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The Helsinki Convention's agricultural nutrient governance: how domestic institutions matter

M. S. Andersen[a], A. Andersson[b], M. Brady[b], M. Graversgaard[c], E. Kilis[d], A. B. Pedersen[e], M. Hvarregaard Thorsøe[c] and H. Valve[f]

[a]Department of Environmental Science, Aarhus University, Aarhus C, Denmark; [b]AgriFood Economics Centre, Department of Economics, Swedish University of Agricultural Sciences and Centre for Environmental and Climate Science (CEC), Lund University, Lund, Sweden; [c]Department of Agroecology, Aarhus University, Foulum, Denmark; [d]Baltic Studies Centre, Riga, Latvia; [e]Department of Environmental Science, Aarhus University, Roskilde, Denmark; [f]Finnish Environment Institute (SYKE), Helsinki, Finland

ABSTRACT

National policy styles and path-dependencies are affecting the abilities of Baltic Sea countries to deliver on their commitments under the Helsinki Convention. This article synthesizes evidence and insights from studies relating to the provisions on agricultural nutrient management, a main source of marine pollution. We contend that governments that are strongly concentrated vertically, while fragmented horizontally, lack capacity including with respect to informal institutions that can leverage implementation. As a stocktaking of institutional impediments to sustainable development, our analysis has wider relevance for other international agreements with Baltic Sea countries involved.

KEYWORDS Implementation; Agri-environmental; national policy styles; nutrient recycling; HELCOM; marine pollution; international environmental agreement

Introduction

Despite nutrient leaching reductions over recent decades, 97% of the Baltic Sea remains eutrophic, with dead hypoxic zones in the central basin.[1] Agriculture constitutes a major source of nitrogen and phosphorus, contributing two-thirds of anthropogenic nutrient pressures key to the Sea's eutrophication, with management of this non-point source pollution considered an intractable and by some even a 'wicked' governance problem (Patterson, Smith and Bellamy 2013; Shortle and Horan 2017).

The Baltic Sea Action Plan (BSAP) approved by the nine littoral states in 2007 aims to restore the Baltic Sea and involved an update of the nutrient management provisions of the Helsinki Convention, to be implemented by parties in national legislation.[2] In evaluating compliance with these provisions prior to the revisions expected by 2021, we have identified numerous shortcomings in the transposition into national law (see Thorsøe et al. 2022). Major shortcomings exist in the three largest countries of Russia, Poland, and Germany – the 'Great Powers' of the Baltic Sea – and we also identified

CONTACT H. Valve helena.valve@syke.fi Finnish Environment Institute (SYKE), Latokartanonkaari 11 FIN-00790 Helsinki, Finland

Table 1. Nutrient surplus per unit of farmland in Baltic Sea countries.

	1997–2003 kg N/ha	2015–17 kg N/ha	Change kg N/ha	Change %	1997–2003 kg P/ha	2015–17 kg P/ha	Change kg P/ha	Change %
DK	127	¤80	−47	−37	13.1	¤7.0	−6.1	−47
DE*	103	70	−33	−32	3.1	−3.3	−6.5	−206
EE	¤36	¤22	−14	−39	−5.0	¤−7.0	−2.0	−40
FI	61	49	−12	−20	9.3	4.7	−4.6	−50
LV	14	25	+11	+80	0.4	1.3	+0.9	+211
LT	34	¤25	−9	−27	5.5	¤1.0	−4.5	−82
PL	43	47	+4	+8	3.7	1.5	-2.2	−60
RU**	144	¤130	−14	−9	10.5	16.5	+6.0	+57
SE	52	35	−17	−33	2.3	0.7	−1.6	−71

1997–2003 is Baltic Sea Action Plan baseline. *DE: national; **RU: Baltic Sea catchment; ¤EE: base year 2004; DK, EE, LT: 2015 data only; RU: no 2017 data.

Sources: (Eurostat 2020); authors' calculations based on Russia's Federal State Statistics Service (Knoema 2020). N: Nitrogen; P: Phosphorus.

shortcomings in the three Nordic countries, Sweden, Denmark, and Finland. According to our continuum of compliance, the three Baltic countries range from Estonia being a high performer, Lithuania in the middle, and Latvia falling below its two neighbors. Moreover, we observed that the trends in nutrient surplus reductions (Table 1) tend to reflect the scope of management measures implemented by each country, despite the structural contrasts in agriculture across the region.

Recent comparative research identifies the absence of suitable governance structures for the integration of agricultural and environmental policies as the key reason for the stubborn character of the nutrient problem (Wiering et al. 2020). These circumstances tend to be neglected by decision makers, with deliberations on pressure reductions frequently focusing on narrow scientific and technical issues, for example in HELCOM (the Baltic Marine Environment Protection Commission; governing body of the Helsinki Convention). Following the collapse of the planned economies, all but one of the post-Communist countries (Russia) have joined the European Union (EU) and become subject to the EU acquis. Still, in acknowledgement of the sensitive nature of the Baltic Sea, the Convention requirements go further and are more restrictive with respect to nutrients than the EU Nitrates Directive, explicitly committing countries to 10 specified measures relating to nutrient management.[3] Given this background, our objective with this article is to provide a comparative synthesis and assessment of the governance capacities of the nine littoral states for implementation of the provisions of the Helsinki Convention to reduce nutrient emissions. With this purpose, we condense findings, observations, and knowledge from a vast literature.

Theoretical framework

We define governance according to Fukuyama (2013) as the government's ability to make and enforce rules and deliver services. Governance is in other words about the performance of agents in carrying out the wishes of principals, and not about the goals per se. As governance is about execution, it falls mainly within the domain of public administration, as opposed to politics. While this may appear straightforward, the Helsinki Convention is legally binding to its signatories only under international law, and so the interface to domestic politics is not 'waterproof.' Implementation, moreover, takes place in a multi-level governance system also featuring the EU, whereby authority

has been reallocated upward from the national authorities, while domestic implementation simultaneously involves sub-national and local actors, as well as target groups of farmers and a wider civil society (Tynkkynen 2013).[4] While the Convention details an agreed set of agro-environmental measures, it remains the prerogative of the nation states to designate the responsibilities.

How the implementation effectiveness of supra-national policies is affected by preexisting administrative traditions at the national level has over the past decades been subject to continued research interest (Knill and Liefferink 2007; Tynkkynen et al. 2014; Tosun and Debus 2021). The point of departure in this research is how domestic institutions feature standard operating procedures that can be expected to follow a logic-of-appropriateness that is essentially unique to each country (March and Olsen 1995). The distinctive national styles of public administration must, however, be understood as path-dependent outcomes of long-term historical processes that warrant attention (North 1991). Embedded in formal and informal institutions of state and civil society, they are deeply rooted, often dating back to the formative phases of statehood, and are not easily changed (van Waarden 1995; Liefferink and Jordan 2005).

