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Caitriona Carter. Regulatory, accompanying, and collective governance? The challenges of re-orientating environmental-economic interdependencies in two French ports. *Journal of Environmental Policy and Planning*, 2024, pp.1 - 13. 10.1080/1523908x.2024.2305351 . hal-04538288

HAL Id: hal-04538288

<https://hal.inrae.fr/hal-04538288v1>

Submitted on 9 Apr 2024

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To cite this article: Caitriona Carter (24 Jan 2024): Regulatory, accompanying, and collective governance? The challenges of re-orientating environmental-economic interdependencies in two French ports, Journal of Environmental Policy & Planning, DOI: [10.1080/1523908X.2024.2305351](https://doi.org/10.1080/1523908X.2024.2305351)

To link to this article: <https://doi.org/10.1080/1523908X.2024.2305351>



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Published online: 24 Jan 2024.



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Regulatory, accompanying, and collective governance? The challenges of re-orientating environmental-economic interdependencies in two French ports

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ABSTRACT

How small/medium-sized (SM) commercial ports act politically matters for local ecological transformation facing increasing climate and socio-environmental failures and dilemmas. In this spirit, we compared the environmental public action of two SM ports in southwestern France – La Rochelle and Bayonne – facing two sets of dilemmas: (i) how to tackle problems emerging from past choices; (ii) how to resolve issues arising from ‘choosing the future today’. Whereas global scientific assessments highlight regulatory, accompanying and collective approaches as high confidence ones towards ecological transformation, more technologically resourced scenarios (without economic behavioural change governance) are available to SM ports. Furthermore, although political processes of territorialisation, democratisation and ecologisation have reconfigured environmental authority for both public actors and SM ports in France, there is nothing inevitable about how different categories of public (and private) actor may work together. Our results reflect these tensions. Both SM ports have engaged to institutionalise regulatory, accompanying and collective environmental public action, and portray new approaches as indicative of their acknowledged responsibility. Nevertheless, important contradictions muddy the ecologisation trajectories their key actors claim to be taking. Overall, the study highlights that transformed governance alone does not guarantee that actors have fully embarked upon a newly transformative trajectory.

ARTICLE HISTORY

Received 30 June 2023
Accepted 8 January 2024

KEYWORDS

Climate; economic; environmental; port governance; interdependency; transformation

1. Introduction

Increased climate and socio-environmental events are crystallizing regulatory failures and revealing inescapable global change dilemmas (IPCC AR6, 2023). Whereas ‘business as usual’ responses are hotly disapproved and transformative ones strongly promoted (IPBES, 2019), much can be learned about how these dilemmas are actually being faced using political economy approaches which examine the experiences of actors involved in attempts at regulatory change (Chailleux & Smith, 2023).

One such category of actor whose environmental public action merits analytical attention is ‘small/medium sized’ commercial ports (SM ports). SM ports are spaces where numerous industries intersect and, consequently, are especially exposed to global change dynamics. This is because they are confronted with tensions arising from their need to protect their respective vulnerability – providing industrial services and employment in local economies competing in global markets – whilst at the same time initiating climate and ecological transition (Carter & Roche, 2022). Although environmental rationales have increasingly been taken up

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within their respective development strategies, SM ports also generally need to clarify their governance role as regards recurrent risks. Specifically, they need to take decisions on what industrial practices in the port area they deem desirable, and permissible.

Whereas SM ports can (and do) take logistical decisions in response to these challenges (see various editions of *L'Escale Atlantique*, port of La Rochelle newsletter),¹ in this article we are focused on their public action role governing environmental-economic interdependencies in the port area. More precisely, we examine how two SM ports in south-western France (La Rochelle and Bayonne) have generated institutional conditions and opportunities for transforming industrial practice; the relationships they have developed to do so; and the challenges they have faced.

The existing literature on SM ports has already shown that their public action matters because governing the port economy carries consequences for local development (Alix et al., 2015). Although for decades, many ports were politically disconnected from their hinterland territories, port liberalisation and regionalisation in Europe (Gueguen-Hallouët, 2014) provided opportunities for new territorial connections (Debrie & Lavaud-Letilleul, 2009). During the same period, reform processes redistributing state environmental power resulted in a hybridisation and diversification of environmental authority in many European countries (Mol, 2016). Indeed, today's 'environmental statehood' (Van Tatenhove, 2016) looks quite different from its earlier counterparts, with environmental power shared by many actors at different scales and across different domains (Barone et al., 2018).

