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Article



Coordinating Wickedness: A Comparative Analysis of How Norway and Sweden Organize for Climate Policies

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ABSTRACT *Through the lenses of “wicked policy problems” this article compares how Norway and Sweden organize for climate policies and analyzes the coordination challenges encountered by the two countries. Both countries’ policy fields display characteristics of complexity, divergence, fragmentation and uncertainty, indicating a substantial degree of organizational wickedness. The conditions for dealing with such wickedness is affected by contextual factors such as ministerial rule and the petroleum industry’s pivotal role in Norway, enhancing the role of administrative silos; and Swedish traditions to delegate responsibility in the governance system and prohibition of ministerial rule allows a slightly more unified approach to policies.*

Keywords: wicked problems; coordination challenges; public administration; climate policy; comparative governance; qualitative methods

1. Introduction

Climate change may be the ultimate wicked problem (Pollitt 2015, 2016). Arguably, such problems entail increased, improved and more elaborate approaches to coordination of the involved governmental organizations (Lægveid et al. 2014, 2015). In climate governance, a polycentric turn has added layers to the formal levels of the policy field (Jordan et al. 2015).

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Hence, climate policy has become a global issue deeply situated in governance frameworks such as the UN and the EU, although enormous responsibilities remain at the national level (Zannakis 2015), and a substantial amount of policy challenges are mainly local and regional (Neby 2019). Climate change governance thus permeates the entirety of governance systems, requiring substantial coordination efforts. Public sector organizations are thus particularly important parts of “the tools of government” (Hood 1983). This highlights the role of administrative policies and the need for exploring climate policy from a public administration perspective (Rykkja et al. 2014; Pollitt 2015, 2016).

The mitigation of greenhouse gas emissions and adaptation to climate change impacts reflect two separate fields in both the academic literature on climate policies and in actual policies, despite calls from the Intergovernmental Panel on Climate Change (IPCC) and others to see the two as integrated. This article treats the political-administrative organization of mitigation and adaptation as interconnected phenomena, as cross-sectoral, multilevel issues relevant for national policies and for transformation to more sustainable societies (Groven et al. 2012; O’Brien et al. 2013). In comparative terms, Norway and Sweden have well-developed climate policies and political-administrative structures. An important topic is whether mature administrative policies, understood as part of climate policy design and instrumentation, reflect the demands posed by climate change as a policy challenge: an instrumental premise for the choice of policy tools is that they contribute to creating the desired effects (Linder and Peters 1984; Howlett 2018).

That leads us to inquire into the relationship between the wicked character of climate policies and governance capacity in the two countries’ systems. Governance capacity refers to the objective of making policies effective; governments’ ability to “make things happen” (Christensen et al. 2016). This article seeks to provide a better understanding of the coordination challenges raised by climate change, contributing to our baseline knowledge of the difficulties involved in designing effective climate policies. This requires a two-step inquiry, where the first step is empirical and the second more analytical:

- a. *How do Norway and Sweden organize for climate policies, across the mitigation and adaptation divide?*
- b. *From a wicked problems perspective, what are the coordination challenges encountered by the two countries?*

The present study focuses on the systems level: the structures of government, the interconnections between public organizations, distributions of roles between central, regional and local levels. The article continues as follows: in the second section, we present our take on the issues of wicked problems, coordination challenges, and governance capacity in order to provide an analytical framework for the paper. Next, we account for the methods and data underpinning the study, before presenting a necessary contextual background on the two countries and the climate policies. In the fifth section, we present our findings in terms of four elements of wickedness (complexity, divergence, fragmentation, and uncertainty). The final sections provide a discussion of the findings and a set of concluding remarks.

2. Wickedness, Coordination, and Governance Capacity

Wicked problems (Rittel and Webber 1973) are high on the research agenda. These problems include difficulties in delineating policy efforts and proposing solutions, and high degrees of complexity and interdependency (Turnpenny et al. 2009). They contain uncertainties and inconsistencies regarding needs, preferences, values and consequences of actions, and lead to fragmented and heterogeneous actor participation (Carley and Christie 2000; Head 2008; Balint et al. 2011; Head and Alford 2015). Thus, solutions do not spell “more science”; instead, the challenges emanate from competing value frameworks (cf. Rein and Schon 1996; Daviter 2019). Such characteristics are indeed relevant for climate policies (Pollitt 2015, 2016).

Managing wicked problems demands governance capacity. The literature displays a certain variation in how it assesses governance capacity: By example, Fukuyama (2013) highlights the instrumental capacities embedded in a state’s infrastructure, whereas Rothstein and Teorell (2008) focus on the quality of government. Evans and Rauch (1999) use the Weberian bureaucracy as an indicator, and others focus on the rule of law and regulations (Kleinfeld 2006). Lodge and Wegrich (2014) take a different approach: Capacity could relate to various aspects such as *regulation capacity*, i.e., control, surveillance, auditing; *analytical capacity*, i.e., processing information, providing advice, etc.; or *delivery capacity*, i.e., exercising power and providing public services (Lodge and Wegrich 2014; Christensen et al. 2016). Without neglecting the importance of those types of capacities, in this article we follow a focal point in public administration in recent years, *coordination capacity*.