We use the concept of national policy style to guide our synthesis and assessment of countries' governance and implementation capacities. Its two dimensions, namely the prevailing approach to problem-solving and the relationship between government and other actors (Richardson, Gustafsson, and Jordan 1982), provide pointers to focus our literature review. The prevailing approach to problem-solving largely covers routine choice behaviors such as problem solutions that have been proven to draw acceptable responses in the past and which tend to be repeated, running along a continuum from anticipatory to reactive modes. Conversely, the relationship between government and other actors refers to how a country deals with interest groups in society, ranging from an accommodating policy style aimed at reaching consensus with interest groups to decisions tending to be made and imposed notwithstanding opposition from such groups. These two aspects, framed more concisely as consensus ability and strategic proficiency, are, according to Jänicke (1995), cornerstones in assessing the capacity for 'ecological modernization,' helping to understand why and how various nations have different capabilities to modernize society on the grounds of more sustainable development (Andersen 2015).

National policy styles are maintained and nurtured within a formalized framework of regulatory structures. Following Knill (1998) the distribution of administrative competencies, as well as the patterns of administrative coordination and control, have both a vertical and horizontal dimension: vertically the degree of centralization/decentralization and horizontally the degree of fragmentation/concentration. On the horizontal dimension, fragmentation of administrative institutions is expected to diminish a country's strategic proficiency, for example, for integrating environmental concerns into sectoral policies (Lenschow 2002). On the vertical dimension, centralization of administrative institutions is expected to limit a country's consensus ability, for example, the opportunities for deliberating with various target groups on measures according to local needs and pressures (Richardson 2018). Where supra-national policies exert low or moderate adaptation pressures on domestic administrative institutions, chances for their successful implementation are reasonable. Conversely, with higher pressures, the risks of failure are substantial (Knill and Liefferink 2007). Although formal institutions do not determine outcomes, they provide a stimulating, restricting, or enabling context for governance: 'The success of implementation is affected by preferences, capabilities

and resources of subordinate administrative actors dealing with practical enforcement' (Knill 1998, 3).

Changes of policy styles are likely to be incremental and occur only over longer spans of time. Richardson (2018), for instance, observes how over three decades a shift occurred in the UK from deliberative to 'strong' government. For post-Communist countries that have abandoned a centralized, planned economy, national styles of governance have been undergoing significant changes with the reconfiguration of administrative institutions.[5] These countries represent a moving target with respect to governance, as novel institutions based on accountability need a longer time span to define themselves, while learning processes are required for institutions and their individuals to identify successful routines for problem-solving and novel logics of appropriateness. Still, some profound path-dependencies can be expected to be at play too. Rather than through a central planning bureau, their strategic proficiency is likely to be reinforced by flexible and noncompetitive collaboration between administrative institutions of different sectoral and spatial orientation, while consensus ability would seem to hinge on democratic deliberations having been gradually strengthened and cultivated over many years (Rhodes 2007).

Post-Communist countries, moreover, with the restitution of property rights to private owners, have experienced profound changes in the institutional framework governing agricultural land. These transformations continue to influence the structure and size of farm holdings as well as their economic viability, and are having significant implications for the preferences, capabilities, and resources of the domestic target groups of agricultural nutrient governance – farmers – and thus in turn for the specific challenges that national administrative institutions are facing. To guide our synthesis of the literature, we infer from our theoretical framework the criteria for the selection of the relevant literature, as explained in the following section.

Material and methods

Systematic reviews are not common in political science, which is faced with a 'small-N problem,' not least when it comes to national administrative systems (Dacombe 2018). Moreover, as Pawson et al. (2004, v) argue 'the "same" intervention never gets implemented identically and never has the same impact, because of differences in the context, setting, process, stakeholders and outcomes'. Instead, our review methodology belongs to the theory-driven approach, offering a critical interpretative synthesis (see Dixon-Woods et al. 2006; Victor 2008).

As an important body of literature is available beyond journals, particularly in books not indexed in the Web of Science, we used the search tool 'Publish or perish' by Harzing.com to identify the relevant literature (Harzing 2007). We used search terms combining each country name with 'governance', 'policy', 'agriculture', 'nitrogen', 'phosphorus', and 'Baltic Sea', respectively. We opted for 1998, the year of the initial provisions of the Helsinki Convention on nutrient management, as the principal cutoff year for country-specific literature, although a few exceptions had to be made. As the searches returned more than 1,000 hits for each country, the first step was to filter away purely technical and natural science publications, and then to take advantage of the citation count available in the software to select a suitable number of social science-oriented publications according to citation rank for each country.

Table 2. Publications identified and selected for review in the study.

Country	DE	DK	EE	FI	LV	LT	PL	RU	SE	Ba3	BSR	Total
Articles	6	5	5	10	5	7	19	7	4	8	17	93
Book chapters	10	4	1	2	1	3	5	4	5	4	4	43
Reports	9	8	10	6	7	10	9	9	7	-	10	85
Total	25	17	16	18	13	20	33	20	16	12	31	221

Ba3: The 3 Baltic countries (EE, LV, LT); BSR: Baltic Sea Region (the nine littoral countries)

We screened the abstracts and made a selection informed by our theoretical lenses, arriving at about 25 publications for the larger countries and 20 for the others. The criteria used were to choose articles related either to Baltic Sea nutrient policy and agriculture specifically, or to the national polity of each country more generally. The latter criteria served to obtain insights on the multiple levels of government and their interplay, as well as on the relationship of government to other actors in the policy process. Such interactions are shaped by the characteristics of the national polity in terms of the centralization/decentralization and fragmentation/concentration and are anchored in the policy style that has evolved over the course of history. With the aim of understanding agricultural nutrient policy achievements from the perspective of the strategic proficiency and consensus ability of the individual countries, we read the literature to find information on these aspects.

Altogether, more than 200 publications of relevance were identified (see Table 2), with less than 5% not in English (mostly German). Most of them had to be read in-depth. About 40 publications covered more than two countries, either the three Baltic states, or a larger set from the Baltic Sea Region and beyond. Environmental performance reviews from the OECD, UNECE, and the European Commission were also considered. The most informative studies for our purposes were the report by Pihlajamäki and Tynkkynen (2011) and the project 'Legal Approaches to Controlling Emissions of Nutrients in the Baltic Sea Region' (Baaner and Anker 2013; Broks, Relve, and Veinla 2013; Nilsson 2013a, 2013b; Nyka 2013) covering, respectively, eight and four of the nine littoral states. We found no previous studies with a scope comparable to our own. The literature is relatively sparse on the polity of the three Baltic countries, but it was nevertheless possible to gain a basic understanding. Equally challenging to grasp were the developments in Russia, as agricultural pollution is covered mostly in technical and engineering literature, but still a few policy-oriented analyses could be identified. A previous review of environmental assistance to Poland, Russia, and the Baltic states involving numerous interviews with administrators and analysts helped underpin the synthesis (Andersen 1998a, 1998b, 2002), as did many years of research by the authors on nutrient management policy in the Nordic countries.