Consequently, a central political challenge for SM ports re-connecting port governance with local public action is how they position themselves in relation to this 'reconfigured environmental authority' and its organisational and institutional complexity.² This positioning is not arbitrary: successive French governments have sought to structure port responses through both obliging them to develop their strategies in line with sustainability goals, and holding them to account (e.g. by the *Cour des Comptes*). Different institutional trajectories are nevertheless available to actors: environmental effects of economic activity in the port area can be more or less regulated, notably by extending or not national or European Union (EU) environmental rules; port company transitions can be more or less accompanied by collective action and/or public intervention; responsibilities for making changes to tackle risks (e.g. pollution, carbon emissions) can be more or less collectivised by working with other public bodies. Yet, as demonstrated in the literature, simply increasing the number of actors responsible for environmental governance does not *per se* lead public actors down any one path. On the contrary, public action within a 'reconfigured environmental authority' can be ineffective, e.g. due to weak state control over policy enforcement (Badre & Bordenave, 2021; Mol, 2016); a dominance of vertical alliances (Hourcade & Muñoz, 2021); problem displacement (onto other societies, onto nature, into the future: Wagner, 2023); and territorial inequalities (Mazeaud, 2019).

In light of these issues, drawing on empirical research material (see section III), we compared the public action of one medium-sized 'state' port (La Rochelle) with one small-sized 'regional' port (Bayonne) to understand how they have responded to these challenges – and the implications for local industrial practice and production. We first position reformed port governance in France in a wider context of a changing environmental statehood to specify the institutionalisation of the reconfigured environmental authority within which SM ports can choose (or not) to engage; second, we present our case studies, analysing political processes governing environmental-economic interdependencies in both ports compared. We highlight similarities and differences between two forms of SM port public action: (i) tackling problems which emerge from past choices; (ii) resolving dilemmas arising from 'choosing the future today'. Whereas in each territory studied a 'regulated, accompanied and collective' form of governance is in evidence (corresponding with high confidence transformational approaches outlined in the IPCC, 2023 report), the strategies of both are shot through with important contradictions and tensions which muddy the ecologisation trajectories their key actors claim to be taking.

2. Changing environmental statehood and port governance in France

Since the 1980s, a reconfiguration of the political organisation of the liberal capitalist state and the regulation of advanced political economies has unfolded (Streck & Thelen, 2005). In Europe, processes of

'Europeanisation', 'decentralisation', 'neoliberalisation' and 'democratisation of knowledge use' have altered balances of power and created new interdependencies between territories at different scales, between public and private regulation, and between knowledge use and its providers (Carter, 2018).

In the field of environmental policy, these reforms have altered the character of the environmental state (Eckersley, 2020) and indeed its very 'statehood' reshaping 'the ability of governmental actors ... to govern activities causing environmental problems' (Van Tatenhove, 2016, p. 162). Specifically, state polity reforms re-assigning power to 'find [new] solutions for [environmental] problems and conflicts' (Van Tatenhove, 2016, p. 162) have resulted in a 'reconfigured environmental authority'. In France, such a reconfiguration has been gradually institutionalised following state government projects to decentralise environmental decision-making in several policy domains; these include water, biodiversity, coastal risk and flooding, energy (Amblard & Mann, 2021; Chailleux & Hourcade, 2021; Mazeaud & Rieu, 2021). Decisional processes have also been opened up to participation by new categories of stakeholders, e.g. environmental NGOs, and the creation of new types of environmental actor and environmental territorial jurisdictions (e.g. national and marine parks: Arpin & Cosson, 2021). Today, this authority is organisationally and institutionally complex, and consists of a myriad of actors, jurisdictions, policy framings and public policy instruments operating at different scales and across different domains.

An extensive literature has analysed these changes and revealed their non-linear dynamics (Amblard & Carter, 2022; Bombenger & Larrue, 2014; Ginelli et al., 2020; Rieu, 2022). Questions have been raised over the extent to which French decentralisation has led to a breakdown in coalitions and patterns of governance (or not: Poupeau, 2014) and shown that (in the case of energy transition) local actors face multiple challenges shifting logics of centralised decision-making (Chailleux & Hourcade, 2021). Research has pointed to a mismatch between limited available territorial tools and the magnitude of environmental challenges to be faced by regional and local actors (Bombenger & Larrue, 2014). Conversely, scholars have also demonstrated the importance of local actors' 'geographical work' anchoring European environmental policies on water biodiversity in local conservation practices (Ginelli & Le Floch, 2021). Some overall trends have been observed, including a weakening of state services' resources and a rise in private consultants shaping environmental decisions (Badre & Bordenave, 2021; Mazeaud & Rieu, 2021).

In parallel with changes to French environmental statehood, port governance has also been reformed. Following state modernisation and liberalisation processes (Foulquier & Lamberts, 2014), a greater number and diversity of actors now engage in port governing bodies, creating potential for plural forms of knowledge use in decision-making (Guillaume & Guinberteau, 2014). For state-owned Grand Maritime Ports (GPMs) (such as La Rochelle), a key reform in 2008 established the framework for a separation of public and private interests and made possible a 'hybrid' (Foulquier & Maugeri, 2014) and 'enlarged' port governance (Gueguen-Hallouët, 2014). Port governing bodies were re-designed to bring democratically-elected regional and local actors (including cities), as well as states, into dialogue with private economic operators (representing port traffic and companies based in the port area) and independent interests. In the case of GPMs therefore, although they are state public bodies, whereby 'the state' holds formal powers over port authority decisions and strategies, 'port policy is not the preserve of the state' (Carter & Drouaud, 2022, p. 16). In the case of regional ports (such as Bayonne) and following a decentralisation and democratisation process launched in 2004, the state transferred its 'port development' governance functions from what were then known as 'ports of a national interest' for uptake by local, regional and departmental public actors (Debie & Lavaud-Letilleul, 2009) (yet it retained authority over port security services). Initially marked by conflicts following competition between local public actors making bids to acquire new powers and take ownership of the development of these ports, at the same time this reform opened possibilities for renewed relations between public actors at different scales, and between public actors and economic operators deciding economic development ambitions (Cros & Lérique, 2021).

