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Regulating GHG Emissions from shipping: Local, global, or polycentric approach?

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Highlights

- GHG emissions from shipping are projected to grow.
- Global regulation is not the only way forward.
- A polycentric approach opens prospects for policy learning and improvement.

Abstract

Climate change has recently been a subject of increased attention in the shipping sector. Along with technical issues of GHG emissions reduction, a question of appropriate governance has been raised. The argument regarding the role of global, regional, and local policies in curbing shipping emissions is a part of a broader theoretical debate on forms of global governance. This paper examines the recent literature on polycentric climate governance and suggests principles for environmental regulation in shipping based on a polycentric approach.

1. Introduction

On January 9, 2017, the Secretary-General of the International Maritime Organization (IMO) Kitack Lim has written to the senior officials of the European Union (EU) to express his concern regarding including shipping emissions into the EU's Emission Trading System (ETS). His main argument was that including shipping in the EU-ETS "significantly risks undermining efforts on a global level" [1]. The argument made by the IMO unfolds as follows: in October 2016, a strategy on tackling the greenhouse gas (GHG) emissions from shipping has been agreed by IMO member states, which is a sign of political cooperation under the IMO's leadership. Unilateral or regional actions would undercut the uniformity of regulation envisioned by IMO and thereby weaken IMO's global status. Eventually, such premature moves would be at odds with achieving global GHG reduction.

The reaction to this letter came immediately. On the 11th of January, the Brussels-based Clean Shipping Coalition (CSC), a group of non-governmental organizations with an observer status at the IMO, has criticized Mr Lim's position, reminding that the EU seeks to meet its obligation under the 2015 Paris Agreement and is acting in a legitimate and fully democratic manner [2]. On the 13th of January, INTERCARGO, an international shipowners' association dedicated to dry cargo, expressed its support and alignment with the IMO, highlighting the appropriateness of global regulation to tackle GHG emissions from ships in a comprehensive manner. Similar position has been taken by the International Chamber of Shipping (ICS) and the European

Community Shipowners' Association (ECSA), who have been critical of the European Parliament's proposal as it was announced in December 2016.

The controversy described above is an excellent illustration of a scholarly debate regarding the relationship between global and regional, or even local, rules in addressing climate change [3]. Extant scholarship explicates how a combination of loosely-coupled small-, medium-, and global-scale arrangements, usually referred to as polycentric governance, enhances our capacity to cope with complexity and uncertainty in the face of global climate challenges [3], [4], [5], [6], [7], [8], [9], [10]. How such a fragmentation of international governance affects shipping GHG regulation? While CSC argues that unilateral and regional measures are "an important complementary effort", the IMO asserts that unilateral and regional measures jeopardize the deliberation of the global community. In this article, I will argue that the recent research supports the CSC's rather than the IMO's claim and suggest four principles for designing effective GHG regulation for shipping based on a polycentric approach to climate governance.

2. Shipping GHG–Addressing the large and growing emissions source

The Third IMO Greenhouse Gas (GHG) Study released in 2014 found that for international shipping, the annual CO2 estimate decreased from 2,8% in 2007 to 2,2% in 2012 [11]. While this looks as a positive development, the Study emphasized that the absolute amount of emissions is still expected to increase. Despite the fact that the technological and operational improvements are expected to yield significant energy savings, business-as-usual (BAU) scenarios of maritime CO2 emissions up to 2050 project an increase between 50% and 250%. Also according to the estimates of an EU study Emission Reduction Targets for International Aviation and Shipping, by 2050 shipping will produce 17% of global GHG if no regulatory measures will be introduced [12].

While it is widely accepted that maritime transport is a significant contributor to the global GHG with emissions set to grow, the global policy progress towards its de-carbonization has been slow. The Kyoto Protocol 1997 acknowledge that GHG emissions from shipping cannot be attributed to any particular national economy due to the inherently transboundary nature of the international shipping. The apportionment of GHG emissions, and consequently allocation of emission quotas, can follow different methodologies, for example based on reported bunker fuel sales, flag of the vessel, or freight movement; all yielding different results [13], [14]. For example, if obligations were imposed only on ships flying the flags of Annex I countries, significant carbon leakage would emerge [15]. During the COP 21 negotiations in 2015, the same argument resulted in excluding shipping from the Paris Agreement. The principle of common but differentiated responsibilities (CBDR) that informs the global climate conventions presupposes that differential obligations can be imposed on parties, which in case of shipping is contradictory with the principle of equal treatment of ships [16].

Given the shipping sector's complex nature, the IMO's Marine Environment Protection Committee (MEPC) took the agenda forward by promoting a multilateral approach. In October 2017, a 2017–2023 roadmap for developing a "Comprehensive IMO strategy on reducing of GHG emissions from ships" was approved. The initial version of the roadmap shall be adopted in 2018, when the global fuel consumption monitoring,

reporting and verification (MRV) system will enter into force. The final version of the IMO GHG Strategy is to be adopted in 2023, once sufficient data has been collected in the framework of the MRV system to provide solid ground to the future regulatory choices.

