industrial-clusters-commit-to-reach-net-zero-by-2050/

Zietsma, C., Groenewegen, P., Logue, D. M., & (Bob) Hinings, C. R. (2017). Field or fields? Building the scaffolding for cumulation of research on institutional fields. *Academy of Management Annals*, *11*(1), 391–450. https://doi.org/10.5465/annals.2014.0052