We aim for a concise assessment of the domestic capacity for agricultural nutrient governance, summarizing formal administrative structures and informal policy styles. We identify the different levels of government, along with the strength of national agencies and local authorities tasked with delivering on nutrient management. Moreover, we assess the national patterns for deliberations with farmers and interest groups, and synthesize key informal mechanisms at play, as far as the reviewed literature allows for, including the propensity of countries to take action and their routines for addressing societal challenges.

The 'Great powers' of the Baltic Sea

The Russian federation's top-down governance

President Yeltsin initially granted Russia's regions (*oblasts*) wide-ranging autonomy to win their support, de facto transforming the country into a loose confederation, but during an institutional counter-revolution President Putin reestablished the conventional centralized mode of governance characterizing the former Soviet Union, and earlier, czarist Russia. He removed regional governors from the Federal Council and created a new administrative level of seven mega-regions (*okrugs*), not foreseen by the constitution, to improve oversight and control over lower levels of government (Hahn 2001). The historical tensions between territorial administrations and sectoral production-oriented ministries, which had characterized the Soviet Union, resurfaced with the deconcentrated *okrug* administrations of federal ministry branches. Correspondingly, regional-level bodies at the *oblast* level were dismantled by decree, transferring many environmental responsibilities down to the municipal level (Kasyanov and Stovpivskaya 2007, 282).

Over the past decades, there has thus been a high degree of instability with respect to which agencies have authority over the environment (Newell and Henry 2017; Tynkkynen 2018). The Soviet State Committee on Environmental Protection, established as late as 1988, which had been transformed into the Ministry of Environment and Natural Resources, was soon downgraded to a State Committee without a voice in the government (Kasyanov and Stovpivskaya 2007). Instead, the Ministry of Natural Resources assumed many responsibilities, including for water resources, reflecting the economic priorities in an era of privatizations, for example, with the Water Code shifting focus from protection and restoration of water bodies toward water use regulation (Alexeev 2008).

Despite devolved responsibility for environmental management, the Helsinki Convention commitments remain the responsibility of the federal government (Nechiporuk and Nozhenko 2010). The Environmental Control and Supervisory Service of Kaliningrad, with its limited number of employees, considers the drawing up of a regional water plan as envisioned during the 1990s 'unworkable' (Nechiporuk and Nozhenko 2010). Moreover, while the federal Ministry of Natural Resources is responsible for BSAP implementation, federal funding is practically absent, pending approval of the federal Ministry of Economic Development (Tynkkynen 2018).

In Russian agriculture, joint stock companies – successors to previous state-owned farms – dominate over family-owned farms and small plots, while economic transformations have caused the agricultural land area in the northwest regions to decline by 60% over the past 20 years. The Agricultural Inspection agency is responsible for ensuring that fertilizers and manure are handled in a safe way (Skorupski 2007), but the regulatory focus remains on health-related standards inherited from the Soviet era and often nominally stricter than their EU or WHO counterparts (Lindgren 2013, 14). Still, many laws are framework laws and tend to contradict each other. In the Soviet period, instructions and decrees frequently took precedence over legislation, even if not in conformity. Environmental laws and regulations in Russia are often not sufficiently specific, lack mechanisms for their implementation, and are not enforced in practice (Solomon 2008; World Bank 2014; Newell and Henry 2017). Eutrophication 'from which no one dies' is not a strategic priority in Russia and 85% of agricultural enterprises in Leningrad and Kaliningrad *oblasts* still do not have storage capacity in place for

handling livestock manure (Nordic Environment Finance Cooperation 2014; Briukhanov et al. 2018).

As Nechiporuk, Nozhenko and Belokurova (2011) note, despite a willingness to make pledges to the environmental protection of the Baltic Sea, the authorities have not been able to overcome certain systemic deficiencies of Russia's top-down governance that adversely affect the efficiency and quality of implementation. The fragile stakeholder participatory mechanisms that have been allowed to develop are susceptible to Soviet traditions of suppressed democracy, precluding those processes that could facilitate more effective implementation and processes of societal innovation (Nikitina, Ostrovskaya and Fomenko 2010).

Poland's numerous veto points

Poland, with its longer history of national decision-making, is characterized by considerable continuity in national, regional, and local bureaucracy (Gorton, Lowe, and Zellei 2005). Seven regional water management authorities are complemented by its triple-tiered administrative structure of local government with provinces (*voivodships* – 16), counties (*poviats* – 380), and municipalities (*gmina* – 2,479) (OECD 2015).

While Poland established a Ministry of Environment as early as 1972 and a State Environmental Protection Inspectorate in 1980, the water authorities date back to 1960, reflecting a deeper governmental engagement with pollution concerns than in the Soviet Union (Andersson 1999). Still, most environmental protection responsibilities nowadays lie with the municipalities that are short of resources and technical competences, while effective controls to ensure they fulfill their environmental protection duties are largely missing (Nyka 2013).

As noted by the OECD (2015, 51), there is profound institutional complexity and water-sector arrangements are particularly convoluted, which makes coordination challenging. The State Environmental Inspectorate has 16 regional inspectorates with 34 branch offices; these offices report to the provincial marshal appointed by the Voivodship Assembly. Conversely, the Environment Ministry's other operational wing, the General Directorate for Environmental Protection that was established in 2008, also has 16 regional directorates, but reports to the provincial governor appointed by the central government.

While the Ministry of Environment coordinated the process of bringing Poland's environmental legislation into line with the EU's, it relied on a reluctant Ministry of Agriculture to characterize the extent of the nitrate problem and to help formulate a practicable implementation strategy (Gorton, Lowe, and Zellei 2005). With its productivist orientation, prevention of nutrient pollution was not a strategic priority, and collaboration between the two ministries stalled. Poland's parliament, the Sejm, overruled the proposed scheme for good agricultural practice, limiting manure storage to below the provisions of the Helsinki Convention for many years (Karaczun 2005). Following institutional reform in 2017, the Ministry for Marine Economy and Inland Navigation, which focuses on infrastructure projects, has assumed responsibility for water management from the Ministry of Environment (European Commission 2019).

Polish agriculture retains a high number of smallholders, having escaped the collectivization process that profoundly transformed farming elsewhere in the Soviet bloc, though large state farms were established in the territories ceded by Germany in 1945 (36% of Poland). Privatization processes over the past three decades have not

fundamentally changed the skewed distribution of land, with farms larger than 100 hectares (ha) cultivating only about 20% of total farmland.