Coordination capacity refers to the ability to bring different bodies together and align their efforts to achieve ends that extend beyond those of single actors in the system (Wegrich and Štimac 2014; Neby 2019). This can involve both procedural and structural components, typically giving rise to secondary processes and structures that cut across the main organizational distinctions between the governance system’s constituent parts. Thus, coordination seems crucial for managing especially wicked policy problems that cut across many societal and administrative levels and organizations. Coordination efforts can follow a hierarchical dimension, or they can be horizontal between ministries, agencies, or authorities. Moreover, they can concern internal affairs within public administration, or external relations, i.e., coordination activities between public administration and external organizations (Verhoest and Bouckaert 2005; Christensen and Læg Reid 2008; Pelkonen et al. 2008). In this article, we primarily focus on internal vertical and internal horizontal coordination: the practices within and between entities of public administration.

Another perception of coordination is that striving to achieve it is the organizational equivalent to “the quest for the philosopher’s stone” (Seidman 1970), indicating coordination is both an activity and a virtue. Peters (1998) instead refers to coordination as an achievement or an end-state where the programs of government exhibit minimal redundancy, incoherency, and lacunae. Our contention is that coordination is a dynamic organizational feature that balances the structural and functional components of government. The premise is that coordination is attempted, enacted and achieved through means that display different governance rationales: coordination is as much about hierarchic arrangements as it is about partnerships or networks, sectorial silos, polycentric arrangements, and about finding ways to manage wickedness.

The interpretative scheme for the present study builds on previous refinements of the wicked problems literature (Head 2008, 2014; Turnpenny et al. 2009; Wegrich and Štimac 2014; Head and Alford 2015) that, in combination, highlight four issues: complexity, divergence, fragmentation and uncertainty. Hence, we understand *complexity* as

(a) the interdependencies between organizational actors in systemic arrangements (for example, accountability relations), (b) the number and type of actors, but also (c) the extent and scope of different organizational principles involved in a policy field.

Divergence is likely to include (a) distending mandates across levels and sectors, understood as conflicting aims, tasks and roles. This could extend to include (b) conflicting governance rationales in different parts of the public apparatus (for example, across central, regional and local democratic levels, or across policy sub-areas such as petroleum and climate policies). This could in turn indicate (c) tensions and conflicts between different parts of the administrative system.

Fragmentation relates to (a) problematic subdivisions of policy fields and corresponding organizations, affecting the relative coherence of organizational structures and connections. Fragmentation also relates to (b) variation in organizational types that deal with the same thematic issues (for example, across governance levels or sectors). That suggests that we also (c) need to understand how responsibility and accountability is likely to distribute across organizational forms and affinities.

Finally, we contend that *uncertainty* relates to insecurities about (a) the effects of organizing policy responsibilities in different manners, for instance deciding between different options about governance level or organizational form. This also relates to (b) the variation in demands placed on organizations and policies as decision-makers mediate or interfere with each other across levels. Across these governance levels, the role of (c) exogenous contingencies – understood as influences outside their control – may also vary.

An important part of this interpretative scheme is its ambiguity. Although complexity serves as a basic component of political-administrative wickedness, the delineations and connections between complexity and the other three dimensions, in analytical terms, are vague and open for interpretation. Differently, Noordegraaf et al. (2019) show how ambiguity is not only an analytical challenge, it also embeds in the situations that administrative actors find themselves in. More precisely, different actors find ways of coping and navigating wickedness that signals a certain dissonance between the scholarly meta-discussions of wicked problems and the more practical actions chosen within the ambiguous reality of creating governance capacity. An important aspect of ambiguity is the role of expectations and norms: in ambiguous settings, instrumental considerations tend to be downplayed and the role of appropriateness is elevated (March and Olsen 1989).

3. Context and Expectations: Climate Policies and Political Organization

In January 2018, both countries introduced new climate legislation. The two Climate Acts are remarkably similar as they state substantial goals for climate policies, carbon budgeting and accounting, revision of policies, and establishes new institutional frameworks to ensure policy implementation. The acts intervene with a tradition for a relatively incremental development of the policy field in both countries. Based on the assertion that climate issues cut across sector and level boundaries, the acts may influence the menu of alternatives for both substantial policies and the organization of the system needed to implement them. Moreover, the potential role of legislation as a coordinative measure may prove to be important, not least concerning the relatively “dispersed” nature of the climate policy fields in Norway and Sweden.

Norway’s and Sweden’s geographies and climates differ, as do their adaptation policies. Topography, coastline, habitation patterns and climatic impacts indicate different climate

adaptation challenges. Seasonal patterns vary, as do precipitation and flood patterns, temperature fluctuations and expected changes for the future. In both countries, adaptation has been the “lesser brother” of climate policies, gaining less attention at the national level and highlighting decentralized policy responsibilities. The recent Norwegian climate act briefly points to adaptation, while the Swedish government instead presented a climate adaptation strategy in parallel with the climate act. Both countries take part in international mitigation initiatives and have ambitious aims catering to international agreements. Sweden, however, has a track record of emissions reductions that is significantly better than that of Norway (Muntean et al. 2018).

