

Policy and politics in energy transitions. A case study on shore power in Oslo.

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ABSTRACT

Their position in transport systems allows ports to play a fundamental role in energy transitions. In increasingly ambitious quests to promote sustainability, ports often look to shore power to reduce emissions. To fill knowledge gaps regarding empirical experiences with shore power, this study turns to the transition to shore power in Oslo, Norway. In doing so, it demonstrates the instrumental role policy and politics can play in transitions. To explore this particular transition, we rely on document analysis and interviews with actors around the Port of Oslo and discuss their involvement with reference to the Multiple-Streams Approach. We argue that the main reason for successful implementation in this case was the *environmental thrust and the lack of controversy*. The transition was supported by shore power's ability to address different problems experienced by different actors, by the lack of competition from other policies and by a range of political influences which gave momentum to and aligned policy domains. Specifically, we find that the political stream was less prominent in selecting a policy, but more prominent in realizing it. Although the experiences from this particular transition are not necessarily transferrable beyond this case, our study demonstrates the importance of policy alignment, and argues that holistic policy making could be crucial to ensure deep transitions – in which ports can be expected to be prominent.

1. Introduction

As links in transport networks, ports play a crucial role in both land-based and sea-based transport. Since many actors and stakeholders interact in the port area, ports could also function as energy hubs in the transport system. This implies that ports could play a critical role in energy transitions (Damman and Steen 2021). This paper dives into one such transition process and investigates the role of policy and politics in the transition to shore power in the Port of Oslo, Norway. The Port of Oslo aims to remove 85% of its CO₂ emissions within 2030 (Port of Oslo 2018), and shore power is a focal point in its pursuit to become a zero-emission port. Shore power allows vessels at berth to shut down their fossil auxiliary engines and instead rely on shoreside electricity to power their operations. Shore power has become the most prominent approach to improve the environmental footprint of ports (Bjerkan and Seter 2019). Above all, it reduces visible, local emissions in the port area, but is in most cases also expected to reduce global emissions (Hall 2010). However, current research provides few empirical accounts of experiences with use and implementation of shore power. This study

therefore provides a much-needed empirical account of the transition to shore power in the Port of Oslo.

The main objective of this study is to *demonstrate the role of policy and politics in the transition to shore power in the Port of Oslo*. Although we recognize that a range of other factors also impact transition processes, we wish to emphasize these because transition studies have been criticized for under-acknowledging aspects of power, policy and politics in transitions (Meadowcroft 2009; Shove and Walker 2007). We therefore conduct an in-dept analysis of the processes proceeding implementation of shore power in Oslo. Through document analysis and interviews with involved actors, we develop a timeline that structures and demonstrates the transition to shore power. This is analyzed and discussed with reference to the Multiple Streams Approach (MSA) (Kingdon 1984), which has been successfully applied to understand policy and politics in transitions in other domains (Normann 2015). By taking this approach, we address a research gap put forth by Svensson and Nikoleris (2018), elaborated in the latest agenda for sustainability transition research (Köhler et al., 2019): “Transitions (should) provide more systematic process explanations (...) with tighter links between events and

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identification of critical conditions that link events". This paper responds to this call by identifying empirical steps (events) in the transition to shore power in Oslo and by defining timelines which inform about the prevalence of policy and politics throughout the transition process. We find that the problems, policy and politics emphasized by MAS are interdependent in their support of shore power. Our findings further stress the importance of policy alignment and holistic policy making, and that political work is essential to ensure policy realization as well as policy selection.

The transition literature contains interesting discussions on what constitutes a transition in terms of incrementality and timescales, and different types of transitions (pathways) that can be identified (e.g. Berkhout et al., 2004; Elzen and Wieczorek 2005; Geels and Schot 2007; Roggema et al., 2012). Within the scope of this paper, we choose to put a pin in those discussions. As such, we do not seek to problematize by what standards what we have observed is a transition and whether/how our observations are compatible to a particular theorized pathway. Rather, we observe that a new technology, with social and cultural bindings, has been implemented with the intent to impact energy practices. We consider this a change that per se is worthy of scientific scrutiny.

The article is structured as follows. In the next section, we will account for the theoretical underpinnings of this study, focusing especially on the Multiple Streams Approach. Section 3 presents methods and data, hereunder the actors who were most prominent in the transition to shore power. Section 4 presents and analyzes problems, policies and politics associated with the transition, before section 5 discusses how these contributed to reduce controversy and push for policy realization. Section 5 also discusses how the relations and interconnectedness between these streams supported this particular transition. Section 6 concludes and discusses implications for policy and research.

2. Multiple streams in the politics of energy transitions

This section describes the prevalence of policy and politics in transition studies, and elaborates on the Multiple Streams Approach, which we apply to structure and demonstrate the role of policy and politics in our case study on shore power.

2.1. Policy and politics in sustainability transitions

Although criticized for overlooking such aspects of transition, transition studies increasingly orient towards the roles of policy and politics. Several studies address how policy mixes can promote (or impede) transition (Kivimaa and Kern 2016; Kivimaa and Virkamäki 2014; Lindberg et al., 2019; Reichardt et al., 2015; Schmidt and Sewerin 2019; Uyarra et al., 2016) and existing studies provide different approaches for categorizing the content and functions of policy instruments (Kern and Howlett 2009; Kern et al., 2019; Rogge and Reichardt 2016). Further, scholars increasingly focus on how policy is produced, drawing on established theories of political science to highlight the roles policy and politics play in shaping transition pathways and outcomes (Köhler et al., 2019:22). These are inherently tied to the bargaining of political processes, and thereby expressions of different types of power being exercised (Ahlborg 2017; Avelino 2017; Avelino and Rotmans 2009; Grin 2010; Hoffman 2013; Pel 2016).

Politics are at play at niche, regime and landscape levels (Meadowcroft 2011), which has ushered a growing body of literature on politics in transitions (see Avelino et al., 2016 for a useful overview). Hess (2014) studied struggles between opposing political coalitions, and Raven et al. (2016) investigated the role of technology advocates in promoting sustainable technologies. Normann (2015, 2017) found that the breakthrough of emerging niches was influenced by specific political positions and political bargaining, as well as access to policymaking processes. Some studies have incorporated politics to refine existing theoretical understandings of transitions (e.g. Lockwood et al. (2017);

Geels (2014)), while others attend to politics inherent in transition management (e.g. Shove and Walker 2007; Smith and Stirling 2010).

Kern and Rogge (2018) argue that the full width of policy theories might be useful to analyze transition processes, depending on the focal point of the specific study. The focal point of this study is the transition to shore power in Oslo, and the strong prominence of policy and politics in this narrative makes the Multiple Streams Approach (MSA) useful to demonstrate the of roles policy and politics in transition.

2.2. The Multiple-Streams Approach

The Multiple-Streams Approach (MSA), originally presented by John W. Kingdon (1984), derives from political science theory, using a systemic approach to understand policy outcomes. It was developed to understand agenda-setting in policy processes, but is also useful to understand dynamics in the full policy process. The MSA originally evolved from the Garbage Can model of organizational choice, which considers policy outcomes to occur through coincidental interaction between opportunities, problems, solutions and participants (Olsen 1972). The MSA assumes that policy outputs are produced through interaction between three streams: problem, policy and politics. Policies change when policy entrepreneurs recognize and seize opportunity to exploit so-called "policy windows" (Sabatier 2007). We claim that such interactions were vital in the transition to shore power in Oslo.