Membership of a Chamber of Agriculture is compulsory for all farmers who pay agricultural taxes, but the Chambers have a weak position and are not considered equal partners, lacking technical expertise to engage in dialogue with ministry officials about means of effective nutrient management (Dmochowska and Szaniawska 2011). Their incomes are dependent on proceeds from agricultural tax revenues, extending a tradition of government interference with interest organizations (Toszek 2009, 157). Despite formal requirements to consult all parties affected by new legislation, they are frequently bypassed by the national government (Matthes, Markowski, and Bönker 2018). There is only a small network of agricultural advisors, so most farmers apply fertilizers based on advice from commercial suppliers (Drangert et al. 2017). Although Poland is a unitary state with a legacy of statist governance, its triple-tiered and hybrid administrative system is offering multiple veto-points for undercutting compliance with Helsinki Convention measures to address agricultural pollution.

The joint decision trap of the Federal Republic of Germany

According to the German Basic Law, the *Länder* (states) have competences on water management, though since 1969 the federation has assumed framework responsibilities, an asymmetrical allocation of competences that is observed to complicate the adoption of cross-sectoral approaches to pollution control (Wurzel et al. 2003, 119). The federal government has no field offices of its own and relies entirely on the *Länder* administrations (and local governments) to pass and implement legislation for the execution of federal policies (Derlien 2005). Local authorities, comprising towns (116), counties (329), and municipalities (14,500), have a constitutional right to self-administration, extending the historical tradition for strong local government in towns and villages of Germany. Upon its 1990 reunification, Germany did not seek to restitute property to pre-war circumstances, taking 1949, the end of formal Soviet occupation, as the point of reference in former east-Germany. The structure of large estates is thus maintained in the *Land* of Mecklenburg-Vorpommern bordering the Baltic Sea, with an average farm size a remarkable 275 ha. Along with the other littoral *Land*, Schleswig-Holstein, however, it is in many ways peripheral within Germany (Schumacher 2011).

According to Article 91a of the Basic Law and the principle of cooperative federalism, the Federation is obliged to support the *Länder* in improving living conditions, and offers financial support for rural areas, improvement of agricultural structures, and coastal protection (Engel and Zimmermann 2007). With the *Länder* having no autonomous tax authority, the fiscal equalization principle mandates transfers, while *Länder* governments are represented in the second chamber of the German parliament (*Bundesrat*). While they may veto legislation involving costs, 'local governments are notoriously fiscally squeezed by ever more public tasks transferred from higher levels, which they are obliged to implement on behalf of the state' (Derlien 2005, 99).

Notwithstanding the federal Ministry for Environment, Nature Conservation, and Nuclear Safety, marine environmental protection still falls under the Ministry for Transport, while rural-sector water management and coastal protection belong to the Ministry for Food and Agriculture. Differences between the ministries have been causing long delays in agreeing the nutrient management measures of the federal Fertilizer

Act under which the Fertilization Ordinance is issued, which in turn is the basis for the *Länder* to issue their respective ordinances (Weingarten 1997, 16). This legal cycle tends to get repeated for the infringement proceedings on nitrates brought by the EC. Moreover, the monitoring and sanction mechanism for nutrient management continues to be considered inadequate (Sachverständigenrat für Umweltpolitik 2013, 12; Taube 2018).

Although since 1971 the 'cooperation principle' is a guiding principle of German environmental law, direct negotiations between regulators and target groups are not common (Bülow 2019). Theesfeld and Schleyer (2013, 130) conclude a study on public participation in water management by noting that 'most national, federal and regional state activities are still limited to simply informing and consulting people'. Governmental working groups on nutrient management have representatives from different ministries at the federal and *Länder* levels, but do not involve farmer organizations or environmental NGOs (Sachverständigenrat für Umweltpolitik 2013, 11). It reflects the distinctive pursuit of *politik-verflechtung* (cooperative federalism), a mechanism that in a highly technical area such as agro-environmental policy is 'woven very tightly' (Pehle 1999, 171).

An iron principle of German policymaking is its legalism and the strong bureaucracy, and in the area of water policy 'an enormous body of laws, rules and regulations' has been built up (Rüdig and Kraemer 1994, 54). The ordo-liberal principle of the *Rechtsstaat* (legal state) requires an internally consistent system of legal rules, which any new policy measure must conform to, guarded by a civil service dominated by lawyers, implying rule *by* the law, not necessarily *of* the law (Fukuyama 2013).

The Nordic countries

Sweden's expert-led consensus governance

Before becoming a Member State of the EU in 1995, Sweden based its agricultural policy on the principle of state responsibility for market imbalances, protecting farmers through high-price policies and counter-cyclical interventions (Daugbjerg 1998). Although agriculture occupies only 7% of Sweden's territory, it remains an important sector in rural areas.

The Swedish Environmental Protection Agency (EPA), *Naturvårdsverket*, established in 1967, was among the very first environmental administrations worldwide, and it enjoys a high degree of institutional autonomy (Nilsson 2013b). More recently, in 2012, a separate Agency for Marine and Water Management was established through amalgamations of the previous Board of Fisheries and relevant parts of *Naturvårdsverket*. The Swedish Board of Agriculture is the counterpart agency of the Ministry of Enterprise and Innovation into which the Ministry of Rural Affairs (previously of Agriculture) was merged in 2015. According to Kronsell (1999), many actors in Sweden adhere to a conviction that societal change can be made through rational and scientific methods, and the agencies are providers of such expertise. There is a preference for framework laws, which allow political problems to be transformed into technical and administrative issues that can be dealt with by experts.

The regional level features an administrative board (*Länsstyrelse*) with an appointed governor, functioning as a representative of the state, which among its duties oversees the implementation of agro-environmental measures. A decades-long process of

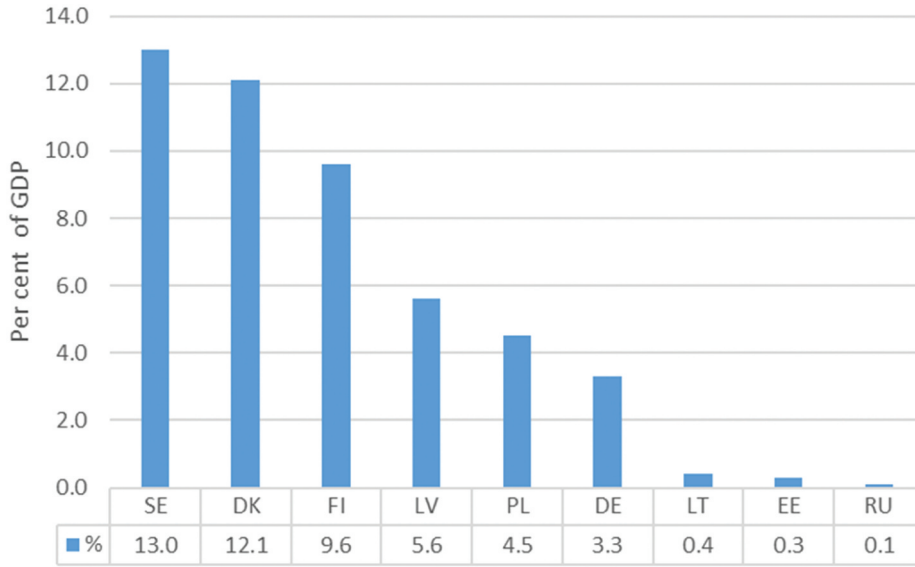

Figure 1. Taxes received by local government as a percentage of GDP in 2018 and, in the case of Russia, in 2014; excluding transfers (Sources: Eurostat 2020; International Monetary Fund 2014).

decentralization has increased the role of local municipalities in day-to-day environmental management through permits and inspections. They have substantial own tax revenues (see Figure 1) for the extended welfare services they provide, and process enforcement cases related to nutrient management with oversight from the political level. Sweden, moreover, has a unique system of environmental courts. The five Land and Environment Courts, along with an associated Court of Appeal, are linked to the general court system. They preside over appeals of administrative and enforcement decisions, and experts in environmental sciences sit as judges jointly with lawyers (Nilsson 2013b, 34).