As well as being liberalised, decentralised and diversified, SM ports in France have also increasingly acquired an environmental rationality and responsibility for their estate and industrial services, in line with European ports more widely (Ecoports, 2020). Different processes have contributed to their ecologisation. First, local residents and their associations have systematically placed pollution emanating from port industrial

sites on local policy and eventually port governance agendas, especially on matters of air and noise pollution (Debie & Lavaud-Letilleul, 2009). Indeed, many port conflicts are over these very questions (Foulquier & Ortiz, 2014). Second, port conversion projects for economic development have been subject to French environmental impact regulation, whereby port authorities have had to compensate for biodiversity destruction (e.g. caused by dredging) through ecological restoration projects (e.g. wetland, coral reef, restoration), and have increased their ecological engineering expertise to do so (Carter et al., 2023). Third, reform processes have given GPMs responsibilities for managing natural resources within their land and sea estate. Climate change has also appeared on SM ports' policy agendas (adaptation and mitigation). Protecting their economic and socio-environmental performance now depends on their ability to adapt to a decline in global traffic in hydrocarbons and support decarbonisation strategies as well as renewable energy production in the port area (Colrat et al., 2018).

Consequently, the three interconnected dimensions of political work highlighted in this Special Issue (Chaillex & Smith, 2023) as potentially structuring industrial adaptation – namely territorialisation, democratisation and ecologization – have reconfigured environmental authority for both public actors and SM ports in France and have created opportunities for new collaborative governance approaches transforming the SM port economic model. However, not all commercial ports in mainland France or in its overseas territories have seized these political opportunities (Carter et al., 2023; Carter & Roche, 2022; Cour des Comptes, 2021). As outlined by Patterson et al. (2017), transformation towards sustainability is a deeply political and socially constructed process. Even if re-assignments of environmental political authority can be observed, there is nothing inevitable about how different categories of public (and private) actor may work together, nor whether they can build regulatory, accompanying or collective projects premised upon a sharing of values. Consequently, drawing on long-standing institutionalist conceptions (Streeck & Thelen, 2005), our analytical starting point is that for political change to occur, it must be worked by actors through their redefining problems, governing newly arising interdependencies (socio-ecological, public/private), creating new decisional arenas or re-orientating behaviour of old ones, and codifying norms, principles, charters or other institutional frameworks to guide economic behaviour.

Furthermore, it is through analysing this actor public action that research can discover the potential for transformation. This matters because whether and how actors work together is a central question for resolving dilemmas facing global change (Biermann et al., 2016) and has ramifications for the overall performance of environmental public action (which is not just the purview of national governments). It matters especially achieving sustainability in policy coherence governing entangled land-sea interactions where critical issues are at stake (O'Hagan et al., 2020). In the case of SM ports, energy transformation can be evidenced by a diversification of activities and a re-orientation towards low energy traffic; for environmental performance, this can be evidenced *inter alia* by the institutionalisation of circular economy tools (Colrat et al., 2018; Cros & Lérique, 2021). Importantly, from an institutionalist perspective which views transformation as a non-linear process (Eckersley, 2020), even if small changes can 'cumulate into more substantial transformation over time' (Patterson et al., 2017, p. 4), analysis must nevertheless also pay attention to tensions and contradictions. Research therefore needs to engender more data on how SM port bodies make sense of the wider reconfigured environmental authority in which they operate, whether they seek to politically influence its numerous actor and socio-environmental interdependencies, and with what consequences for ecologisation in particular.

3. Governing environmental-economic interdependencies addressing environmental impact failures and dilemmas: ports of La Rochelle and Bayonne compared

To contribute to this research effort, our study set out to understand SM port institutional responses to numerous socio-environmental, climate and economic risks by comparing the political work of the state GMP of La Rochelle with that of the regional port of Bayonne. More precisely, we examined the areas of environmental public action in which their governing bodies were investing, and resultant practices altering economic production and permissible activities in the port area.