The EU has been also calling for reduction of shipping GHG on the European basis. Already in 2013, the EU Commission proposed a strategy for Integrating maritime transport emissions in the EU's greenhouse gas reduction policies proposing three consecutive steps: introduction of MRV of CO2 emissions in EU ports (regulation adopted in April 2015), setting reduction targets for maritime transport, and, finally, introducing further measures, such as emission trading. Unlike international regulation in the framework of the IMO that requires national implementing legislation, the EU directives enjoy direct effect, and its regulations are directly applicable. As a part of the overall EU policy with respect to shipping air emissions, the European Parliament's Environment Committee agreed that shipping GHG emissions should be included in EU-ETS from 2023 if the IMO system will fail to deliver a global measure in accordance with its roadmap. It was this decision that prompted Mr. Lim's letter to the EU.

3. The fallacy of the level playing field

While there is no debate about the necessity to reduce shipping carbon emissions, the IMO and the EU demonstrate different approaches to this issue. From a theoretical point of view, the controversy presented in the introduction is not only about the applicability of CBDR in shipping, but also about identifying the appropriate level of governance and locus of authority. The argument brought forward by the IMO's Secretary-General is based on the assumption that in global shipping each participant shares the same playing field, thus, regulation is required at the global level to ensure that same conditions apply to everyone, thus, the IMO shall govern the process of addressing the GHG emissions from shipping and ensure its uniformity.

The attempt to level the playing field by means of uniform global regulation is expected to affect variation in business performance, improve chances for success for all players, and avoid ‘race to the bottom’, or a situation where actors can gain a competitive advantage by restoring to the so-called regulatory, pollution or tax ‘heavens’ [17]. In shipping, the phenomenon of flags of convenience is usually seen as a primary example of the ‘race to the bottom’: companies flagging out their vessels seek profit opportunities by reducing regulatory and tax burden and lowering the cost of labor, at an expense of works and the environment [18]. However, maintaining the level playing field effectively means that not only occasional regulatory ‘heavens’, but also regulatory ‘hells’ with standards higher than the global average shall be avoided, as this would compromise the very idea of leveling. Yet, the assumption of uniformity of context inherent to such reasoning does not hold true in shipping that exists in a multitude of operational contexts [19].

4. A polycentric approach to global climate governance

In 2009-10, Nobel Prize winner Elinor Ostrom published a series of papers where she developed an idea of polycentric climate governance. Her argument is that while no one country can solve the problem of a global climate change, this does not mean that only a uniform worldwide solution can. A "polycentric order" in which formally independent centers of decision making constitute an interdependent system in which units "take each other into account in competitive relationships, enter into various contractual and cooperative undertakings or have recourse to central mechanisms to resolve conflicts" [20, p.831], can be an effective way to cope with global climate change [3]. According to Ostrom (2010) [3], key factors that make polycentric approaches effective are the opportunity for experimentation and policy learning. If there is only one policy in place, the prospects for learning and improvements are much more limited in comparison to a situation when different regimes are in place, so that their design and effectiveness can be compared. Besides these benefits, there are also limitations pertaining to coordination failures, increasing transaction costs, and loss of democratic accountability [21], [22]. Ostrom (2010) [3] pointed out the potential of location and market leakages, when harmful activity is shifted in space or along the value chain, gaming the system or free riding by taking advantage of the situation without an adequate contribution. Yet, she concluded, not only polycentric systems, but also global regimes are prone to such threats.

Scholars of maritime regulation and governance adopted the concept of polycentricity to emphasize the fragmentary, multilevel and overlapping structure of shipping governance [23], [24], [25], [26]. Polycentricity usefully describes the evolution of maritime governance from the primacy of intergovernmental conventions towards a complex system of arrangements that include different types of regional (such as port State control or EU regulation) and private instruments developed by ports, cargo-owners or third-party certifiers. Empirical illustrations demonstrated how the emergence of new public and private loci of authority has strengthened shipping environmental governance [27], [28], [29].

The case of shipping sulphur and nitrogen emissions reduction lends an example of how policy experimentation and learning occur in a polycentric order. Since early 2000-s, there have been multiple attempts to come to grips with shipping air emissions: voluntary agreements in Norway, differentiated port dues in Sweden, emission standard limits set by the EU, and introduction of emission control areas (ECAs) by the IMO. At first, there were concerns regarding the distortion of the level playing field as a result of this patchwork regulation [30], [31]. Yet, the shipping industry has coped with the regulatory discrepancies as these initiatives became accepted within the maritime community as appropriate tools to address regional differences. Moreover, these first policy experiments in different parts of the world have created incentives for other maritime actors to provide new emission reduction concepts such as scrubbers and LNG bunkering. New technologies and infrastructure are paramount to enabling shipping emission reduction at the global level, yet, it is easier to develop and prove concepts in 'test' areas before scaling them up. We even observe cases of policy learning – Chinese ECA entered into force on 1.1.2016 not as a part of global regulation, but upon the discretion of the Chinese authorities, who acknowledged the benefits of local regulation in other contexts.