According to Lundqvist (1996, 290) 'the relationship between the controllers and the polluters is primarily based on cooperation, aiming at consensus about what to do in pollution abatement, and how to do it'. In this process, the aim is to build mutual trust (Kronsell 1999, 57). Once consensus has been reached on targets and methods, polluters will be relied upon to execute agreed programs and prescribed measurements. The 'Swedish model' is traditionally understood to involve a political culture that is extremely deliberative, rationalistic, open, and consensual. Its strength is the 'political exchange' achieved through negotiations that commit polluters and their interest organizations to actually implement the desired measures. It is underpinned by the existence of unified national umbrella organizations; in agro-environmental policy, the Federation of Swedish Farmers (LRF) with a high membership rate. The LRF is financed through subscriptions from members, and its advisory subsidiaries have staff with technical know-how and scientific training that can match regulators.

Schönach (2011) nevertheless deplores the slowness of implementation as a 'core problem' to Swedish anti-eutrophication policy, and points to obstacles at the local level with financing as well as with municipalities delaying action. The environment-related expenses, for example, for supervision and guidance, compete with

expenditures in other areas with higher immediate visibility. One of Sweden's major anti-eutrophication policy challenges is to establish broad knowledge-based support for decision-makers who confront a multitude of complex and complicated questions, while hesitating to draw concrete conclusions about the issues and transfer them into policy formulations (94).

Finland's quest for national consensus

Two core features of Finland's agricultural policy have been family farming and maintenance of self-sufficiency, and the agricultural structure is still characterized by many smaller and middle-sized farms. Prior to EU membership, agriculture received price support and benefitted from restrictions on imports. Joining the EU in 1995 incorporated Finland into the Common Agricultural Policy, while causing a profound decline in food prices affecting farm incomes. National schemes for agricultural support have thus been continued, offering conventional production-promoting income support.

Finland's Ministry of Environment was established only in 1983, coinciding with the first election of the Greens to the parliament. The regional environmental centers have since 2010, however, been discontinued and merged into state regional offices subordinated to the Ministry of Employment and Economy, executing the tasks of several ministries and building a deconcentrated public administration. Responsibility for environmental inspections is shared by state regional offices and municipalities. Almost 300 municipalities continue to be, despite many mergers, rather small with only a few thousand inhabitants, and thus with limited capacity to shoulder their tasks. The regional councils are merely cooperative organs of the municipalities (Kettunen 2014).

Finland shares a Nordic tradition of a close relationship between the government and the main interest organizations, underpinned by the neutrality policy's quest for national consensus (Sairinen 2000, 94). Interest organizations such as the influential Central Union of Agricultural Producers and Forest Owners (MTK) have taken part in policy formulation processes through representation on commissions preparing new legislation, by submitting detailed comments to new regulations, and through participation in permanent advisory bodies (Joas 1999, 133). The largest business organizations and the largest trade unions, as well as major environmental organizations, are nearly always involved in seeking a practical consensus on future changes in the legal framework. By engaging in a 'political exchange' with MTK as a strong national umbrella organization, the government benefits from its technical expertise and paves the way for acceptance and smoother implementation. Still, its powerful position also serves to dilute policies, for instance, via the common planning protocol whereby river basin management plans are accorded a limited role (Valve et al. 2017). Agricultural advisory services are independent and provided by private entities. The environmental payment scheme of the Rural Development Program, into which about 90% of farmers are committed, is conceived as the main tool to control nutrient leaching (Kauppila and Anker 2018). The tool also operates as a source of income support (Åkerman, Kaljonen, and Peltola 2005).

Denmark: from compromise to conflict

Accelerated by EU membership since 1973, farming in Denmark has become intensive and specialized, accounting for 61% of its territory and with high livestock densities and

inputs of mineral fertilizers. Denmark exports most of its farm products and is a significant player in the global pork export market. At the same time, it relies on huge imports of feedstuff, essentially acting as a transfer hub of proteins from Latin America to Europe and Asia.

Denmark's Ministry of the Environment, established in 1971, was the second such body worldwide, and has under its aegis several expert-based agencies, notably the Danish EPA. It was conceived on the model of the Swedish EPA to become an independent, expertise-based agency, and it has had a unique and strong position in the policy process, somewhat unusual in the Danish context (Daugbjerg 1998, 84). Denmark opted early on for a broad framework law on environmental protection with integrated environmental permitting, but over the first decade, it did not apply to farmers, who requested economic compensation for any pollution control measures. There is a Nature and Environment Board of Appeal where decisions can be appealed, headed by a judge and with members appointed by the major interest organizations for business, labor, and certain NGOs. It reflects the conventional emphasis on reaching consensus with target groups, which also penetrates the preparation of new legislation, although in this respect slightly weaker than in other Nordic countries (Crepaz 1995). The Danish constitution has a low threshold for political parties to enter the parliament, and minority governments tend to prevail. Agro-environmental policy has over the years been high on the agenda, spurred by environmental concerns, with ad hoc decisions in parliament frequently challenging the government.

A 2007 reform dissolved the counties and their environmental administrations, shifting responsibilities entirely to the local level and making municipalities (98) the key providers of enforcement. By agreement with the national association of local authorities, Local Government Denmark, there are minimum frequencies for agro-environmental control and supervision, which must be reported. Thus, every year about one in four farms are inspected (Baaner and Anker 2013). Municipalities have their own substantial sources of tax revenues, though local governments in rural areas tend not to make separate environmental administration a priority.

Farmers have a somewhat stronger policy community than in Sweden, despite decreasing numbers due to mergers and takeovers (Daugbjerg 1998). Their national interest association, the Danish Agriculture and Food Council (DAFC), remains influential in advising the government on policymaking. Former associations of smallholders and large landowners were merged into DAFC, together with the major food processing companies, so that DAFC speaks with one voice for the entire food production sector. Still, for many farmers, its relationship with government has become slightly too familiar. Over the past decade, a more adversarial national association has developed with a high membership rate called Sustainable Agriculture (*Bæredygtigt Landbrug*), which has emerged to protest environmental requirements. This in turn has made DAFC a more reluctant partner in agro-environmental policy.