2.2.1. The problem stream

The problem stream consists of problems looking for solutions (Winkel and Leipold 2016). Problems are unwanted situations that someone believe they can correct (Kingdon 1984). Even more important are *perceptions* of problems (Béland and Howlett 2016), as policies occur when "political entities want solutions to issues they perceive as problematic" (Jones et al., 2016:15). This implies that understandings of situations are more important than their actual state. In Norway, for instance, increasing attention to the cruise industry has spurred problem perceptions concerning local emissions from ships.

Problem perceptions typically arise from sudden events and shocks that jolt policy makers, or from permanent monitoring and feedback procedures (Béland and Howlett 2016; Jones et al., 2016). In this study for instance, we will see how monitoring GHG emissions singled out cruiseferries as particularly problematic. However, limited processing capacity implies that only a few problems receive political attention (Zahariadis 2007), and problems continuously compete with other problems over the short life-span of this attention (Cairney and Jones 2016). Problems could also lose attention because policymakers are content with what they have already achieved (or tried to achieve) or because vested actors fail to remain persistent (Normann 2015).

2.2.2. The policy stream

Kingdon (1984) considered policies to be a "primeval soup" in which ideas of how to solve problems floated around, waiting for someone to adopt them. As such, policies represented iteratively evolving strategies (Cairney and Jones 2016) that could be mobilized to solve particular problems (Winkel and Leipold 2016). In the policy stream, different solutions to the problem are identified and evaluated before one is selected (Béland and Howlett 2016). MSA assumes that certain policy characteristics make them more likely to be selected (Kingdon 1984), especially if they are technologically feasible (Jones et al., 2016), comply with the value-system of the community and supported by policy entrepreneurs (Jones et al., 2016; Normann 2015), are competitive in terms of costs, and have public and administrative acceptance (Liu et al., 2010; Normann 2015). The policies of MSA typically find their counterparts in the niches described by transition studies (Normann 2015).

In this study, shore power circulated the policy stream and was picked up as a solution to solve several problems to the City, the Port and to Shipowners. We will describe expectations associated with shore

power and its correspondence with technological feasibility, value acceptability and competitiveness.

2.2.3. The political stream

The political stream contains any political element that might impact policymakers' orientation towards a problem and potential solutions to the problem. In this stream, policymakers that are motivated and have the opportunity to do so, can choose to turn a solution into a policy (Cairney and Jones 2016:40), and developments in the stream occur through bargaining between different positions (Normann 2015).

The political stream is comprised of several potential influences, including the national mood, elections, replacement of executive or legislative officials, issue jurisdiction, stress and crisis, pressures from interest groups, party ideology, consensus and coalitions building (Béland and Howlett 2016; Jones et al., 2016; Kingdon 1984, 1995). In this study for instance, we will see how the constellation of political parties influenced the implementation of shore power in Oslo.

2.2.4. Stream interaction

Originally, Kingdon described the three streams as independent. He contended that transformative change occurs when the streams intersect, through so-called windows of opportunity (see Fig. 1), i.e. "opportunities for advocates of proposals to push their (...) solutions or push attention to their (...) problems" (Kingdon 1995:165). Windows of opportunity appear when streams change to the extent that they align (Normann 2015).

In the earliest application of MSA, this alignment implied a great deal of coincidental timing. It was therefore criticized for under-acknowledging agency and deliberate attempts to connect the streams (Bendor et al., 2001; Mucciaroni 1992). Critics claimed that streams were interdependent rather than independent, implying that change in one stream triggers change in another. Zahariadis (2007) argues, however, that whether streams are independent or interdependent is an empirical issue, especially because the rationales in the policy process can shift.

The MSA tries to mend the agency deficit through introducing policy entrepreneurs into the mix of streams, who represent an interesting parallel to niche actors in transition studies. Policy entrepreneurs "skillfully engage in coupling [streams] to launch their "pet" proposals onto the policy agenda" (Winkel and Leipold 2016). They are not only advocates of specific solutions, but also power brokers and manipulators who initiate actions when windows of opportunity emerge (Zahariadis 2007).

3. Methods

In demonstrating the role of policy and politics in the transition to shore power in Oslo, we have studied a contemporary transition. Given the lack of research on contemporary transitions there is need for exploratory work, for which case studies are particularly suited (e.g. Berg 2001; Bidart et al., 2012; Rowley 2002). Case studies are analyses of subjects (e.g. transition to shore power) within an analytical frame (e.g. MSA) that provide meaning and allow interpretation (Thomas 2011).

Our study primarily focuses on the four actors who were most prominent in this transition. Since the early 2000s the City of Oslo has struggled to tackle poor air quality (NPRA 2010). Environmental and climate issues are high on the City's agenda and it has introduced a range of environmental policy measures, including infrastructure for cycling and public transport, car free zones, incentives for use of electric vehicles, and biofuels. Since 2016, the City has aimed for a 95% reduction of GHG emissions by 2030 (City of Oslo 2016), necessitating emission reductions also in the port area.

The Port of Oslo is a public enterprise owned by the City of Oslo, located in the city center of Oslo. It is the busiest port in Norway, and expects a 50% volume increase by 2030 (Port of Oslo 2018). The Port is managed by a politically appointed board and the Port Director, who

oversees the doings of the (by Norwegian standards) large and specialized port organization. The Port is expected to take a leading role in reducing emissions. Accordingly, it plans to become a zero-emission port, and has launched an action plan which highlights 17 actions estimated to reduce CO₂ emissions with 85 per cent (Port of Oslo 2018).

The local energy company, Hafslund, is owned by the City of Oslo. It has 80 powerplants with 100% renewable power from hydropower (Hafslundeco.no, 2020), and its activities are continuously diversifying and strengthening its position in electrification and energy systems. The company is preparing to actively facilitate and shape energy transitions, through for instance establishing subsidiary companies particularly dedicated to innovation and business development in electrification.

Three Scandinavian cruise ferry¹ lines operate between Oslo and cities in Denmark and Germany, carrying more than 2 million passengers a year (Port of Oslo 2020). Cruiseferries are the largest source of CO₂ emissions in the Port of Oslo, and half of these are emitted at berth. The ferries are located at two different quays. Shore power was established at the first quay in 2011, and at the second quay in 2019.

3.1. Sequential timed events plotting

Inspired by process theory (e.g. Bidart et al., 2012), transitions could be understood as "temporal sequences of events, timing and conjunctures of event-chains", where processes are "sequences of events (...) enacted by (...) actors" (Geels and Schot 2007). This study does not provide a full-blown processual analysis of the transition to shore power in Oslo, but borrows from process theory to structure the actors' narratives about policy and politics.

To capture these narratives, we used sequential timed events plotting (STEP), which was originally designed to identify events and errors leading to accidents (Hendrick and Benner 1987). The main goal of STEP analysis is to understand how different actors perceive and influence processes (Stanton et al., 2019). In practical terms, STEP involves developing time lines for all actors involved in a particular process (e.g. transition), focusing on the actions and interactions within and between actors (Rausand and Utne 2009). This provides a multi-linear description of the process (Sklet 2004). Fig. 2 presents our timeline for actors involved in the transition to shore power in Oslo.