Our source material comes from research conducted within two projects: an EU-funded H2020 project COASTAL (where we examined land-sea synergies in the Charente River basin and coastal zone)³ and a scientific assessment project on energy transition for the French AcclimaTerra association (Roche, 2022).⁴ Working collectively within these projects, qualitative data on actor practices and their governance experiences was generated via different methods: semi-structured interviews,⁵ documentary/grey literature analysis and, in COASTAL, sector and multi-actor labs. For this article, we analysed 35 interviewee responses representing categories of actor, or departments within organisations, across the reconfigured environmental authority: ports (6), port companies and representative bodies (7), region (4), state in the region (5), development agency (1), associations (4), agglomerations (4), intercommunal bodies (2), other public bodies (2). We also analysed observations of COASTAL stakeholder labs, e.g. on coastal activities and multi-actor interdependencies (for methodological details, see Guittard et al. 2024). Documents were selected for statistical/historical information and to understand diverse representations of port profiles, as well as to compare statistical data with social representations: e.g. policy documents governing ports or port-related industrial activity (e.g. national port strategy, seaboard strategy, charters), ports’ own publications (e.g. their development projects, newsletters), minutes of meetings (e.g. SPPPI), company business models, results of surveys (e.g. on cruise shipping), newspaper articles (e.g. on controversies). Analysis was done using NVivo 11 software applying inductive coding approaches and manual categorisation of material, to generate recurring themes and social representations of governance practices.

As a first analytical step, data was organised to provide a snapshot view of the comparable characteristics of each port in terms of main governance bodies, traffic and industry and policy strategies (see Table 1).

Secondly, data was analysed to establish how these differently profiled ports and their governing bodies have worked politically to govern environmental-economic interdependencies in the port area. Data analysis distinguished actors’ political work facing two sets of dilemmas: (i) how to tackle problems emerging from past choices; (ii) how to resolve issues arising from ‘choosing the future today’. To compare how the two ports have faced these dilemmas from an institutionalist perspective (i.e. through changing interdependencies between actors, rules and norms), we drew similarities and differences regarding the extent to which their public action was more or less regulatory, accompanying and collective:

Table 1. A snapshot of the characteristics of the two ports studied adapted from Carter and Roche (2022).

Port key characteristics	Port authority governance bodies	Traffic/Sectors (stats provided by ports 2022)	Key policy strategies
GPM of La Rochelle (public state body) Deep water port, open 24/7 One site 554 ha (233 ha land estate, +35 ha being reclaimed under Port Horizon 2025)	Port Directorate Supervisory board with decisional powers (French state, state nominees, regional and local public actors) Development board with advisory powers (representatives of port traffics) Audit committee <i>Other actors:</i> Maritime Union of port companies	9,8 m t Cereals 42% (exports: 2nd cereal port in France); petroleum products 30%, forest products 7% (the first import port in France), bulk solids and liquids 19%, heavy lift and containers 2%. 133 companies in the port area 1715 direct jobs; 3800 indirect	Port strategy 2020–2024 Developed through consultative processes, mobilising port boards, and workshops with residents and associations (imagining the port of tomorrow). Port Horizon 2025: port conversion strategy Environmental triple quality certification
Regional Port of Bayonne Transfrontier port Two sites on opposite banks of the Adour estuary 150 ha	Strategic Territorial Committee (CST) (Region, 2 departments, 4 communes) Port concession contract with Bayonne Pays Basque CCI (Chamber of Commerce and Industry) (CCI has operating rights within the port area, transferred from the region as owner of the port estate). S3PI (meeting place of elected officials)	2,4 m t An industrial port (75% of goods made in the port area) 12 companies in the port area Fertilisers, chemical products, agribusiness, bulk goods, boiler making, steel industry.	Port development plan 2013 (SDA: Schéma Directeur d’Aménagement) – developed through a series of consultations and workshops led by the CST in partnership with the CAPB, CCI Environmental quality certification

- In terms of regulatory approaches, we sought to ascertain the types of regulatory measures used and whether port actors went beyond minimum legal thresholds when setting new norms in the port area and/or set rules addressing indirect drivers of climate change (Visseren-Hamakers et al., 2021).
- For accompanying approaches, we considered whether port authorities were leaving it up to private companies to make transition choices independently of one another (e.g. in their vertical company hierarchies as part of a larger group), or whether they sought to structure this transition via inter-relational governance initiatives, including funding (Biermann et al., 2016).
- This in turn led us on to examine whether an individualisation of problems was in evidence (Badre & Bordenave, 2021), or whether port authorities sought to institutionalise, and hence collectivise, interdependencies (e.g. port-environment/climate, public/private, port-city)?

3.1. Public action to tackle problems emerging from past choices

A first type of public action which we identified was to tackle waste and pollution problems emerging from past choices. When considering a port's pollution, it is important to distinguish the port authority from the port estate, the latter including the collection of companies operating in the port area (Alix et al., 2015: see Table 1). Whereas the environmental waste or impact of the port authority *stricto sensu* may be quite low, the challenge lies with companies' and services' impacts (Carter & Roche, 2022). Of course, each company is governed by general environmental law, enforced by state regional/departmental administrations and their Prefects. For example, company installation and environmental impact of industrial activities in the port area are controlled by regulatory norms which set legal thresholds of 'permissible pollution' (as well as risks). Indeed, it is private companies who are legally responsible for any negative environmental impacts caused. It is therefore perfectly possible for port authorities to defer to state decentralised administrative control of individual companies' environmental impact. But ports can also be proactive: for example, port authorities have powers over access to the port area, e.g. they issue authorities for industrial siting and decide on its industrial use and/or set port passage fees for shipping. Consequently, SM ports face choices on whether and how environmental concerns are integrated into their decisions and which go over and above a minimal compliance with environmental rules; on whether port bodies should accompany economic actors transforming their practices; and whether they work alone overseeing environmental impacts or collectively in dialogue with other public actors holding environmental policy competences.