Norway and Sweden belong to the same political-administrative tradition (Painter and Peters 2010). Both countries are Scandinavian unitary states with developed economies, part of the global north, and with (comparatively speaking) large resources to support environmental policies. The countries are highly organized and regulated, with public sector engagement that enjoys legitimacy and support, emphasizing “... the capacities of collectivities to administer themselves” (Arellano-Gault and Del Castillo-Vega 2004, p. 522). This reflects a belief in consensus, collectivist arrangements and organization. In both countries, internal horizontal coordination and vertical coordination is common, but the instructional nature of the latter is less characteristic than in many other countries (Ahlbäck Öberg and Wockelberg 2016).

Swedish and Norwegian municipalities are quite autonomous; local democracy is a constitutional pillar. Many climate measures depend on decision-making at this level, not least through societal planning that includes mitigation actions and assessments of natural hazards. Both countries are currently revising their planning regulations, implying a potential influence on the municipalities’ efforts. Moreover, both countries employ the combination of a regional democratic level and a regional state level: in Norway, a recent reform established larger regions, where the geographical boundaries of the regional democratic level and the regional state representative corresponds. Traditionally, the regional democracy has been labelled country councils (Norwegian: *fylke*), and the regional state has been labelled county governors (Norwegian: *Fylkesmann*) – we employ these terms. We use the same terms for the regional levels in Sweden: county councils for the regional democratic level (Swedish *region*, previously *landsting*) and county governors for the Swedish term *länsstyrelse*. In addition, however, several state agencies have regional entities that cut across the boundaries of regions. Norway has a particularly intricate and complex geographical organization of state agencies, lacking a national standard for geographical distributions.

Importantly, the Norwegian system builds on a principle of ministerial rule. A Norwegian minister is responsible for everything that happens within their hierarchically defined jurisdiction, sector or silo. The minister is thus accountable to parliament without jeopardizing the entire government’s parliamentary position. In contrast, Sweden has a system of administrative dualism, resulting in smaller ministries and larger semi-autonomous state agencies. Sweden prohibits ministerial rule, meaning the government is collectively subject to parliamentary accountability, also when the issue at hand resides specifically within a single sector. This institutional setting requires a high degree of coordination (Niklasson 2012; Hall 2015). Recent calls for increasing the state’s coordinative capacity for managing wicked policy problems is to some extent challenged by the historical legacy of ideas of agency autonomy in the Nordic countries, perhaps more so in Sweden than in Norway (Hansen et al. 2012). The differences in

political-administrative organization between the two countries are often taken to represent a divide between an eastern and a western Nordic model, with an emphasis on the different logics underpinning ministerial accountability and agency autonomy (Knudsen and Rothstein 1994; Læg Reid 2017).

The combination of country-specific political-administrative settings and the role of different aspects of wickedness leads us to highlight two main expectations relevant for the present analysis: Firstly, we expect that characteristics of wickedness in the two systems are likely to vary with political-administrative traditions. In effect, the Swedish dualism and the Norwegian system for ministerial rule is likely to influence *how* complexity, fragmentation, divergence and uncertainty manifests, as they provide slightly different frameworks for policy instrumentation.

Secondly, and consequently, we expect that the combination of political-administrative traditions and the wickedness characteristics is likely to inform the character of coordination challenges in the two systems. More precisely, coordination challenges are likely to reflect organizational variations and specifics of the policy area in each country. This relates to challenges of contestation, multi-level arrangements, and to distributions of tasks, roles and power (e.g. accountabilities, mandates, policy areas).

4. Methods and Data

This study primarily draws on written sources about the organization of climate change-related organizations in the Norwegian and Swedish political-administrative systems. As part of a larger research project, we mapped and described the policy area in both countries based on public documents and databases, website information and secondary literature. The mapping utilized a template developed for the purpose, distinguishing between different types of public organizations (including level of governance, tasks and jurisdiction, subdivisions, listing of relevant policy documents and literature, affinities, regulatory position, and so on). This allowed qualitative descriptions and assessments of each entity. The mapping followed a semi-structured guideline outlining themes of relevance. For this article, we focused on extracting information about the organizational landscape of climate policies, where the inclusion criterion defines the field: all included organizations have explicit and specific policy responsibilities concerning climate change: their formal climate responsibilities go beyond the requirements for “policy takers”. Accordingly, we exclude organizations that are merely subject to climate policies.

In terms of empirical detail, we mainly focus on ministries and agencies, and a general description of responsibilities placed with lower level governance actors. We have opted to include the latter in our analyses, but the number of actors on this level restricts the descriptive detail.

We also draw on interviews and other conversational data gathered from public organizations at different governance levels. These interviews were not conducted with this specific article in mind but rather to meet the research project’s coverage of coordination issues. Highly valuable, they provided insights into coordination activities, including details on tensions between different actors or interests, which would otherwise be difficult to gain. Within the project *Coordination, Capacity and Legitimacy: Organizing for Climate Change, Immigration and the Police*, altogether ten interviews

were conducted with informants from climate-specific actors in the central administration – two from Sweden and eight in Norway. We also draw on previous projects, however, particularly concerning the regional and local levels of climate governance.