Domestic national plans for protecting the marine environment dating from the 1980s have resulted in very comprehensive and detailed legislation on the use of fertilizers and manure. The specific obligations of the Helsinki Convention and the BSAP have, however, received limited attention (Baaner and Anker 2013, 72), even though Denmark's coastal waters are far from meeting provisions under the EU's Water Framework Directive.

Lithuania, Latvia, and Estonia: different but reactive

In the 1920s, the large estates of the former nobility had been parceled out to smallholders, and it was to this fragmented mosaic of ownership that the Baltic countries returned when the restitution of property rights to restore private ownership carved up the large, collectivized farm holdings of the Soviet period (1945–1991) (Plakans and Wetherell 1996). The new farm entities were short of equipment and capital, with many heirs having other occupations (Knudsen 2012). More than two-thirds of Baltic small-scale farmers still have no formal agricultural training and lack expertise in running a modern farm business, frequently leaving land idle, and vast rural areas struggle with poverty (Leimane, Krieviņa, and Miglavs 2014; Žakevičiūtė 2019).

Estonia's Ministry of Environment was established in 1989, even before independence (Kontio and Kuitto 2013). Latvia's Ministry of Environmental Protection and Regional Development was founded in 1993, while in Lithuania, a Ministry of Environmental Protection followed in 1994 (Gorton, Lowe, and Zellei 2005). Lithuania and Latvia have a separate Environmental Protection Agency as the operational wing of their Ministry, and all three countries have a State Environmental Inspection Team for supervision and monitoring (in Latvia, named the Environmental Service). In all three countries, the implementation of environmental legislation falls within the remit of a de-concentrated structure of 8–15 regional ministry departments (Kontio and Kuitto 2013). Upon independence, the three Ministries of Agriculture continued from former Soviet republic structures (United Nations Economic Commission for Europe 1999).

The Baltics states have centralized systems of environmental governance because after administrative reforms regions were abolished as separate self-governing entities. The functionality of information chains between national, regional, and local-level actors is diminished by a shortage of educated and experienced people (Jokela 2011). In Latvia, for instance, not all environmental inspector posts can be filled (OECD 2019, 89). Estonia has provided municipalities with certain planning powers, but without increasing their economic resources, human capacity, or the level of expertise. Local governments are dependent on financial resources from the central budget, as revenues from local taxes are small or negligible (Trasberg 2009).

Baltic countries have relatively small administrations, with many key players holding 'multiple identities' (Rinkevičius 2000), which makes it easier for the ideas and personnel of NGOs and academia to be incorporated into state activities (Gorton, Lowe and Zellei 2005). While this may ease the formal transposition of supranational regulations, weak advisory services and fragmented farm unions have created a lack of a technical dialogue about the nutrient challenges and how to resolve them (Jokela 2011). Moreover, environmental authorities stress the need to improve the inspectorate system itself and the existing inspection methods.

The 'double-faced' policy culture of the Soviet period, in which the Baltic states were formally following directives from Moscow while actually adjusting them to ameliorate impacts at the local level (Rinkevičius 2000), has facilitated 'reactive acceptance' of today's supra-national requirements with frequently unfamiliar principles and procedures (Zemeckis, Lazauskas, and Gorton 2005; Gorton, Lowe, and Zellei 2005). Piecemeal transposition into national law combined with a Soviet legacy of fragmented environmental permitting creates a considerable degree of regulatory uncertainty (OECD 2017, 24).

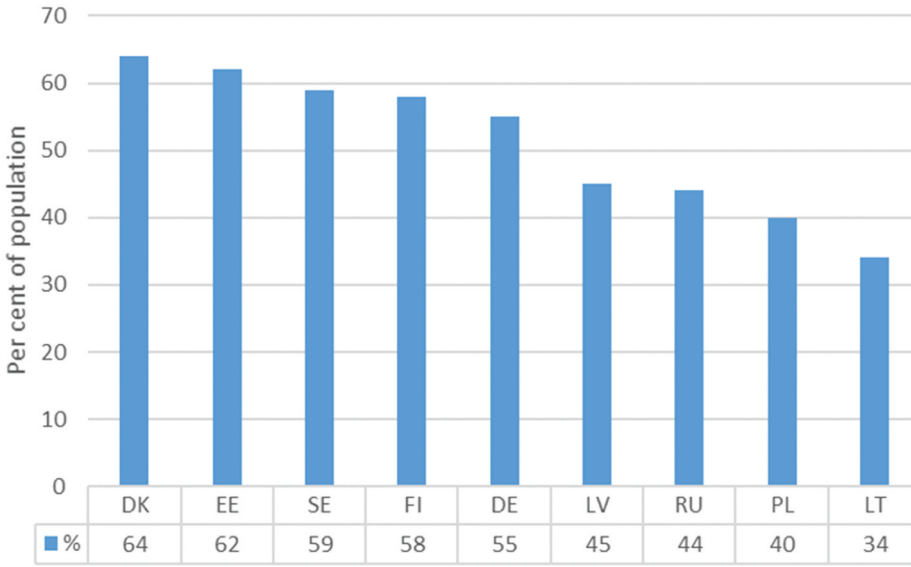

Figure 2. Share of population that tends to trust national government in 2018 (Sources: Eurobarometer 2017; Levada Center 2019).

The level of ambition on nutrient management differs with our findings showing that Latvia's approach toward compliance is timid compared to Lithuania's, while Estonia's formal legislation corresponds better with the Helsinki Convention (Jokela 2011; Broks, Relve and Veinla 2013). These differences resonate with variations in transition and economic performance, where Estonia from the very beginning was able to gain a lead. From becoming a laboratory of economic reform during the Gorbachev era, the governance approach of Estonia counts as more consensus-oriented, embedded in a national unity that has deep roots relating to its pre-Soviet culture, and its language and media proximity to Finland (Norkus 2007). With Latvia being more divided due to the large contingent of Russians that had arrived during the Soviet period, and with their displacement in administrative institutions by a young Latvian generation, there has been less elite continuity and more conflict, which has slowed reforms and complicated compliance (Norkus 2007; Egle 2008). On Lithuania, Mžavanadze (2009) deplores an administrative legacy with emphasis on formalism (versus practical execution of policy) that has made the national style of governance 'rather closed, rigid and statutory,' with administrators clinging to old habits. Indeed, the lowest level of trust in government is found in Lithuania (Figure 2). These differences among the three Baltic countries have emerged despite a shared past during Soviet occupation and comparable challenges in connecting to their neighbors and Europe. More research on the traits of individual Baltic countries is still needed to improve our understanding of their transformations in governance.