In the case of the GPM La Rochelle, port actors have sought to fix their own sustainability standards and environmental flow practices in addition to those set by international certification (see Table 1). Working with private companies and the Maritime Union, the port established a Sustainable Development Charter, which set criteria for company practice in the port area (2015). The charter lists a series of actions e.g. on the environment, societal responsibility, biodiversity, human rights and constitutes a set of standards to be respected. On interview, it was expressed that the intention was to improve the environmental impact of port activities and to do so in a 'collective' way pulling companies in the same direction.

The enactment of the Charter created an interdependence dynamic which encouraged the establishment of a new initiative (and later association): the MER (*Matière Énergie Rochelaise: Rochelais Energy Matter*) (for more details, see Carter & Drouaud, 2022). MER fixed required sustainable development objectives for company projects within the port area and was conceived in line with the port's intention to become a major actor of ecological industrial transition (interviews). Accordingly, since 2016, MER has operated as an institutional device to translate this discursive representation of the port into a change in company practice. Port officials considered that if they did not accompany companies in the port area, then companies would either fail to sign the Charter, or would just sign it, but make no changes to their practices.

MER can best be described as a publicly-funded⁶ 'public private' initiative to create a circular economy amongst economic operators on and near the port area. It is underlined by a philosophy of industrial ecology promoted by the French environmental and energy agency (ADEME) (Alix et al., 2015). Focusing on 'physical exchanges of materials, energy, water and/or by-products' (Chertow, 2000, p. 313), it federated those companies managing most of port traffic and flows. After three years as a project MER has now been institutionalised

granting greater control to companies within a logic of ‘co-construction’: ‘whereas the GPM had shaped a change of culture over three years, it now became a collective work for port companies to manage’ (interview MER).

From a governance standpoint the port authority developed its capacity to simultaneously accompany industrial transition and institutionalise interdependencies between private actors re-structuring the economy of the port (Carter & Drouaud, 2022). The interpretation of its role as a GPM matters in this regard: although the port can adopt an oversight role of what is happening in the port area, it does so ‘without the stick’ (interview), as it has no powers to fine or tax companies. Consequently, it must find collective ways to facilitate improvement of environmental quality.

Developing an oversight role of the environmental impact of the port estate – one which goes beyond the question of company compliance with environmental regulation – has also been the aim of the regional port of Bayonne. The port’s development plan (SDA 2013: see Table 1) outlined actions to establish a Charter of contractual requirements for companies operating in the port area. These include obligations regarding environmental impacts and port-city interconnections (Carter & Roche, 2022). The Charter provides a regulatory framework for industrial siting – and also seeks to federate company practices around a set of values (interviews). In particular, the Charter was described as necessary to complement existing environmental regulation and impact assessments demanded by the State, and as a mode of consultation. Revealingly, the port authority has refused port projects not in conformity with Charter values (minutes SPPPI⁷).

Yet, as in La Rochelle (but with a different configuration of partners), the port of Bayonne does not work alone in its port estate oversight role. Rather it is an active member of the SPPPI (Permanent Secretariat for Prevention of Industrial Pollution) of the Adour Estuary. Importantly, the SDA identified the water quality of the Adour estuary (which flows into the sea in Bayonne) as a central issue of environmental concern. This has been a long-standing challenge whereby the estuary water quality is judged as poor (according to EU Water Framework Directive indicators), and this despite a density of rules and controls within French water legislation. Indeed, whereas the estuary’s regulatory framework could be judged ‘high environmental performance’ based on rule density criteria, from an ecological standpoint this is not the case.

The SPPPI associates multiple public actors at different scales, including the port and the CCI, as well as port companies, environmental NGOs and residents’ associations. Initially set up with the intention of better understanding technological risks and accidents linked to the port’s activities, the work of this body has evolved over time. Today, a central task is to understand the contribution of the port industrial zone to water, air and noise quality and pollution. Moreover, members have allocated funds to support its work in a concern for greater transparency of environmental governance. Beyond regulatory control, the SPPPI has the ambition to scrutinise, debate and exchange over environmental impact and the port plays a central role at the interface of the port and the city, and between port companies and residents. Heated debates take place on environmental impact thresholds and whether they are respected by companies. Private operators are called to account, data requests are made, and studies commissioned (interviews: SPPPI minutes). Members examine files and raise questions about control. Of course, there are already multiple legal restrictions on companies. Accordingly, through the presentation of different types of data and information, members scrutinise whether companies are operating within legal thresholds. Yet, just because companies operate within legal thresholds, this does not solve the environmental paradoxes raised. Debate centres on the sharing of verifiable data, as well as on comparing different types of knowledge (of residents, state data, photos, etc.). Indeed, pressure is placed on both public and private actors to share data.⁸ The SPPPI has also commissioned studies ‘to objectify debate’ (Minutes SPPPI, 4 December 2020).⁹ Finally, SPPPI has more recently discussed carbon emissions of companies within the framework of the local climate and energy plan. Once again, whether a company’s presence is authorised in the port area turns on how impacts are measured and at what scale, i.e. should the port authorise companies whose local CO₂ emissions are high, but who operate short supply chains in the port area and hence (arguably) contribute to reduced overall global emissions for their industry?