Table 1 displays the selection of organizations and levels of governance.

5. Organizing for Climate Policies in Norway and Sweden

There is a trade-off involved in balancing descriptions of the organizational fields in detail or aggregating the empirical aspects to a more general description. Our choice is the aggregate version, turning to empirical examples for illustrative purposes as an integral part of the analysis. The description is oriented towards the four tiers of wickedness: complexity, divergence, fragmentation and uncertainty.

5.1 Organizational Complexity

In Norway, the Ministry of Climate and the Environment has holistic responsibilities for climate policies. Only counting ministries and agencies that have explicit responsibilities for climate policies, there is a minimum of seven climate-related hierarchical silos. For each ministry, there is at least one corresponding agency. Four ministries mainly have mitigation responsibilities; two have adaptation responsibilities, in addition to the overall responsibilities of the Ministry of Climate and the Environment. There are thus 15 national-level government organizations with direct involvement in Norwegian climate policies, excluding actors such as the Norwegian Meteorological Institute, or ministries and agencies responsible for providing input to climate policies through adjacent jurisdictions. The structure of ministries in Norway depends on the executive's choices: the ministers' portfolios define the detailed policy areas for the ministries. Thus, their names, the number of ministries and their responsibilities change over time, although some ministerial silos remain stable, in particular finance, judicial matters, foreign policies and defense. As of July 2020, there are 16 ministries in addition to the prime minister's office – but as some ministries have two ministers, there are 20 ministers, including the prime minister.

In Sweden, the Ministry of the Environment has overall responsibility for climate policies, including coordination. The ministry changed name for the seventh time (since its inauguration as the Ministry of the Environment and Energy in 1987) in 2019, moving energy issues to the Ministry of Infrastructure, established in April 2019, who also took over responsibility for transportation issues from the Ministry of Enterprise and Innovation. Sweden has fewer ministries than Norway with explicit climate responsibilities (we count five; including the newly established Ministry of Infrastructure). A higher number of agencies is involved (our count is twelve, of which six mainly have mitigation responsibilities, two mainly have adaptation responsibilities, and four for both). Regardless of the prohibition of ministerial rule, state agencies sort under and are governed by certain ministries. Thus, the notion of trust-based governance is central to the Government Offices (*Regeringskansliet*). Agencies have relatively free missions and the government trusts that they will do a good and important job (interview with public servant at the Ministry of the Environment, March 15, 2018). The Swedish Environmental Protection Agency (SEPA) stands out as a coordinating node among agencies regarding mitigation issues. In 2017, coordination responsibilities were gathered

Table 1. Public organizations with specific climate policy responsibilities, conservative count as of 2020

Ministries	Central agencies	Regional state: county governors	Regional democracy: county councils	Municipalities
Norway	7	11	11	356
Ministry of Climate and the Environment	Norwegian Environment Agency	Oslo	Oslo	
Ministry of Local Government and Modernization	Directorate for Civil Protection Norwegian Water Resources and Energy Directorate Norwegian Agency for Development Cooperation	Viken Innlandet Vestfold og Telemark Telemark Agder	Viken Innlandet Vestfold og Telemark Agder Rogaland	
Ministry of Justice and Public Security	Norwegian Building Authority	Rogaland	Vestland	
Ministry of Petroleum and Energy	Norwegian Mapping Authority Climate Adaptation Norway (aggregate organization, 17 sub-entities)	Vestland Møre og Romsdal Trøndelag Nordland	Møre og Romsdal Trøndelag Nordland	
Ministry of Finance	ENOVA (state-owned enterprise, with policy mandates)	Trøndelag Nordland Finnmark	Troms og Finnmark	

(continued)

Table 1. (Continued)

Sweden	5	12	21	21	290
Ministries	Central agencies	Regional state: county governors	Regional democracy: county councils	Municipalities	
Ministry of the Environment	Swedish Environmental Protection Agency	Blekinge län	Region Blekinge		
Ministry of Infrastructure	Swedish Energy Agency	Dalarnas län	Region Dalarna		
Ministry of Enterprise and Innovation	National Board of Housing, Building and Planning	Gotlands län	Region Gotland		
Ministry of Finance	Swedish National Expert Council for Climate Adaptation	Gävleborgs län	Region Gävleborg		
Ministry of Foreign Affairs	Swedish Meteorological and Hydrological Institute	Hallands län	Region Halland		
	Swedish Agency for Marine and Water Environment	Jämtlands län	Region Jämtland		
	Swedish Chemical Agency	Jönköpings län	Härjedalen		
	Swedish Board of Agriculture	Kalmar län	Region Jönköpings län		
	Swedish Transport Administration	Kronobergs län	Region Kalmar län		
	Swedish Transport Agency	Norrbottnens län	Region Kronoberg		
	Swedish Civil Contingencies Agency	Skåne län	Region Norrbotten		
		Stockholms län	Region Skåne		
		Södermanlands län	Region Stockholm		
		Uppsala län	Region Sörmland		
		Värmlands län	Region Uppsala		
		Västerbottens län	Region Värmland		
		Västernorrlands län	Region Västerbotten		
		Västmanlands län	Region Västernorrland		
		Örebro län	Region Västmanland		
		Östergötlands län	Region Örebro		
		Götalands län	Region Östergötland		
			Region		
			Götalandsregionen		