3.2. Document analysis

Document analysis has been central in identifying the steps (events) in the transition process. We reviewed planning and policy documents related to policies and objectives in the Port of Oslo and the City of Oslo. Particularly prominent were the Port Climate Strategy (2017) and Zero Emission Action Plan (2018), and the City Climate Strategies (2016, 2019) and Plan for emission free Oslo Fjord. We also relied on media coverage and opinion pieces in local and national media (Aftenposten 2017; Aftenposten 2018a; Aftenposten 2018b; Elgvin 2017; NRK 2018; Vårt Oslo 2017). Documents were mainly accessed through web searches, and some were suggested by interviewees. The document analysis provided important background information for the interviews and helped to identify preliminary events and timelines for each actor.

3.3. Qualitative interviews

Based on the document analysis, preliminary timelines were developed for each actor. Interviews were conducted to test, remove, or modify preliminary events, and to identify additional events. The interviews provided the actors' subjective perceptions of transition events. Considering the lack of pre-existing knowledge on transitions in ports and empirical experiences with shore power (Bjerkan and Seter, 2019)

¹ Cruiseferries combine features of a cruise ship with a passenger and car ferry, which is common in the seas of Northern Europe.

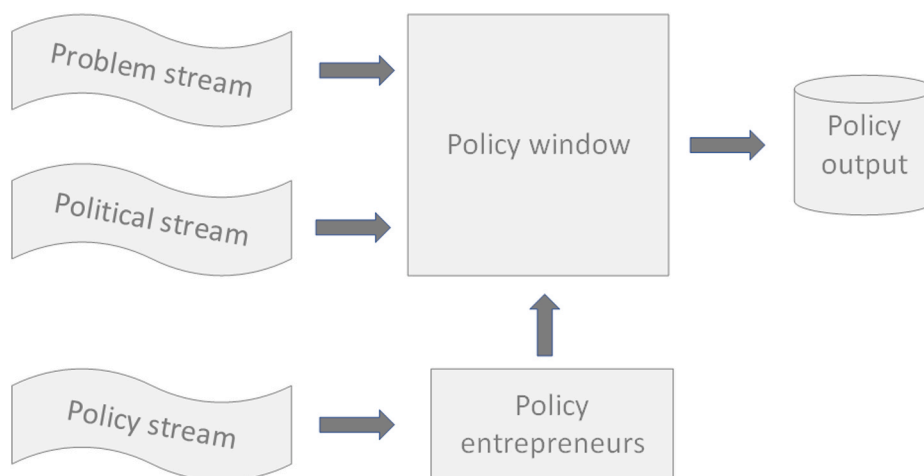


Fig. 1. Multiple-Streams approach. Sources: Jones et al., (2016), Zahariadis (2007).

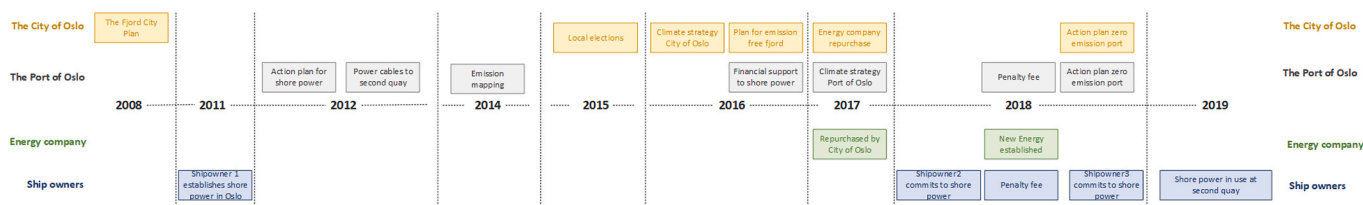


Fig. 2. Timed events in the story of shore power in Oslo.

semi-structured interviews were considered appropriate.

For each actor we defined an interview guide based on the actor’s preliminary timeline, with questions related to each event (i.e. what was the motivation behind ... ? When did you first start to discuss ... ?). The interviews provided detailed, chronological accounts of events in the preliminary timeline. When one event was thoroughly accounted for, the interviewees asked the interviewee to describe what happened next. In some cases, the interviewee did not have knowledge about all events, which made it necessary to interview several representatives of the same actor.

Given the comprehensiveness and uniqueness of the interviews, all questions and topics from the interview guide cannot be displayed here. However, Table 1 gives a stylistic image of an interview guide based on a hypothetical, preliminary timeline.

In total, we conducted 12 interviews about shore power in the Port of Oslo. Seven of these were conducted with actors involved in implementing shore power for the cruiseferries; the Port of Oslo (n = 3), the City of Oslo (n = 1), shipowners (n = 3) and the local energy company (n = 2). Four interviews were conducted with users in the port who considered or had actually implemented shore power for the own operations. These interviews mainly served to shed light on the problem stream and the policy stream, and were not directly relevant to the transition process itself. Finally, we conducted an interview with the politically independent environmental organization Zero, which mainly served to inform about the political stream. Interviewees were identified through the researchers’ network or suggested by other interviewees (i.e. snowballing, Goodman 1961). The interviewees were all closely involved in the process of implementing shore power in Oslo, and all provided in-depth information on what perspectives were guiding their decisions. The interviews were conducted on telephone and lasted approximately 1 h.

Interviews were transcribed, and coded and analyzed using the NVivo software. Preliminary events were used as codes, and iteratively modified and added/removed as interviews shed light on new and existing events. As such, the final set of codes corresponded to the set of

events described in the next section.

3.4. Selection of case and events

The Port of Oslo is an interesting case for understanding energy transitions in ports. For one, it is a frontrunner port in applying dedicated and ambitious strategies for energy transition. Second, it is distinguished from international frontrunner ports because of its smaller size and its geopolitical location. Thirdly, the use of shore power in Oslo has generated substantial discussion, media coverage and interest. The transition process was therefore well documented. Finally, given that the last shore power connection was opened 2019, the interviewees had events fresh in their memory and provided first-hand accounts of the process.

To tell the story of policy and politics in the transition to shore power in Oslo we selected events that expressed or influenced the actors’ motivations and decision-making. Selected events are listed in Table 2. Events that have impacted technical specifications and the practical realization of shore power (e.g. dialogue conference with suppliers, technology providers and other stakeholders) were generally not included. Such events were only included if they directly impacted transition progress, such as laying power cables to the second quay (Event 4).

4. The problems, policies, and politics of shore power in Oslo

This section accounts for the transition to shore power in Oslo. First, we present problems that made shore power a relevant solution. Then we describe how shore power evolved as a policy and how it allowed actors to solve their problems. Finally, we introduce political influences that we consider instrumental in the transition to shore power.

4.1. The problem stream: multiple problems for multiple actors

In Oslo, arguments for shore power related to both local environmental issues and global climate issues, and these discussions started

Table 1
Stylistic example interview guide based on hypothetical, preliminary timeline.

Timeline		2008		2012		2018	
Event no.	Event 0	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6
Event description	First discussion of shore power	Launched policy document	Received public funding	Entered into collaboration agreement	Entered into collaboration agreement	Entered into collaboration agreement	Entered into collaboration agreement
Questions	When did you first start to discuss shore power in your organization?	Why did you launch? Who was involved in developing this policy? What reaction did you receive?	When did you start to discuss applying for funding? Who initiated the application? How did this relate to the policy document?	When did you start to discuss applying for funding? Who initiated the application? How did this relate to the policy document?	Who suggested you enter into formal collaboration? What was your motivation? What plans do you have for this collaboration?	Who suggested you enter into formal collaboration? What was your motivation? What plans do you have for this collaboration?	Who suggested you enter into formal collaboration? What was your motivation? What plans do you have for this collaboration?
							What happened after?