Discussion

In their recent comparative study of agro-environmental policies in five western EU countries Wiering et al. (2020) observe patterns of 'coercive isomorphy,' as countries are

pressured by EU directives to implement comparable measures vis-à-vis farmers, yet their overall patterns of governance differ widely, which is in line with our observations here for Baltic Sea countries under the Helsinki Convention. Despite comparable and rather detailed provisions on nutrient pollution having been agreed upon and written into the Convention, it becomes clear from the present review how domestic institutional differences nevertheless impinge upon these countries' implementation (Table 3). The negligence or symbolic transposition by post-Communist countries, in particular, Russia and Poland, is due to their weak environmental authorities without adequate enforcement powers, whereas the shortfalls in Germany, Denmark, and Finland are shaped by domestic politics with their powerful lobbies of livestock farmers (Thorsøe et al. 2022).

In venturing beyond the actors per se and in reflecting on the formal institutions of the three 'Great Powers' and laggards of the Baltic Sea – Russia, Poland, and Germany – we note how besides horizontally vesting important competences to authorities outside of their environmental administrations, vertically their local authorities are largely without the resources needed to perform the enforcement roles entrusted to them in legislation (Figure 1). The vertical governance structures of the three countries for nutrient management owe much to their federal or multi-tiered architecture, complemented by ambitions embedded therein for maintaining a relatively strong central power, aspects that of course have deeper historical roots. Horizontally, however, the circumscribed responsibilities vested to their environmental ministries as relating to agricultural and marine pollution reflect to a greater degree the priorities of recent years, with important competencies being delegated to administrations with a productivist mission and limiting the access of environmental administrations to decision-making. In reflecting on the informal institutions of the three countries, despite the huge differences there are also some commonalities. The governments' standard approaches to problem-solving tend to be legalistic, with reactive approaches

Table 3. Formal and informal institutions at the domestic level impacting implementation of the Helsinki Convention's agricultural measures.

	Formal institutions		Informal institutions
	Horizontal	Vertical	National policy style
Russia	Fragmented +++	Deconcentrated; disempowered regional and local level	Top-down imposition with arbitrariness
Poland	Fragmented ++	Hybrid of decentralized and deconcentrated	Reactive legalism with multiple veto-points
Germany	Fragmented +	Multi-level with empowered Länder	Legalistic imposition; weakly anticipatory
Sweden	Concentrated +++	Decentralized; empowered local level	Expert-led consensus; anticipatory
Finland	Concentrated ++	Decentralized; empowered local level	Farmer-biased consensus; anticipatory
Denmark	Concentrated ++	Decentralized; empowered local level	Conflict prone consensus; anticipatory
Estonia	Concentrated +	Deconcentrated; disempowered local level	Reactive with consensus-building
Latvia	Concentrated	Deconcentrated; disempowered local level	Reactive; conflict prone
Lithuania	Concentrated	Deconcentrated; disempowered local level	Reactive; legalistic imposition

The strength of concentration or fragmentation of environmental authority is indicated by the number of '+'.

prevailing in Poland and Russia, whereas in Germany, a joint decision trap (Scharpf 1988) of its federal structure only occasionally manages to enable anticipatory moves. The relationship to other actors in the policy process is by contrast not well formalized, whereby an incremental political exchange and dialogue between interest groups and the government that could further an adaptive implementation of supra-national commitments is being forfeited.

In contrast, the Nordic countries have stronger environmental administrations as well as local authorities with own tax-raising powers, with in principle better opportunities for further enforcement, especially when mobilized. Vertically, these governance structures owe a great deal to longer historical processes of administrative decentralization, which have evolved in unitary states that have left behind (Sweden, Denmark) or escaped (Finland) imperial ambitions of the past. Horizontally, these considerably stronger environmental administrations resulted from the transformations of past decades, spurred by environmentally conscious voters and decision-makers. The informal institutions relating to the governments' relationship to other actors are characterized by a predominantly consensual approach in most areas of policymaking and with deeply engrained routines for consulting and negotiating with target groups of regulations prior to their adoption. The Nordic welfare state model with high public spending and income transfer levels has moreover created comprehensive government machinery, where anticipatory approaches to problem-solving are more easily nourished.

The formal and informal institutions of the three Baltic states – Estonia, Latvia, and Lithuania – are not easily synthesized, as their dynamic transformations to independent, unitary states from Soviet republics have been evolving continuously, with a new impetus from becoming member states of the EU since 2004. Their shared past and relatively small population sizes provide them with a comparable set of formal institutions within a framework of deconcentrated rather than decentralized modes of governance. As regards their informal institutions, the literature identifies a north–south divide with Lithuania's administrative legacy being closer to Poland and Russia, while Estonia's is closer to that of the Nordic countries. Agricultural nutrient governance nevertheless reaches a somewhat higher level of compliance in these countries than among the 'Great Powers,' reflecting a desire to engage with and commit to supranational institutions as part of their regained national independence.

The Convention provisions on nutrients represent a bold attempt to integrate environmental requirements into the sectoral policies of agriculture, and their introduction coincided with the instigation of the Cardiff process in the EU, aiming to leverage integration of environmental considerations into different sectoral policies. Similar to the Cardiff process on environmental policy, whose integration quietly expired (Jordan and Lenschow 2011), key provisions of the Convention, and the opportunities for mobilizing available EU funds to underpin them, have been neglected by the responsible national authorities. This negligence stems not only from the bureaucratic interests and iron-triangles of the agricultural sector but has been enabled by routines for problem solving, where responsibilities for agriculturally related issues are in several countries vested to sectoral administrations without access for environmental agencies. It is revealing that Sweden, as the country with the most adequate transposition and implementation, has integrated agricultural issues into a broader business ministry portfolio, abandoning a separate Ministry of Agriculture.

As the above exposition of the nine countries illustrates, the actually existing institutions, both formal and informal, reflect specific nation-state identities. The

centralized mode of government in post-Communist countries is not easily changed, whereby delegation of responsibilities to local authorities short of resources and their own tax revenues falls short of being productive. Conversely, the decentralized structure of government in the Nordic countries reflects a different historical trajectory, underpinned by their affluence and the propensity to accept high public spending ratios of national income, circumstances that are not easily transferred in the short run.

Moreover, nutrient management targets farming communities that have evolved over the course of history in profoundly different ways, reflecting the political tensions over property rights and their sometimes abrupt reconfiguration, with long-lasting implications for farmers' resources, skills, and raison-d'être. A sound dialogue with farmers and farmer organizations is frequently called for to underpin good nutrient management (Graversgaard et al. 2018). Such a dialogue could be facilitated via stronger alignment with catchment management principles of the EU's Water Framework Directive involving institutionalization of Catchment or River Basin Councils (see Brady et al. 2022). Experiences with the *Agences de l'Eau* (Water Agencies) in France show that by adding a novel institutional layer in control of its own resources, a new dynamism can be injected into otherwise centralized governance structures, an experience relevant to a possible revitalization of Poland's regional water agencies. Still, a local sub-catchment-based dialogue about the reductions necessary to protect surface water bodies and drinking water supply (from nitrate contamination) informed by data and models may be insufficient, where farmers are more accustomed to top-down regulation as observed by Stelljes et al. (2017).