at the Climate Department (earlier, coordination responsibilities were scattered between different departments at SEPA). Since August 2018, the National Board of Housing, Building and Planning and the Swedish National Expert Council for Climate Adaptation, tied to the Swedish Meteorological and Hydrological Institute, have become key actors in the national coordination of climate adaptation. Earlier, the regions, although responsible for climate adaptation, lacked appropriate knowledge and interpreted risks differently (SOU 2017: p. 42).

In both countries, most agencies also answer for tasks resting outside climate policies. Thus, there is a degree of “compartmentalization” (Knutsson et al. 2017), where internal specialization and decentralization contributes to complexity. Even within the hierarchical constraints of governmental silos, there are internal organizational prioritizations that influence the role of climate-specific sub-entities (for example, in competing for funds, competence, agendas and attention).

In conclusion, both countries display a high degree of complexity at the central level. Climate policies embed in more specific jurisdictional categories and instruments, for example planning regulations, civil protection legislations, transport regulations and so on. National policies cut across ministerial silos, and the relationship between ministries and agencies is not straightforward. In particular, the number of agencies in relation to the number of ministries in Sweden is asymmetric. Arguably, since ministerial rule is prohibited, the need to maintain strict hierarchic delineations of governance chains is perhaps less important than in Norway, where a higher number of ministries (and a lower number of agencies per ministry) reflects the principle of ministerial rule. Norwegian agency autonomy depends on the political, hierarchic delineations, whereas Sweden seems to allow more autonomy, perhaps also in resolving horizontal organizational arrangements among agencies.

An important part of national policy instrumentation is to exert influence over the lower levels of the public apparatus. Lending authority, advice and funding from state agencies, regions and municipalities are situated within the larger national policy frameworks (climate legislation, emissions targets, adaptation priorities). Norwegian and Swedish county councils and municipalities are democratically autonomous with independent policy responsibilities, however. Local and regional planning generates frameworks, within which they decide upon most specific measures, but as separate decision-making processes. For instance, county councils plan for and operate regional collective transportation, where incorporating climate measures is a part of public tenders. An illustrative Norwegian example of such contributions to complexity is that the Ministry of Local Government and Modernization administers planning regulations necessary for regulating waterways. Waterway regulation concerns both climate adaptation and preparedness (for instance, flood management), but these two concerns sort under different agencies. The Norwegian Water Resources and Energy Directorate, which sort under the Ministry of Petroleum and Energy, is the main agency for waterway regulation. In matters of preparedness, municipalities primarily deal with the Directorate for Civil Protection, sorting under the Ministry of Justice and Public Security. The coordination between three ministerial silos is thus essential.

In both countries, the state level takes an explicit and active role in mitigation policies, whereas adaptation responsibilities are mainly decentralized. Arguably, national adaptation policies – and corresponding polities – have been relatively weak, leaving much for

lower levels. The numerous municipalities (356 in Norway, 290 in Sweden as of January 1, 2020) have the main responsibilities for adaptation measures, based on the assumption that adaptation often has a local character. With this comes a shortage of coordination capacity; the Swedish government has recently (Government Bill 2017/18 :163), aside from depicting the National Board of Housing, Building and Planning and the Swedish Meteorological and Hydrological Institute as national coordinating agencies, acknowledged this and put greater legal responsibilities on municipalities. Adaptation responsibilities are thus largely delegated to local (Norway) and regional (Sweden) levels. However, the Norwegian lead ministry, the Ministry of Climate and the Environment, does have adaptation responsibilities (shared with the Ministry of Local Government and Modernization and others). This is not the case in Sweden, which lacks a lead ministry for adaptation.

The county governors (Norway has 11, Sweden 21) function as a link between national policies and local policy implementation, carrying out audits of municipal activities, guide and council municipalities in their work, and provide feedback to national actors from local authorities. Importantly, the 2020 Norwegian municipal reform recently reduced the number of municipalities significantly (from 422 to 356), also reducing the number of regional divisions from 19 to 11. The distinction between the regional democratic institutions and the regional state representative remains. A similar, decade-long debate in Sweden regarding a reduction of (from 21 to suggested 6–9) regions has not led to any decisions due to a divided opinion (cf. Wockelberg and Ahlbäck Öberg 2018).