Table 2

Short description of events in the transition to shore power in Oslo.

Event	Description	Year
#1	The Fjord City program. Introduced shore power as principle in sustainable transport	2008
#2	First shore power installation. Initiated by Shipowner1. Shipowner1 funded 70% of all costs. The rest was funded by the Port of Oslo (approx. 8%) and public agencies (approx. 22%).	2011
#3	Action plan for shore power in the Port of Oslo. Introduced the port's goal that "all passenger ships with regular calls shall have the opportunity to use onshore power".	2012
#4	Power cables to second quay. The Port of Oslo places power cables to quays used by Shipowners 2 and 3.	2012
#5	Mapping of emissions in the port. Highlighted the need for cutting emissions from the cruise ferries	2014
#6	Local election. A new green-left city council replaced eighteen years of conservative city government.	2015
#7	Climate Strategy for City of Oslo. Aimed for shore power and other measures to reduce port emissions with at least 50% within 2030	2016
#8	Plan for Emission Free Fjord. Called for the City Council to initiate use of shore power for cruiseferries from 2020 at the latest.	2016
#9	Financial support from Enova. Grants covered 75% of costs with establishing shore power at the second quay.	2016
#10	The Port of Oslo's Climate Strategy. Identified shore power as solution to reduce port objective in the City's Climate Strategy of 2016.	2017
#11	The City of Oslo repurchases energy company. The City of Oslo regained over 90% ownership and removed the company from the stock market	2017
#12	Shipowner2 committed to use shore power.	2018
#13	Penalty fee for cruiseferries without shore power. Introduced by the Port Board.	2018
#14	Shipowner3 committed to use shore power.	2018
#15	Subsidiary to energy company established. Dedicated to innovation and business development of future solutions for electrification.	2018
#16	Action plan for zero emission port. Included shore power as one of seventeen measures to reduce CO2 emission in the port by 85%	2018
#17	Shore power for international cruiseferries is launched.	2019

about ten years before shore power for cruiseferries was implemented. Locally, there was a desire to "improve the city" (City of Oslo 2008; City of Oslo 2016), by addressing the **disconnect between the urban population and the seaside**. In promoting the motto "The Blue and the Green, the City in between" (City of Oslo 2008), the Fjord City Program aimed to redevelop the urban shore side to connect urban life with the fjord. This mirrors worldwide trends, where cities redevelop port areas to accommodate growing city populations (e.g. Jauhainen 1995; Oakley 2005; Wang 2014). Shore power was suggested together with other so-called "principles" for promoting a sustainable city by the fjord in 2008, but these principles were less specific, such as increasing accessibility to the fjord or better utilization of the area. To connect the city and the seaside, redeveloping port areas was important to reduce **local emissions and noise**, which also threatened the port's position and legitimacy in the urban environment (Port of Oslo 2012), and jeopardized the desire to improve the city. This also corresponded with the problem agendas of port users, whose economy and reputation relied on solving noise issues.

"The most important thing we can do, economically, is to operate 24/t, and then we need to be as noise free as possible (...) this is why we choose shore power (..) because neighbors call to complain".

Port User A

Although the Port also addressed local emissions (e.g. nitrogen, sulfur), the "climate problem" (Port of Oslo 2017) and CO₂ emissions were increasingly emphasized. As discussed below, the 2015 elections raised global emissions on the agenda and produced the City's ambitious CO₂ objectives. The City's 2016 ten-point plan for an emission free fjord (Event 8) further pinpointed passenger vessels, particularly emissions

from vessels at berth, and as such pointed at the port as problem owner when it came to vessel emissions.

"It is important that the ports have electricity and shore power to ships when they are at port".

Port User B

In 2014 the Port did a mapping of emissions sources that lay the foundation for their actions. This allowed the port to identify its primary emission problem and became a decisive event for the port's priorities with respect to climate and environmental actions:

"We became very interested in fact-based actions"

The Port of Oslo

After monitoring and documenting its emission sources, the Port found cruiseferries to represent 38% of CO₂ emitted from vessel operations in the port (Port of Oslo 2018).

"First, the hotels in these ferries are energy intensive, and second, the ferries come and go every day"

Port of Oslo

This made cruiseferries the first priority for reducing emissions in the port. To shipowners, this represented potential image problems. Shipowner1 therefore collaborated with an environmental organization to explore how to improve their sustainability profile. As a big actor, they felt expected to take social responsibility.

"[We] are expected to take social responsibility and follow developments (...) Travelling with us should not compromise the customer's personal perceptions. [Still] we expect to get economic return and recognition"

Shipowner1

These motivations were also tied to commercial assessments that suggested a proactive, green reorientation was necessary to maintain (or improve) own market position and to prepare for the green future; Shipowner1 launched its sustainability initiatives expecting to be rewarded and recognized as an early mover.

Hence, shore power responded to problems associated with global emissions, as well as local emissions which reduced urban life quality, and the public's access to the shoreside. Local port emissions were further considered a threat to the legitimacy of port activities in urban areas, which are common problems in port cities (Fusco Girard 2013). According to MSA, however, policies become successful not only because they respond to problems, but also because these problems are raised on the political agenda. In the case of Oslo, these problems represented an opportunity to raise political flags. As elaborated below, the increased thrust of environmental policy produced more attention to emission problems and sustainable urbanism, encouraging local politics to capitalize on green sentiments by expressing drive and deliverability.

4.2. The policy stream: shore power for port and city sustainability

Local port emissions represented a challenge in connecting the city with the seaside. Historically, port areas have not been attractive housing or recreational areas because of noise and pollution. With the introduction of shore power local air pollution and noise would be significantly reduced (Poulsen et al., 2018; Vaishnav et al., 2016), and it may therefore be an efficient tool to improve the relationship between ports and their neighboring communities.

The City also considered shore power a response to reducing global

emissions. The 2016 Climate Strategy (City of Oslo 2016) aimed to reduce the City's CO₂ emissions with 95% by 2030,² and shore power was introduced as one of 16 priority areas. However, it did not suggest detailed approaches for how to promote shore power. Rather, specific actions to initiate shore power rested on a ten-point plan for reducing emissions in the Oslo Fjord approved by the City Council in September 2016. The plan originated from a private proposal by representatives of the conservative opposition and was unanimously approved. The plan therefore represented cross-partisan consensus regarding emission reduction. Among other, the plan stated that the city council should initiate shore power for cruiseferries from 2020 and promote national regulation which allowed ports to require calling vessels to use shore power.

"The work in 2016 pointed out a clear direction and ambitions for the Port of Oslo"

City of Oslo

As port owner, the City's increasingly explicit port policies also compelled the Port to raise its own ambition in terms of emission reduction. As stated by the Port's 2012 *Action plan for shore power* the Port aimed for "all passenger ships with regular calls [to] have the opportunity to use shore power" (Port of Oslo 2012). In the wake of Shipowner1's shore power installation (2011), the Port prepared for a second shore power connection. The port applied for public funding to establish shore power for Shipowner2 and Shipowner3 in 2016, although neither were at this time planning to use shore power. The funding covered 75% of the costs and was decisive for the Port's decision to establish shore power at the second quay. The ambitious national policy for electrification of transport, expressed through this funding scheme, thus directly enabled similar policies at the local level. Following policy developments in the City, the Port launched their own climate strategy aiming to reduce climate emissions with 50% by 2030, in which shore power was essential to succeed.