As noted above, structures can at most provide a stimulating or enabling environment. As pointed out by Jordan and Lenschow (2011) it would also require actors determined to trigger their potentials, and attentions at higher strategic levels of the government are no doubt required to reorient goals and the associated procedures of regulating agricultural nutrients. There is need for a stronger European policy framework and for the EU to meet its responsibilities as a party to the Helsinki Convention, by integrating its provisions into the Common Agricultural Policy and the European Commission's management related to water quality directives (see Brady et al. 2022). The Treaty on the Functioning of the European Union has a section on international agreements prescribed in Article 216.2, '*Agreements concluded by the Union are binding upon the institutions of the Union and on its Member States*.' It warrants more attention as a lever to improve compliance.

Conclusion

It is striking that countries with an otherwise legalistic culture of governance (Germany, Poland, and Russia) are not readily transposing and implementing provisions for nutrient management that they have agreed to under the Helsinki Convention. We find that their environmental administrations have a weak position in the formal institutional framework, while the same countries tend to lack informal institutions that can facilitate negotiations with target groups to leverage practical implementation and financial compensations. These circumstances are partly a legacy of their 'Great Power' status or ambitions, with relatively high vertical and horizontal concentration of powers and resources.

While a governance culture that is more deliberative and anticipatory is found in several of the smaller countries analyzed (Nordic countries and Estonia), it is clear that they are not all equally capacitated to engage fully in the provisions for nutrient

management. We stipulate that high levels of conflict over material interests coupled with an asymmetrical preference afforded to agricultural organizations tend to diminish governance capacity, for example, with environmental administrations losing ground to other institutions over time (as seen in Denmark and Finland). These circumstances reflect not only that the pressures for adaptation to the Convention provisions in those countries are relatively higher but also their specific institutional legacy in recent years as conditioned by high-level decision-makers for whom agricultural nutrient governance and abidance to international law has apparently not been a priority.

The ailing capacity of Russia to address farm nutrients is an issue that warrants attention considering the overall ambitions of the Helsinki Convention. Considering the significance of Poland to the catchment as a whole (48% of all farmland in littoral countries) the predispositions of its domestic institutions to delay or even obstruct obligations under the Convention present greater challenges. Questions relating to institutional capacities are key, and how to possibly tackle them (see Andersson, Brady, and Pohjola 2022; Brady et al. 2022) deserves to be addressed more carefully in future supra-national negotiations for this and other Conventions. Finally, there is substantial overlap between the EU's Nitrates Directive and the measures prescribed to control nutrients from agriculture in the Helsinki Convention. With the EU as a signatory to the Convention, there seems so far to be a missed opportunity to gain legal traction for the nutrient measures agreed. The river basin management plans, compulsory for member states under the EU Water Framework Directive, as well as the Rural Development Funds of the EU's Common Agricultural Policy have not been mobilized to prevent lax domestic implementation of the Convention's legally binding measures, which calls for further research on the interplay between domestic and European-level institutions to identify possible shortcomings in the EU's monitoring and compliance architecture.

Notes

1. Eutrophication (from the Greek *eutrophos* meaning 'well-nourished') is the process by which an entire body of water, or parts of it, becomes progressively enriched with minerals and nutrients. The visible effect is often nuisance algal blooms that can limit water clarity and cause substantial ecological degradation. After bacterial degradation of the algae, this process results in oxygen depletion of the water body, that can kill fish and seagrass and reduce essential fish habitats.
2. Annex III Part 2 of the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area; introduced in 1998 and amended in 2007 in conjunction with BSAP. According to Article 28 the Annexes are an integral part of the Convention.
3. For an analysis of the Convention's interface to EU directives and the Common Agricultural Policy, see Thorsøe et al. (2022) and Brady et al. (2022).
4. All the littoral states, except for Russia, are members of the EU.
5. In the Baltic Sea Region: Estonia, Latvia, Lithuania, Poland, and the Russian Federation. Germany's most important *Land* (state) bordering the Baltic Sea, Mecklenburg-Vorpommern, covers a territory which up to 1990 belonged to the Soviet Bloc's German Democratic Republic.

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Notes on contributors

M. S. Andersen is full professor at the Department of Environmental Science, Aarhus University. His research interest is on the greening of the economy, with a focus on policy instruments, regulation, and external costs, especially the relationship between market-based instruments, governance institutions, and technological innovations as a remedy for preventive and foresighted policies. msa@envs.au.dk Twitter: @MikaelSkouA

A. Andersson is a researcher at the Department of Economics at the Swedish University of Agricultural Sciences and AgriFood Economics Centre. Her research interests include agricultural and international economics. anna.r.andersson@slu.se

M. Brady is an associate professor at the AgriFood Economics Centre, Department of Economics, Swedish University of Agricultural Sciences and at Centre for Environmental and Climate Research at Lund University. His research interests include ecological-economic modeling for quantifying the broader social and environmental impacts of agriculture on welfare, and the design of effective agricultural and environmental policy. e-mail: mark.brady@slu.se

M. Graversgaard is a postdoc at the Department of Agroecology at Aarhus University. His research is focused on water and natural resource management and governance in rural landscapes.Address: Blichers Alle 20, Foulum, 8830 Tjele, Denmark e-mail: morten.graversgaard@agro.au.dk

E. Kilis is a researcher at the Baltic Studies Centre. His research interests include science and technology studies, the role of scientific expertise in public policy, and agricultural knowledge systems.Address: Kokneses prospekts 26-2, Riga, LV-1014, Latvia e-mail: emils.kilis@gmail.com

A.B. Pedersen is a senior researcher at Department of Environmental Science, Aarhus University. He specializes in environmental policy and governance including analyses of the effectiveness of policies and policy instruments, implementation barriers, and multi-level governance.Address: Frederiksborgvej 358, Risø, DK-4000 Roskilde, Denmark E-mail: abp@envs.au.dk

M. Hvarregaard Thorsøe is an assistant professor at the Department of Agroecology, Aarhus University. His research interest lies at the interface between science, technology, and society, with a focus on issues associated with agriculture.Address: Blichers Alle 20, Foulum, 8830 Tjele, Denmark E-mail: martinh.thorsoe@au.dk

H. Valve is a senior researcher at the Finnish Environment Institute (SYKE). She studies the practicing of authority in environmental governance, focusing on the shaping of nutrient circular economies, water management, and marine protection in particular. E-mail: helena.valve@ymparisto.fi

ORCID

M. S. Andersen http://orcid.org/0000-0003-2299-8134
E. Kilis http://orcid.org/0000-0002-2233-3637
A.B. Pedersen http://orcid.org/0000-0002-4163-5649

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