5.2 Organizational Divergence

In Norway, divergence have not manifested as standoffs at the ministerial level, which may be due to an acceptance of the principle of ministerial rule. Ministerial rule *allows* politically distending mandates, partly resolving the otherwise difficult issue of political accountability. However, divergence remains latent within the silos, surfacing at the subordinate agency levels and in political debate. An example concerns adaptation, where municipalities and counties experience mixed signals from agencies. Informants maintain that the Directorate of Civil Protection and the Norwegian Water Resources and Energy Directorate deal with adaptation challenges in conflicting manners: where the former stresses formal procedural demands and a hierarchically oriented regulative approach, the latter stresses epistemics, dialogue and a “softer” regulatory style. As seen from the two agencies’ point of view, these approaches are complementary: the Directorate of Civil Protection primarily stresses preparedness and security issues through demands for municipal risk and vulnerability assessments, while the Water Resources and Energy Directorate supplies formalized knowledge-based support services (such as flood thresholds, waterflow estimates) from a water management perspective. For the municipalities, however, these two strings of adaptation issues tend to collide in societal planning, as the agencies’ rationales for action and regulatory styles differ in policy issues that involve both. Municipalities explicitly raise frustrations that distending rationales cause confusion and indecision in planning efforts.

Sweden has a history of inter-ministerial tension in climate policies where the Ministry of Finance, the Ministry of Enterprise and Innovation, and the Ministry of the

Environment have advocated different views (Zannakis 2009). The tension has primarily concerned different views on policy measures: the Ministry of Finance and the Ministry of Enterprise and Innovation emphasized the importance of efficiency and advocated an economic perspective on climate politics, the former in a more neoclassical and – according to critics – shortsighted manner. The Ministry of the Environment instead promoted a broader (scientific) view, including other values than economic efficiency when evaluating climate policy measures. An interviewed public servant at the Ministry of the Environment (March 15, 2018) describes a very similar tension within the government offices, where some actors advocate a quite narrow theoretical economics perspective in contrast to others emphasizing climate science and feasibility of policy measures. In this person's view, the economic perspective, based on rather simple economic modelling, has a quite strong hold in the Swedish government administration compared to other countries, where such modelling is more developed and nuanced. Reports indicate that there are common views on climate-related issues within ministries/agencies, although diverging views stemming from different silos in the governance structure do surface. For instance, the Swedish Environmental Protection Agency may interpret that the Ministry of Enterprise and Innovation or the Swedish Energy Agency have other considerations and defend other interests than pure environmental/climate interests (Interview, March 19, 2018). Despite the prohibition of ministerial rule and relatively strong agencies in Sweden, agencies tend to have views that correspond to those of their "home ministry", allowing tensions between agencies from different government silos.

In vertical terms, regional and local actors in both countries have on occasion raised criticism towards central ministries; that national policies are too distant and too oriented towards a global policy paradigm. There are systemic features that reflect this situation. The relative democratic autonomy of regions and municipalities levels may "insulate" the national and local levels from each other, somewhat enhanced by the silo-based state-level organization. A risk is that silos prevent positive spillover effects or synergies between adjacent climate issues, such as using infrastructure for adaptation purposes (for example, investing in hydropower to regulate water flow, preventing floods) in situations where local decision-makers depend on "competing" central authorities for approval or regulation. Many Swedish municipalities claim that state authorities' support for local planning, which they are required to offer according to the Planning and Building Act, is too general and not useful.

The somewhat stronger presence of adaptation responsibilities at the central level in Norway and the specific Norwegian construction of ministries focused on local issues and modernization, and on oil and energy, mirrors the ministerial silos, as well as the saliency of both petroleum politics and center-periphery issues. The Ministry of Petroleum and Energy's role signals a certain divergence in the system, where balancing less climate-friendly (but societally highly important) considerations with climate issues such as renewable energy production is an important characteristic. Perhaps less visible in Sweden, the relative tension between the Ministry of the Environment, the Ministry of Finance, and the Ministry of Enterprise and Innovation could be taken to indicate some degree of divergence. Further, the Swedish Environmental Protection Agency seems to play a stronger role than the Norwegian Environment Agency, which reflects one of the differences between the

Swedish and Norwegian system in general: In Sweden, the prohibition of ministerial rule allows agencies to play a more prominent role in making regulative decisions. In Norway, the more direct hierarchical accountability that follows ministerial rule allows more ministerial, political leeway. Arguably, this reflects functional premises of the governance systems. An administrative apparatus that needs to deal with conflicting policies may cause divergence in Norway, whereas divergence in Sweden largely may revolve around the functional premises laid down in administrative policies.

5.3 Organizational Fragmentation

Despite ministries with dedicated climate responsibilities – albeit only for mitigation in Sweden – there is a certain degree of fragmentation: the policy issue distributes across various organizational actors, with different mandates. The complex set of ministerial silos in Norway raises issues concerning the organization of responsibilities and accountabilities in vertical and horizontal terms. For instance, it is not clear how accountabilities based on thematic distinctions distribute. Climate policies are certainly a matter for the Ministry of Climate and the Environment, but what if the issue at hand mainly involves planning regulations directed towards the municipalities? In such a case, the Ministry of Local Government and Modernization is the parent ministry, but not if the issue crosses over to preparedness or societal security, which leads the chain of accountability to the Ministry of Justice and Public Security. This is a likely scenario for adaptation issues, not least as reported by municipalities. However, municipalities and regions are themselves democratically accountable for policy development and implementation and cannot simply lean on the central level.