"After the climate strategy of the City of Oslo was launched, we decided at the Port of Oslo, that we needed our own climate strategy."

The Port of Oslo

In 2018, the Port launched its Action Plan for Zero Emission Port, aiming to reduce CO₂ emissions in the port by 85% within 2030. The Port's action plan represented efforts to merge port and city policies on energy and sustainability. The interviews suggested that the work with the Action Plan for Zero Emission Port (2018) marked the beginning of a closer policy collaboration between the Port and the City. Previously, these two had not cooperated to a large extent on joint policies.

"[We worked] shoulder by shoulder with the bureaucrats, who have lifted issues to a political level (...) Everyone who has been involved have learned more about the port than they had anticipated, which is a benefit in itself".

Port of Oslo

This collaboration revolved around defining an appropriate policy mix, which allowed the City to reach its ambitious emission reduction goals while avoiding disrupting the Port's operations and customer relations. It was important to the City that the action plan resonated in the Port and that the Port assessed the realism in proposed policy mixes. This collaboration further allowed knowledge transfer from the Port to the City, and the Port stressed a sufficient understanding of port and maritime business in the City.

To shipowners, shore power represented a solution to maintain

² Using 1990 as year of reference.

reputation in times when sustainability in general and vessel emissions in particular were prominent in public debate. One shipowner highlighted shore power as a solution to problems associated with their environmental profile:

“We did something that people can see and understand, because we are so visible and close to the city”

Shipowner1)

To Shipowner 1, initiating and financing shore power in 2011 (Event 2) addressed problems related to green profiling. These problems were particularly pressing because the shipowner’s port operations were close to the urban environment and therefore visible to the population. As such, shore power was a way of ensuring co-existence with the urban population also among shipowners.

As such, in reducing local and global emissions and thereby facilitating co-existence between the port and the urban population, shore power responded to the problems facing the City, the Port and the Shipowners alike. The MSA further stresses that successful policies hold comparative advantage over other potential solutions. One could also imagine other policies to solve these problems, such as reducing traffic to the port, refusing particularly polluting vessels, moving or modifying port operations, or requiring vessels to operate on non-polluting fuels. However, there did not seem to be any explicit discussion around these alternatives after the mapping of the emissions was launched in 2014, and shore power appeared in policy documents as early as 2008. As such, it seems that shore power was established as the chosen solution quite early, and that there was **no real competitor** to shore power in tackling these challenges.

Shore power corresponds well with the advantageous policy characteristics emphasized by Kingdon (1984); technological feasibility, value compliance, and competitiveness. For one, shore power was **technologically feasible** and power supply in the region was abundant. Following the entrepreneurial work of Shipowner1, an industrial standard for shore power connections was launched, suggesting that the port’s work to establish shore power at the second quay faced few technological challenges. The Port also sought to enhance technological feasibility through inviting technology suppliers and users (i.e. shipowners) to a dialogue conference on shore power in which participants provided input to design an optimal solution. Further, shore power complied with the green **political climate** characterizing the city, but also reflected national calls for protecting Norwegian fjords from ship emissions. In contrast to other potential policies, shore power was also pushed forward by **policy entrepreneurs**. Shipowner1 relied on own initiative and funding to establish shore power in several Norwegian ports, and through dialogue and collaboration it raised ports’ awareness and knowledge about shore power. Shipowner1 even claimed their solutions to have inspired the industrial shore power standard, suggesting that their entrepreneurialism reached beyond Norwegian shores. As elaborated below, Zero further appeared to play an instrumental role in setting shore power on the political agenda and actively worked to produce cross-partisan consensus around the proposal that eventually produced a political resolution for the introduction of shore power to cruiseferries.

Finally, shore power was a superior policy because costs were low and acceptance high. The generous public support **scheme** for electrification of transport has enabled approximately 90 Norwegian ports to install shore power. In Oslo, this support scheme covered 22% of Shipowner1’s costs with establishing the first facility, and 75% of the Port’s costs with establishing the second facility. Further, there is large **political consensus** and **public acceptance** concerning shore power, which has continued the long line of strong incentives for electrification of transport. Public acceptance could also be particularly high because shore power impacts the population directly; in reducing visible air pollution it improved public health and public access to the shore.

4.3. The political stream: green-left push in public policy

Several political influences can be identified in the transition to shore power in Oslo, and in the following we highlight political influences that we consider to have been crucial for its success.

4.3.1. Political and administrative restructuring

The 2015 **local elections** accelerated attention to port sustainability. These elections changed the political landscape in Oslo, as the landslide of the Green Party allowed a green-left city council to replace eighteen years of conservative city government. This spurred substantial emphasis on climate and environmental policy, and subsequent political influences which collectively supported the transition to shore power. For one, the change in government implied new political priorities, new agenda setting and new values underpinning policies and instruments. In July 2017, the **Climate Agency** was established as a permanent agency to oversee the implementation of the City’s climate strategies (City of Oslo 2016; City of Oslo 2019). This reflected the new city government’s emphasis on climate and environment, and their effort to realize ambitious policy. The Agency was for instance heavily involved in developing the City’s Climate Strategy and the Port’s Zero Emission Action Plan, and became instrumental in aligning the policy perspectives of the Port and the City.

4.3.2. Political steering

Another political influence following the local election was more active **port ownership**. Before the 2015 elections, local politics were largely unconcerned with port activities. Norwegian ports have historically enjoyed great autonomy from public owners, which in Oslo has been reflected in the lack of coordination between the Port and the City in matters of port sustainability. However, the years following the local elections saw an increasing politization of port issues, which evolved through direct collaboration between the Port and the City, and through more political engagement by the port board.

The City’s 2016 Climate Strategy represented an opportunity for the new rule to demonstrate this political shift. It allowed the new local government to make their mark on the political landscape and to point out direction and ambition for the city’s emission reductions. Active ownership from the City, with more explicit port policy, thus became apparent.

“[The City’s 2016 Climate Strategy was] first and foremost a political document, which pointed out a clear direction and the level of ambition for the Port of Oslo”

City of Oslo

Following the City’s ambitious emission reduction goals, the Port decided to define specific reduction measures as well. The Port considered it vital to adjust to the political goals of their owner, and in raising their own reduction targets they hoped to avoid a politically controlled process. Hence, the Port’s efforts were motivated by their concern that the City might interfere with port business and that the Green-Left City government would exercise its formal power over port activities and strategies, which resides in the City’s ownership of the port and the politically appointed Port Board. The discussions with the bureaucrats in the Climate Agency were not without controversies, but the collaboration gave a mutual understanding of what level the goals of the Port of Oslo needed to be to be politically accepted.

“Initially, we believed [the objectives] were too ambitious, but it was clear that it would not be politically acceptable [to reduce ambitions], [and then] they [would] begin with nonsensical measures. So, we need to be ambitious and go the extra mile and define demanding measures”

Port of Oslo

Although the election represented a political shift, it did not introduce a large number of opposing ideas between the City government and the Port. The Port of Oslo seems to have decided on going into dialogue with the Climate Agency and then adjust their own policies in line with the expectations raised by the City government.