As the oversight role of Bayonne port has been enlarged and opened up to public scrutiny, actors highlight that this is influencing company cultures in the port area, even if change is slow: ‘Industries have understood

that they need to play the transparency game' (Translation, Minutes SPPPI 4 December 2020). Because of these changes, the port has also used the SPPPI as a platform to defend a local economy within which an industrial SM port plays a central role, arguing against any future local economic shift towards a 'tourism' dominant model – one which would also cause significant environmental impacts.

3.2. Public action to address dilemmas 'choosing the future today'

Climate change raises a series of urgent dilemmas whereby port actors must redefine their economic model (e.g. replacing declining traffics in hydrocarbons, decarbonisation) and thereby 'choose their future today'. Both ports studied have implemented logistical and technological actions and projects towards these goals (e.g. electrification of docks and port services, installation of electrical points, solar panels, new train tracks, modal shifts, self-sufficiency: Carter & Roche, 2022). Of course, ports could choose to rely solely on green technological development rather than behavioural change or take the risk that technological innovation alone will 'repair' socio-environmental systems: indeed, these are two of the possible transition trajectories outlined in ADEME's 'Transitions 2025' scenarios. Consequently, port governing bodies have choices over whether they create institutional conditions and opportunities for transforming industrial practice and production (in the port area or beyond) through putting in place regulatory incentives, accompanying action or initiating collaborative partnerships.

The GPM of La Rochelle has worked to do all three, starting by building alliances with other public actors and especially with the Agglomeration of La Rochelle. Both the city, and the department of Charente-Maritime, have acquired de-centralised policy competences to fashion climate change adaptation and mitigation policies (Loi Notre, GEMAPI) (Mazeaud & Rieu, 2021). As stated on interview, 'a port has little say on maritime policy' and so policies enabling coastal adaptation must be co-constructed with relevant others. These partnerships have been facilitated by public actor representation in port bodies and especially by the way these bodies organised reflections on port strategies through working group meetings, e.g. preparing the most recent strategy 2020–2024 included a wider reflection on connections between port and local territorial development and led to a specific action point to forge inter-relationships with the city (interviews).

This is not to imply that relations between the port and the agglomeration have always been smooth. Each has their own role and jurisdiction. According to actors involved, a central challenge of transition is to understand 'who' is competent for which policy issue and 'not step on each other's toes' (Interview, Agglomeration). As institutional port-city interrelationships have been built, they have materialised into a new partnership between the GPM, the Agglomeration, AtlanTech (with which the port has a hydrogen experimental project), and the University of La Rochelle in the form of 'Zero Carbon Territory' (ZCT) project funded in part by the region (Carter & Drouaud, 2022).

The ZCT project created a hybrid public/private governance partnership to implement a decarbonisation strategy for the territory of the urban agglomeration (28 local authorities), including the port area. The background and commitment to this project is explained by different actors as part and parcel of an historical approach associated with La Rochelle as a territory open to experimentation and innovation in a long maritime history of adaptation. The main objectives are to reduce the carbon footprint of the territory by 30% (by 2030) and achieve zero net carbon emissions through nature-based carbon capture by 2040. The project provides economic incentives for local businesses and citizens through allowing for the possibility of a carbon credits mechanism. Links between carbon emissions reduction and ecological restoration are found through the work of a carbon cooperative operating in the spirit of a social economy (GPM and ZCT visit, 2022). ZCT is presented by its holders as encouraging a societal transformation of practices and forms a central element in the Agglomeration's own strategy towards urban transition based on creativity, solidarity and sobriety (GPM and ZCT visit, 2022).

Whereas the forging of social relations over decarbonisation strategies has expanded the political influence of the port over a wider territory than the port area (Carter & Drouaud, 2022), when it comes to renewable energy production choices, the GPM has had less sway over policy development. As part of the transformation of its economic model and fossil fuels replacement strategy, its heavy lift industrial capacity has been

developed converting parts of the port area to support marine renewable and offshore energy production (e.g. stocking, placement and maintenance of wind turbine components; ship transportation of wind turbines). Indeed, contributing to renewable energy production is viewed as the way to replace hydrocarbon imports (interviews).