The number of involved agencies reflects the fragmentation displayed at the ministerial level; perhaps more so in Sweden, with a larger number of agencies involved. Principal agencies are the Norwegian Environment Agency and the Swedish Environmental Protection Agency, which sort under the respective country's main environmental ministry. They have broad portfolios of tasks that relate to both environmental and climate issues, where a Climate Department is responsible for climate issues, with five/six climate policy-relevant units that work with a variety of climate issues, ranging from international negotiations to administering the industrial CO₂ quota compensation systems.

The adaptation–mitigation divide is another source of organizational fragmentation. In some contrast to Norway, Sweden does not have a ministry or agency with the overall responsibilities for adaptation policies, although the National Board of Housing, Building and Planning and the Swedish Meteorological and Hydrological Institute have recently been designated (different) coordinating responsibilities. In Norway, the coordinating responsibility for adaptation rests with the Ministry of Climate and the Environment, with delegated tasks to the Norwegian Environment Agency – and with important responsibilities for regulative measures resting with the Ministry of Local Government and Modernization. The Swedish county governors have a clearer responsibility for climate adaptation than do their Norwegian counterparts. The regional state level is the prime governance level for adaptation in Sweden (despite clear calls for national-level coordination), whereas Norwegian county governors are pivotal in a different way: they function as a hub connecting levels and as a regulatory authority.

We can thus not speak of a “climate sector” in organizational terms, but more of a fragmented organizational field of public actors that have varying, distributed mandates, and that handle their responsibilities through complex internal subdivisions.

5.4 Organizational Uncertainty

The climate literature stresses uncertainty about physical climate change and its impact. Although present within public administrations, another type of uncertainty stems from how the political-administrative apparatus engages with climate issues. In our interpretative scheme, there are in particular three issues at hand: the question of whether measures have the intended effects, the relationship between expectations towards public institutions and their ability to meet these, and the role of external contingencies beyond the control of political-administrative bodies.

Where Norway has clearly separated energy and climate issues at the ministerial level, Sweden has, for several periods over the last three decades, has not. The Ministry of Petroleum and Energy reflects the political gravity of Norwegian petroleum production. This suggests, firstly, that sectorial boundaries connect to the saliency of sectorial politics, and, secondly, that political debates about emissions are not straightforward. Norwegian mitigation policies in recent years have to some extent focused on emissions from oil production (Andersen 2016), which are included in Norwegian emission statistics. However, they downplay emissions caused by petroleum exports, since established statistical regimes do not include such emissions. This is an important crossover between political discourse and the physical aspects of emissions: annual production-related emissions currently amount to approximately, 14 million tons of CO₂ emissions (of a 50+ million tons in total), whereas the consumption of Norwegian-produced fossils abroad amounts to some 650 million tons of CO₂ emissions annually. This intricate political–statistical balance between climate and petroleum policies in Norway stems from generous petroleum revenues, a foundation for stability in public spending on, for example, welfare and healthcare. Sweden has not had to deal with this issue, allowing a more holistic approach to climate policies. Hence, there are larger uncertainties connected to what the Norwegian system can produce in terms of policy effects than in Sweden.

Further, Norwegian municipalities’ adaptation efforts must match larger variations in adaptation challenges than in Sweden. West Norwegian municipalities have different adaptation challenges than those to the east, coastal challenges differ across southern, western and northern parts of the country, and so on. Moreover, Norwegian municipalities are typically smaller than the Swedish, and recent reforms at the regional and local level generate an organizational uncertainty related to tasks, mandates and role distributions. Some adaptation measures are costly physical endeavors that municipalities cannot handle autonomously. A recent Norwegian example illustrates this: in a western municipality, the cost of a needed flood tunnel is an estimated €150 million Euros – an amount of funds this midsized municipality has no chance to raise, lend or advance. Thus, local plans, although needed, depend on the priorities of central actors. Such investments and measures are thus likely to involve both political and administrative actors on most – if not all – levels.

The question of uncertainty for public administration in Norway and Sweden is less about the physical aspect, and more about the societal, organizational and political factors that influence priorities. In adaptation matters, municipalities may be restricted from making and implementing effective decisions within their domains. In other areas, sectorial policies may be conflicting – even in the organizational sense. The Norwegian petroleum industry also shows how external contingencies influence climate policy, in some contrast to the Swedish allowance of a more holistic approach with less conflicting aims to resolve.

6. Discussion

Initially, we posed two questions: Firstly, we asked how Norway and Sweden organize for climate policies, across the mitigation and adaptation divide. Secondly, from a more analytically oriented wicked problems perspective, we inquired into the coordination challenges encountered by the two countries.