"It is more interesting to collaborate, getting the different stakeholders to meet, and solve problems together"

The Port of Oslo

Controversy around shore power was more prominent in the reactions of the shipowners. The shipowners found expectations of using shore power challenging since it implied long-term, expensive investments. Given the age of cruiseferries calling on the Port of Oslo, the shipowners would have to retrofit "old" vessels. One shipowner had already installed catalysts which reduced local emissions, and sunk costs were therefore substantial. Thus, they expected costs with retrofitting vessels to outweigh potential gain. Nonetheless, all shipowners eventually started to use shore power, but displayed different, political rationales for doing so. As seen above, Shipowner1 took a proactive stance towards green consumerism and became an early mover to remain on the good side of their market. Although initially hesitant, Shipowner2 redecided because their company owner shared the sustainability ambitions of the Port and the City, and resolutely decided that the company itself would bear the costs of retrofitting. The company had used shore power since the early nineties and was continuously working to accelerate shore power use and implement additional measures from its sustainability strategy.

"In the end the [company] owner decided that we should take the money from our own pockets to get [shore power] done (..) The motivation was simply that we wanted to go for sustainability (..) [In other ports] we are the ones investing and pushing for shore power (..) Shore power is one of the pillars [of the company]"

Shipowner2

Finally, Shipowner3 only agreed to use shore power because of **political pressure**. A penalty fee for cruiseferries without shore power was introduced by the Port Board in 2018. The Port Board argued that the cruiseferries had been given enough time to adjust, and the penalty fee was introduced. In addition, a discussion piece was published in a national newspaper where a Port Board member representing the Green Party referred to the lacking shore power connection for all cruiseferries as "demoralizing" for the green shift in Oslo.³ With the political engagement of the Port Board, it became difficult for Shipowner3 to withstand the pressure.

"We were given an ultimatum, as we see it (..) I won't say we had a business case that showed us it was sensible (..) There was political pressure to do it [use shore power]"

Shipowner3

4.3.3. Public energy ownership

The transition to shore power was also supported by renewed local **energy politics**. In the 1990s, the conservative city council privatized the City's energy company. In 2017, however, the City of Oslo repurchased stocks, regained over 90% ownership and removed the company from the stock market. This was part of a strategy to strengthen public ownership of power and electricity in the city (Aftenposten, 2017). A year after the repurchase, the local energy company, now owned by the City, established a subsidiary company dedicated to

innovation and business development related to future solutions for electrification.

"It is amazing [when] [the local energy company] wishes to contribute to Oslo becoming the Climate City that is politically envisioned (..) [As owners we] do not want to dictate how to run the company, but [the City] wishes to show direction and main trajectories for the company, without distorting commercial aspects"

City of Oslo

The repurchase and restructuring of the local energy company were ideologically based decisions to proactively induce energy transitions in which public ownership was an objective per se. These actions were intended to substantiate electrification policies, which in turn supported environmental policies. The energy company could as such be considered a tool for the City to accelerate electrification.

"We have a good dialogue with [the energy company] about electrification in Oslo (..) [also] to ensure that capacity, infrastructure and other issues are aligned to provide a satisfactory transition pace"

City of Oslo

However, although the energy company can be seen as an important tool to accelerate electrification, transitioning towards zero emission takes time, and a holistic approach is needed.

"We need a holistic approach, where the number of shore power systems are seen in relation to for instance solar panels, the use of hydrogen, and the need for batteries for peak-shaving"

Energy Company

Public ownership as a tool for promoting electrification thereby allowed the energy company to engage in new business areas and promote the electrification of transport and port activities, thereby supporting the ambitious objectives of the City. A continuous dialogue between the City and the energy company has been vital for the City of Oslo.

4.3.4. Environmental thrust

A final and very prominent political influence in the transition to shore power was the instrumental role of environmental organizations (Bellona and Zero), who promoted ambitious port policies and shore power. Bellona had a long-time collaboration with Shipowner1 and argued strongly for the shipowner to install shore power in 2011. Zero engaged to accelerate discussions around shore power.

"It was hard, slow, and [there was] little interest [in shore power] the among ports and users (..) So to make it happen we needed political resolutions"

Zero.

Bellona and Zero therefore exerted substantial influence over the Action Plan for Zero Emission Port. They actively pushed the City for stricter emission objectives, requested an action plan for the port and exercised pressure to realize it.

"There is no doubt that Zero was a driving force that influenced politically to have [the action plan] realized. They exercised significant pressure on all politicians in the city council"

Port of Oslo

Zero also engaged directly with shipowners and the port to "push shore power" and to facilitate its actual implementation.

"We had a close collaboration with shipowner 2 to push them in the direction of implementing shore power."

Zero

³ See <https://www.aftenposten.no/mening/debatt/i/xqV9j/fossile-dans-kebaater-geir-rognlien-elgvin> only available in Norwegian.

Following the political opposition's proposal to introduce shore power in April 2016, the initial response from the new government was to wait with installing shore power until shipowners were ready to introduce new cruiseferries in 2020–2021. They argued that installing shore power to be used by old cruiseferries was not economically viable. However, in September 2016, the ten-point plan for an emission free fjord, initially suggested by representatives of the opposition, was unanimously adopted by the city council. During the course of these five months, Zero had actively engaged with both the green-left rule and the conservative opposition to ensure cross-partisan consensus and to more explicitly include the port in the ambitious environmental policy of the new city government.

"We had a dialogue with the opposition about how to improve port policy and helped them devise a proposal that they submitted. Although the green-left wanted to present the "best" environmental policies themselves, after some push from us, they realized that this [proposal] was an improvement of policies that they actually agreed on. So they could not vote it down, as it improved policy"

Zero

Hence, Zero worked with the green-left city government to demonstrate how the proposal from the opposition represented a way of improving environmental policies, leading to the spectrum of political parties standing by the goal of strengthening the environmental profile of the port. Zero therefore seems to have played a decisive role in *accelerating* the introduction of shore power. Although no political wing opposed shore power per se, they clearly disagreed on under what circumstances it should be implemented. Hence, the political discussion did not center on what policy to adopt, but when to implement it. This suggests that shore power was not really politically controversial.

"[We] did not experience that [controversy in discussions on shore power]. The controversy was more how detailed the resolutions politicians make should be, how much micro-management"

Zero

The involvement and successful entrepreneurialism of Zero demonstrates the position of the environmental organizations, compelling both the City and the Port to take their requests into consideration. The Port therefore initiated dialogue with Zero so that Zero could learn more about the realities that the port and its users were operating under.

"We invited to dialogue so that they can participate, discuss, meet our customers (...) to avoid suggestions that are not knowledge-based. (...) We have entered into a collaboration agreement with [the environmental organizations] (...) to have good, competent discussions with them and their networks"

Port of Oslo

As such, it was important for the Port to install realism in the issues being lobbied by environmental organizations. The Port realized that these had valuable competence and networks, and recognized the need to develop a common understanding of realistic opportunities. Therefore, the Port entered into collaboration agreements with both Bellona and Zero in 2019 to ensure that the political pressure exercised by these organizations aligned with the leeway and ambitions of the port.