A central governance challenge is how to connect its replacement strategy with political decisions on energy transition. Who defines the energy problem and its solution in New Aquitaine has shifted over the years. When the State began implementing EU Integrated Maritime Policy in France, energy production, previously an area of interest of the GIP littoral (public interest grouping of coastal local, departmental, regional and state actors), was brought within state maritime spatial planning processes and the elaboration of an Atlantic Seaboard Strategy (DSF) by 'state in the region' services (the DIRM). At this stage, the GPM engaged to influence the DSF. It also engaged to influence the writing of the Charter of the newly created local marine park to include park objectives in favour of siting a marine energy project in the zone of the park (Carter & Drouaud, 2022). However, although in both cases planning documents created enabling institutional conditions for a marine energy farm, its siting has been controversial. And it is another division of the state's administration, the Directorate on General Energy and Climate (DGEC), who has leadership on final siting decisions. The zone ultimately chosen is outside the perimeters of the marine park. For all these reasons, in this issue area of marine energy and spatial planning, the organisational and institutional complexity of the reconfigured environmental authority has rendered it challenging for the port authority to influence decision-making.

In the case of the regional port of Bayonne, we find a different result when it comes to preparing for marine renewable energy production – in this case, for a wave energy project. That Bayonne would be associated with wave energy was the recommendation of a past study carried out by the GIP littoral identifying connections between NA commercial port profiles (including geographical siting) and type of renewable energy production (Carter & Roche, 2022). Against this background, the port of Bayonne, in partnership with the Agglomeration of the Basque country (CAPB), has carried out extensive preparatory work. In the process of elaborating the port's development strategy, relations between the port and the city have been both built, and deepened, in a territory with a strong cultural identity.

It is important to note that neither tidal nor wave power are included in public energy policy in France as both technologies are considered immature and costly. Consequently, this is a challenging project from a technological point of view, when technology is not mature for industrial production (Flynn, 2015). Nevertheless, the port and the city have chosen to prepare the regulatory groundwork for such a project (Carter & Roche, 2022). As wave energy is not a state responsibility at present, regional and city actors are exploring new territory. Indeed, the region (as owner of the port) and the CAPB began a process in 2016 of strategic planning to lay institutional foundations for such a project and firmly embed it in CAPB's 'Development strategy 2023'. The port's energy transition policy is also aligned with the objectives of the local climate plan.

Through elaborating institutional conditions enabling wave energy, port actors have sought to reduce economic uncertainty in a situation marked by contingency and risk (revealing too the fallacy of functionalist accounts of institutions). Indeed, political work has even been directed at the selection of possible future production sites: on land in the port area, and at sea (several possible zones have been identified) (Carter & Roche, 2022). The port and the city have further commissioned a detailed environmental impact study for the marine zone ahead of the creation of a market for project authorisation to ease the regulatory burden for a future project holder (diagnosing siting impacts applying biodiversity criteria from the EU Marine Strategy Framework directive, e.g. on noise pollution). They have also created organisational structures in the form of a project consortium and committee to consult with a wide range of stakeholders on a possible ocean site for the wave power turbines (where different public policies and procedures apply). This consortium includes key local leisure and environmental associations, such as the NGO Surfrider, and discussions have commenced with the fisheries industry (interview material). Finally, an institutionalised principle is that the technology of the wind turbine must be designed in such a way that it is easy to remove from the sea. Consequently, any decision proposed on siting today can be reversed in the future (interview material). Once the regulatory framework is in place, a project call will be launched to attract investors. According to the port's own officials,

mastering the interconnected governance of land and sea use is a critical feature of transition politics and a collective endeavour.

4. Discussion and conclusions

Territorialisation, democratisation and ecologization of both SM ports and the wider polity in France have created opportunities for new governance approaches transforming ports' economic models through re-orientating their energy and environmental strategies (pollution, choice of economic activities, carbon emissions, energy transition). Both SM ports seized these opportunities through political work institutionalising regulatory, accompanying, and collective approaches over time. In both cases, they have sought to scrutinise the environmental impact of the port estate going beyond legal thresholds for 'acceptable' pollution. This has engaged them in a politics of environmental impact measurement, a central issue in transition because, according to the actors themselves, for anything to change, there first must be legitimately agreed thresholds. Both ports have also accompanied company transition (working within old and new organisational structures: SPPPI, MER). They have self-funded projects and secured additional public funding. Their political work has been collective in its orientation: port authorities have adjoined their strategies to those of other public actors tackling pollution and waste problems which emerge from past choices.

Similar conclusions can be drawn about the political work undertaken to address dilemmas 'choosing the future today'. Both ports have elaborated institutional and organisational structures addressing indirect drivers of climate change facilitating renewable energy production and decarbonisation processes. As stated repeatedly on interview, in terms of regulation, even if local actors cannot influence regulation at a global scale, they can (and must) still act locally to make a difference. In the case of La Rochelle, we observe both the creation of economic incentive policy instruments working with the Agglomeration to implement a zero-carbon policy, as well as political work to influence regulatory choices on marine energy production siting. In the case of Bayonne, the port working with the Agglomeration has prepared regulatory environmental impact assessment documents to pave the way for future wave production. In both cases, we also found numerous practices to accompany the reduction of carbon emissions and prepare the terrain for future operators, as well as funding mechanisms. Collective approaches were in evidence, especially port-city ones, with new organisations created and policy strategies elaborated to stabilise partnerships.