The comparisons between Norway and Sweden indicate that the “framing” of the problem matters. Swedish policies take a slightly different point of departure than Norwegian policies, as their collective orientation allows a somewhat clearer organizational layout. The Norwegian policy field – allowing ministerial rule – displays a higher degree of complexity at the ministerial level. A higher number of municipal actors in Norway contributes to this picture, not least, as these have large responsibilities for climate adaptation. The Norwegian split between energy and climate policies in terms of ministerial organization reflects that context matters: in organizational terms, Norwegian energy policies do conflictingly overlap with climate policies, partly in emissions discussions, partly in renewables and adaptation policies. It is important to note that some climate-specific policy responsibilities sort under policy themes defined as “something else”. A good example is how climate adaptation effectively depends on the Plan and Building Code and the Civil Protection Act for authority and instrumentation. A typical response to such challenges in Norway is the establishment of horizontal, semi-formalized networks that cut across governance levels and sectors, such as the cross-agency and multilevel initiative “Climate Adaptation Norway”, which gathers 17 different actors across silos and levels in dealing with adaptation issues. Although prohibited from formal decision-making or policymaking, such arrangements ensure dialogue and interaction that ideally contribute to aligning the perspectives of different actors – but also increase complexity.

Regarding the second research question, we find that coordination challenges are both vertical and horizontal, they span across sectors and silos, and across organizations that differ in terms of size, type, and jurisdiction. In Sweden, one way to deal with coordination challenges, and to assure that the government’s intentions are followed, is the institutionalized instrument “joint preparation”: when one ministry’s concerns overlap with another ministry’s area of responsibility, cases must be prepared/discussed jointly. For instance, when the Ministry of Enterprise and Innovation deals with large investments with climate impacts it needs to consult the Ministry of the Environment, which is responsible for Sweden’s overall climate policy. This usually occurs as inter-ministerial consultations officer to officer, but when trickier issues appear, officers need to consult their managers – more rarely, state secretaries or

ministers consult. These examples suggest that important vertical coordination takes place within everyday routines of horizontal coordination between ministries or between intra-ministerial units. It is not always clear, even to involved actors, how consensus arises: an informant's attempt to describe the process is through "constructive ambiguity" (interview with public servant at the Ministry of the Environment, March 15, 2018).

Characteristic is that both countries, is a lack of delineations of climate policies as coherent, national policy fields. The basic state-level framework is influential; Norwegian ministerial rule allows a higher degree of political tension and conflict, which causes emphasis on structural solutions that follow silos. Adversely, the Swedish prohibition of ministerial rule allows a more collective and unified approach at the central level. Generally, where Norwegian policies often display a structural and governmental approach, Swedish governance is more characterized by a "continuous framing" that allows consensus to form (Neby 2009). When including regional and local levels to the mix, however, it is harder to distinguish the two countries.

Returning to the four dimensions of wickedness, divergence between state-level actors is easier to spot as agencies interact with municipalities. From interviews and workshops, we experience that Norwegian actors across levels are surprisingly unaware of the details of regulations and jurisdictions, tasks and roles that each actor must negotiate when interacting with others across levels. Structural complexity may thus amplify divergence in the practical sense, particularly where more than two actors have legitimate jurisdictional claims. This suggests that divergence depends on a pre-existing complex situation. As coordination turns into practice, the properties of wickedness seem to become more evident and visible. That may also be an important characteristic of the Norwegian situation with ministerial rule: when silos are the main rule, the negotiations that follow from cross-sectoral interaction could arise as divergence.

Increased wickedness thus seems to amplify coordination challenges, but in slightly different forms in Norway and Sweden. We cannot directly assume that the wickedness originating from the climate issue as such is the main driver of coordination challenges, as there are additional contextual contingencies that mark the systems. Such factors include, but are not limited to, ministerial rule or not, the role of competing concerns and interests, geographical and physical challenges, local and regional democracy, or public management traditions. Daviter (2019) argues that if we understand wicked problems as essentially contested and conflicting, policy choices should dialogue with – rather than substitute – relevant controversies, offering a possible remedy for all-too instrumental views of evidence and capacity in policy formation and implementation. The two systems in our study provides slightly different avenues for such an approach, where the Swedish dualism and semi-autonomous agency levels may allow contestation in terms of expertise and professional judgment to a higher extent than the Norwegian case – where it seems likely that contestation is of a more political nature.

7. Conclusions

Both the Swedish and the Norwegian climate policy fields display characteristics of complexity, divergence, fragmentation and uncertainty in organizational terms. Thus, it seems safe to conclude that the organization of this field in the two countries display

a substantial degree of wickedness. Although quite comparable in terms of their organizational choices, there are variations between the countries that seem to make a difference: Norwegian ministerial rule, Swedish traditions for delegation to, comparatively speaking, semi-autonomous agencies, the Norwegian petroleum industry, and more. Thus, there are slight variations in the coordination challenges the two countries face, accompanied by corresponding differences in their approach to coordination. As the present study includes both mitigation and adaptation issues, complexity certainly increases. This is partly due to the study's design (including both), but also an often-neglected holistic challenge for climate policies.

The wicked problems approach – interpreted as a set of organizational factors – can arguably contribute to our understanding of the field. Wickedness certainly amplifies coordination challenges. However, a question that requires further research, is how secondary arrangements operating across formal jurisdictions function and influence policy. Also, there is a degree of ambiguity in both the analytical framework and in our empirical observations that are not easily resolved. As the relative wickedness increases, we argue, so does the relative ambiguity of challenges. Norway and Sweden handle these challenges slightly differently, and choices of policy instrumentation and implementation are likely to reflect the institutional compositions and traditions shaping each country.

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