This study therefore hints at politicization of shore power. There had been a long-standing political wish to implement shore power dating back to at least 2008, which was explicitly incorporated into plans and policy documents for nearly a decade before it was eventually implemented with a broad cross-partisan consensus. As such, politics have been less instrumental in deciding *if* to realize shore power, but rather influenced the pace of transition. This pace could have been rushed by the local and national moods' increasing awareness and problem perceptions associated with local emissions from ships. Further, the new

city government demonstrated push in climate and environmental policies: by involving progressive environmental organizations, establishing the Climate Agency, actively using their port ownership and repurchasing the local energy company. As such, the political influences considered crucial by MSA, including national mood, elections, administrative appointments, and interest groups, were all instrumental in pacing up the transition to shore power in Oslo. These all represent important support structures for the legitimacy and implementation of policy. However, what appears most decisive political influence is this case, was the work to establish cross-partisan consensus in 2016, which not only accelerated shore power, but also raised the port on the political sustainability agenda and triggered other sustainability efforts in the port.

5. Discussion

The previous chapter has told the story of how shore power for cruiseferries was implemented in the Port of Oslo. We consider the success factor of this story to be its environmental thrust and lack of controversy. More precisely, we would like to argue that this study demonstrated how *lack of controversy is necessary but not sufficient for a policy to be implemented*. The lack of controversy rested on all three streams presented in the MSA. For one, the lack of controversy resulted from the ability of shore power to address the problem agendas of numerous actors: it allowed the City to redevelop urban areas; it allowed the Port and the City to set ambitious emission reduction targets; it allowed port users to operate longer and avoid negative publicity; and it allowed shipowners to demonstrate social responsibility.

Second, the lack of controversy rested heavily on the policy characteristics of shore power: it was technologically feasible, ushered by policy entrepreneurs in Shipowner1 and Zero, and a green national mood, heavily supported by public funds and public acceptance. Furthermore, shore power was alone able to address the largest emission source identified in the emission mapping conducted by the port, which made it a clear first choice for the transition work in the port.

Third, shore power had been a long time coming through broad cross-partisan consensus; emerging as a proposal from the conservative right but implemented by the environmentalist left. As such, politics were not evident in this case through the formation of alliances, the mobilization of arguments or clashes of interest. Rather, politics became evident in the *implementation* of shore power, reflecting how policies might also hold political purposes (May and Jochim, 2013). A particular example of this is the role of Zero. Zero clearly acted as a policy entrepreneur in applying their vast shore power knowledge to place shore power more forcefully on the political agenda. More prominently, the work of Zero in brokering between political wings did not really concern what policy to choose – because nobody bluntly opposed shore power – but rather getting a political resolution that pushed its implementation. Although the timeline of shore power shows it had been brewing for quite some time, it appeared to be at a halt until hit by the environmental thrust, as particularly represented by Zero working with both political wings to achieve a political, binding resolution that ensured and accelerated implementation. This resolution was in turn sustained by a number of political support structures following the 2015 elections, such as the Climate Agency and active ownership strategies.

We therefore suggest that the role of politics does not end with the selection of a policy, but that it extends also into the implementation of policy. As such, we like to stress how politics can "affect the extent to which [policy is] broadly and faithfully implemented, or, routinely and strategically ignored, deflected, altered or overturned" (Malen 2006:83). Especially in the case of environmental and climate policy, where the stakes are high and a variety of opposing stakeholders and interests are involved, the policy implementation might require even more political work than policy adoption. In this study, the prominence of politics in implementation contributes to show how the lack of political controversy around the solution (i.e. shore power) in policy

adoption itself was not sufficient. Rather, a series of political decisions preceded its successful implementation. Although the political work to ensure consensus around the 2016 resolution was perhaps the most decisive political influence, implementation also followed influences that expressed the wish of the new political rule to plot a new course for the city, like establishing a climate agency, wielding more active port and energy ownership, and formally collaborating with environmental organizations. These influences could also represent an increasing politization of energy issues and port business, as these topics became an opportunity for the new city rule to raise their political flags and place a green-left mark on something that originated in the opposition and was unanimously adopted.

5.1. Stream interdependence

This empirical case provides ammunition to the early critics of MSA, because the transition to shore power in Oslo *did* involve significant interdependence and interaction between streams, and suggested that the streams evolved in symbiosis rather than coincidentally intersecting at a given point. This interdependence could have consolidated the importance of policy and politics in this transition, as the streams aligned, supported, and strengthened each other. Fig. 3 displays an attempt to illustrate how this works in this case.

This study demonstrates that problem perceptions could be modified both by the policy stream and the political stream, for instance by placing new problems on the agenda, increasing attention to existing ones or suggesting how acute problems are. In the case studied here, we could for instance see how politics shaped the problem stream when a political member in the new port board following the 2015 elections publicly criticized shipowners for not using shore power. Although shore power policies at that point in time were well established on the political agenda and among policy makers, this criticism gained substantial media coverage and thereby raised the issue in public opinion. As this corresponded with greater media attention to vessel emissions in Norwegian fjords, the publicity following a symbolic, political statement

about shore power in Oslo might have strengthened the problem perception of the public, thereby increasing the reputational risks of shipowners reluctant to use shore power.

Problem perceptions could also result from the perceived prominence and forcefulness of policy. Whereas strong and prominent policies could signal that the problems they target are serious and acute, weaker policies that receive little attention could communicate that the problems they address are less pressing. One example of the former in our study was the generous support scheme for shore power, which is one of many components in the strong Norwegian policy portfolio for electrification of transport. The millions distributed to establish shore power connections communicate that at-berth vessel emissions are a problem worth addressing, and could particularly increase the problem perceptions and urgency of ports yet to establish shore power, as they observe one port after the other making these investments.

The strength of policy could also indicate how seriously a problem should be dealt with; the generous support scheme for shore power could for instance incline ports and cities to monitor emissions (problems), or policies aiming to connect the fjord and the city could produce more awareness and problematization around their disconnect.

Conversely, this study also illustrates how problem perceptions can impact both policy and politics. For one, problem perceptions can inform about what solutions are needed. In our study, this could for instance be reflected in complaints about port noise and emissions from neighboring communities, which in many Norwegian ports have been central in developing port areas and activities. As such, problem perceptions of port neighbors provide direct support to shore power as a policy for allowing the co-existence of the port and the city's population.

Second, problem perceptions can impact the politics stream, for instance by assessing whether existing political constellations are equipped to deal with these problems. In our study, this was best exemplified by the green landslide in the 2015 election. The new green-left city council following the elections could be an expression of public perceptions of climate change being so severe that the public saw the need for political change in order to more effectively address them.