Such transformed governance (regulation, accompanying, collective) can be a critical step towards ecological transformation. However, whereas these results suggest a common political interdependence dynamic leading towards ecological transformative approaches, there are some important tensions and contradictions to be born in mind. At stake for SM ports is their vulnerability compared with large container ports – and hence the vulnerability of local economies (including the type of economy, manufacturing versus coastal tourism). Both ports remain embedded in logics of growth and competitiveness whose objectives can pull in contrary directions creating local tensions. From an ecological standpoint, not all local actors expressed satisfaction with the types of industry operating in port areas. For La Rochelle, responding to current geopolitical crises, traffic in fossil fuels has recently risen. The port has also commissioned an impact study on cruise shipping as one way to grow its traffic. Its port conversion project (Port Horizon 2025), viewed by the port authority as essential for preparing for stocking future floating wind turbines, has been contested locally, and it is unclear whether institutional solidarities extend to port-citizen ones. In the case of Bayonne, although the port economy contributes in equal measure to tourism in the local economy (and in 2021, it experienced a growth of 6.7% in port traffic), growth dropped by 15.11% in 2022 (port website). Local actors are clear that Bayonne's renewable energy project is about economic development first and foremost and energy transition second. For both ports, when it comes to energy transition, although there is much evidence of collaborative approaches, nonetheless, we can question to what extent political work on institutional conditions is still trumped by a faith placed in technological and logistical solutions.

Overall, following this discussion, we can conclude on the one hand that both the port of La Rochelle and Bayonne have made sense of the reconfigured environmental authority in which they operate by embracing local collective action. Accordingly, they have engaged to institutionalise its numerous actor and socio-

environmental interdependencies through several governing mechanisms which were mobilised towards a ‘sharing’ of responsibility: these included, circular economies, projects, conventions, charters, committees. This environmental public action goes towards avoiding problem displacement onto others, onto nature or into the future (Wagner, 2023). On the contrary, they have attempted to integrate co-responsibility, environmental-economic interdependencies and new perceptions of time into their governance practices. This political work of transversality (regulatory, accompanying, collective) has deepened interdependency between actors (both ports are now partners in a new project to support floating wind turbines: Carter & Roche, 2022) and resulted in a gradual shifting of cultures and institutions.

Yet, both ports face many challenges in actually realising ecological transformation. First there are important tensions which undercut the aforementioned initiatives. Second, within a reconfigured environmental authority, there are limits to what SM ports can ultimately control politically. At a time when the role of public actors responding to regulatory failures and unavoidable dilemmas is critical, our decentred approach reminds us that any reification of ‘the environmental state’ (or its reduction to ‘national governments’) not only overlooks how much responsibility now falls to numerous public actors, but how the exercise of public power is found in these actors’ ability to ‘work’ those political interdependencies in which they are situated. Transforming the system as a whole would require a concerted and coherent effort of public actors at all scales – one which at present is not a likely scenario. We can therefore conclude that, although we found change towards regulatory, accompanying and collective environmental public action, these changes alone do not guarantee that actors have fully embarked upon a newly transformative trajectory.

Notes

1. <https://www.larochelle.port.fr/nous-connaitre/publications/l-escale-atlantique/>
2. As opposed to the complexity of socio-ecological material interconnections and flows highlighted by Mat et al., 2016.
3. COASTAL was an EU H2020 project examining coastal/rural dynamics in sustainable territorial development (COASTAL No. 773782: <https://h2020-coastal.eu/>).
4. https://www.acclimaterra.fr/wp-content/uploads/acclimaterra-cahier-3-ENERGIES-RENOUVELABLES-WEB.pdf?utm_source=site-internet&utm_medium=page-cahiers-thematiques&utm_campaign=site-internet.
5. Interviews were carried out by Florian Drouaud, Françoise Vernier and myself (COASTAL); Sylvain Roche and myself (AcclimaTerra).
6. Initially funded by the NA region, the French environmental agency, and ADEME.
7. The SPPPI Ardour Estuary was created by an interdepartmental decision in 1998 before the establishment of Bayonne as a regional port. There exist SPPPIs for other water bodies in France.
8. A recent initiative has been to create a ‘nuisances alerts’ procedure, which allows residents to raise alerts (e.g. on air quality, noise) and which are responded to (voluntarily) by companies. Statistics on alerts are gathered and analysed and discussions are held on differences between noise pollution as experienced by residents and environmental impact thresholds as established by the law, which are neither measured nor experienced in the same way.
9. In La Rochelle, access to environmental data is via a new platform SeaPolar.

Acknowledgments

The author would like to thank all actors who gave up their time to be interviewed for this research, as well as her colleagues with whom empirical research was conducted and findings discussed.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This study was supported by funding from project COASTAL, which received funding from the European Union’s Horizon 2020 Research and Innovation Programme [grant agreement number 773782; <https://h2020-coastal.eu/>]. This study also benefitted from conceptual work carried out within the research network RRI Tackling Global Change for People and Environment, funded by the French government in the framework of the University of Bordeaux’s IdEx ‘Investments for the Future’ programme.

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