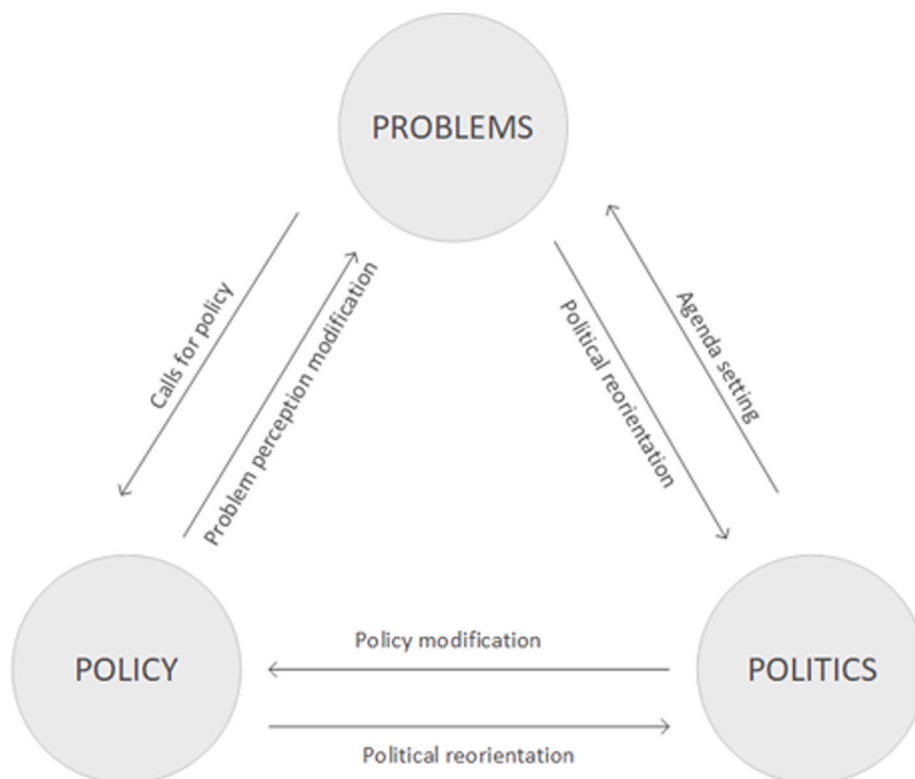


Fig. 3. Symbiosis between streams.

Finally, this study also demonstrates the perhaps obvious interdependence between policy and politics. Policy is shaped by politics, which can place more thrust behind policy, alter existing policies or shut them down entirely. In our study, this is well demonstrated by the range of political influences following the 2015 elections that installed revived pace and vigor in policies for port sustainability and shore power. Policy can therefore be a way to demonstrate political drive or to strengthen political image, for instance through the Port Board's penalty fee, which was not really expected to impact the problem (i.e. cruise ferry emissions) but rather gave a symbolic political statement.

Conversely, more or less successful policies can impact politics in producing calls for political change. If policies do not reflect the national mood or societal values, or if they are considered insufficient to counter problems, they could influence the political stream. In our study, we could argue that the inability of existing policy to sufficiently address climate and environmental problems led to a shift in political leadership (i.e. local election outcome), which in turn spurred the establishment of administrative units and positions (e.g. Climate agency, political port board) and produced more or less political steering (i.e. of energy resources and port business). As such, politics could be considered responses to developments in the policy stream, and vice versa.

6. Conclusion and policy implications

In this study we have applied the Multiple Streams Approach to demonstrate the role of policy and politics in the transition to shore power in Oslo. As seen above, the alignment of and mutual support between streams could explain why this transition was successful. For one, shore power addressed problems experienced by a number of actors, who thus benefitted from its implementation. Second, there was little competition from other policies that could abate the same problems, and shore power was pushed forward by increasingly ambitious and aligned policies related to electrification of transport, urban development, environment and climate, port policy and energy policy. Third, political shifts established support structures equipped to sustain and implement a politically uncontroversial policy. Table 3 displays a brief overview of the main keywords for each of the streams.

Hence, the most important policy implication of this study relates to policy alignment. The interwovenness of actors and policies in this transition, demonstrates the usefulness of holistic policy making in progressing transition. Shore power was supported by urban policies to connect the city and the fjord, by energy policies to ensure electrification, by climate policies that encompassed the port, and by ownership policies that ushered sustainable port policy. The policies grew increasingly detailed and ambitious over time, and an explicit representation of such policy convergences is the intentional agreement between the port and the energy company to establish a joint venture for installing, operating and maintaining shore power facilities. Realizing policy alignment is a demanding task in the complex political system that parties and other stakeholders operate within. However, when the

Table 3
Overview of problems, policies and politics in the transition to shore power in Oslo.

Problems	Policy	Politics
Disconnect seaside/urban population	No obvious competitor	Political consensus Environmental thrust
Global GHG emissions	Strong policy entrepreneur	Political support structure
Local emissions	Mature technology	Political support structure
Image problems for shipowners	Sufficient power supply National funding Public acceptance	Environmental thrust Local elections Climate Agency Active port ownership Political steering Energy politics

problem at hand generates broad political agreement, and several policy entrepreneurs recognize and seize opportunity, policy windows open.

Although other policies, targeting other problems and being supported by other political influences, might be more relevant to other ports and cities, aligning these to provide mutual support is equally important. Both politically and administratively, the City of Oslo played a critical role in developing holistic policy which supported the transition to shore power. Similar approaches to holistic policy making could promote transitions in other cities. Not the least, this is vital to ensure deep transition, in which ports could be prominent because of their position between intersecting sociotechnical systems (Bjerkan et al., 2020). Deep transitions could be considered "a process by which some rules emerge, come to be aligned to each other and diffuse to various systems" (Schot and Kanger 2018). Policy is one expression of rule sets (on the metalevel or nor) at the core of deep transitions, and holistic policy could for instance promote deep transition through allowing the rise of different surges (i.e. support one without disabling others), reducing competition between niches or levels, and facilitating coupling between sectors and policies. Cross-sectoral approaches target the nexus between multiple sectors of policy making (Boas et al., 2016) and could enable holistic transition work. Cross-sectoral coupling is particularly potent in transitions involving the port sector, which joins countless domains and sectors whose transition work might follow non-compatible pathways.

The scientific literature on energy issues in ports tends to focus on large frontrunner ports (Bjerkan and Seter 2019), and considering that most ports worldwide are in the small-medium range, studies targeting these ports complement state-of-the-art. However, the observations made in this study are unlikely to represent any (attempted) transition to shore power. For one, each port is characterized by distinct features (e.g. difference sizes, actors, activities, geopolitical prerequisites) that impact what sustainability efforts are made and how they are carried out (Damman et al., 2019). Second, Norwegian ports in general are in a unique position, due to strong national incentives for electrification of transport (including shore power), large supply of hydropower, and because 90% of the electricity production capacity is owned by public authorities (Energifakta 2019). Third, the Port of Oslo is not representative of Norwegian ports; it has a larger, specialized organization, personnel dedicated to environment and sustainability, and a more progressive, active owner than most ports.

This study offers two contributions to transition research. For one, it adds to the transition field by systematically exploring the role of policy and politics, and as is one of relatively few studies exclusively dedicated these aspects of transition processes. Second, this study responds to a call for bringing process explanations into transition studies, by drawing on STEP analysis to review a specific transition process. We find this a useful approach to discern factors that enable or disable transition. Although our study has focused on the prominence of policy and politics, similar approaches could be applied to explore other aspects of transition, such as agency, the role of incumbents or social movements, niche developments etc. Although a daunting task – and far beyond the scope of this study – conducting an all-encompassing process review of a specific transition, covering (and perhaps comparing?) the width of explanations that research offers in understanding transitions, could be a next step in consolidating process approaches in transition studies.

CRedit authorship contribution statement

Kristin Ystmark Bjerkan: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing, Funding acquisition, Project administration. **Hanne Seter:** Conceptualization, Methodology, Investigation, Formal analysis, Writing – review & editing, Project administration.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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