One could argue that addressing GHG is a far more challenging task than addressing sulphur emissions, since it requires comprehensive measures. It has been demonstrated that alternative fossil fuels, such as LNG or methanol, are similar to conventional oil fuels from a lifecycle perspective, whereas biofuels are not available at a scale [32], thus fuel switching or installing abatement technology, such as a scrubber, would not solve the problem. Instead, there is a need to introduce changes in ship design and operations, which could be more difficult to introduce in a form of command-and-control regulation, further highlighting the value of

polycentric governance. Port incentive programs that favored ships with GHG efficient designs have been a crucial step towards the uptake of IMO's Energy Efficiency Design Index (EEDI) as they promoted experimentation and learning before the EEDI became mandatory [33]. Policy interventions in EU-ETS have been conducted for over a decade and the results have been useful in fine-tuning policy design and implementation at different levels and scales (for example, [34], [35], [36]).

5. Principles for shipping governance based on a polycentric approach

In what follows, I suggest that since a polycentric approach can enhance climate governance, it can be used to address shipping GHG emissions. I propose four principles that take into account the specificity of shipping to support polycentric maritime governance.

5.1. Promote institutional diversity

Shipping embodies institutional diversity reflected in multi-level, multi-purpose, and multi-functional governance arrangements. Alongside with diversification in public regulation, exemplified by the introduction of market-based incentives or environmental taxes, the rise of private certification schemes, corporate social responsibility initiatives and other forms of private governance created new processes (such as voluntary non-financial reporting), new linkages between actors within maritime industry, and new responsibilities for ship managers and operators [24]. Rather than trying to find ‘panaceas’ [37], promoting institutional diversity is a key to deal with market and regulatory failures at different scales [38].

5.2. Target shipping sectors

Shipping industry is enormously complex and heterogenic: operational processes typical of different types of shipping are dissimilar and, respectively, environmental performance and GHG emissions vary as well [39]. Policies need to avoid ‘one-size-fits-all’ approaches that do not recognize significant heterogeneity of shipping industry [40]. Since factors that affect GHG emissions are diverse and often context-specific, it is advisable to complement technical standardization in the areas of ship design and operations, with policies targeting shipping sectors. In other words, since the environmental footprint of a cruise voyage in the Arctic and a container feeder in the Mediterranean is completely different, regulation specifically designed for cruising or short-sea shipping can be more context-sensitive and thus more effective.

5.3. Use subsidiarity as a criterion for policy implementation

De-coupling economic growth from environmental pollution is one of the preconditions of sustainable development. In shipping, the challenges of de-coupling are related to spatial variability of positive (growth associated with maritime trade) and negative (environmental damage to marine and land ecosystems) impacts reinforced through the flag system [18]. While the flag system is blamed for creating 'regulatory heavens', the inadequate competitive consequences of flagging out can be leveraged by applying the principle of subsidiarity, among other things, by reducing gaps in policy implementation by moving monitoring and control to the lower level. Positive effects of this thinking have been demonstrated by the success of the port State controls and ship vetting, as well as by the regional and port regimes [28], [29], [41], [42]. The main advantage of location-based (PSC, port incentives) or sector-based (vetting, certification)

policies is that they include a broader range of actors with a direct stake in reducing GHG emissions, such as port administrations or cargo-owners, into the governance process.

5.4. Democratization of information design

The meaning of democratic institutions is seldom addressed when the subject-matter concerns 'technical domains', such as shipping. By 'democratic institutions' I refer to an accountable, transparent, inclusive, negotiated system of rules, norms and strategies based on a shared understanding of responsibility, sustainability, and quality. When it comes to GHG emissions, improving the democratic quality of shipping governance could be done by improving access to information about corporate carbon performance, where initiatives like the Clean Cargo Working Group and Clean Shipping Project are leading the way. With improving satellite data transmission and rapidly decreasing cost of sensors, shipping is becoming data-smart and acquires new opportunities to address vessel performance, safety and energy efficiency [43]. The new information design in shipping that enables enhanced environmental monitoring will require proactive policy interventions to ensure access to data of a broad range of stakeholders along the value chains.

6. Conclusion

The issues raised in this research note are not only intellectually engaging and topical in respect to governance theory, but they are also relevant to maritime practice. Given that public regulation of maritime activities has been extensive in the past few decades and further changes are on their way, a scientific contribution to ways of explaining governance failures and best practices, even imperfect or incomplete, is desirable to assist future policymaking. This article extended the argument in favor of polycentric approach to climate governance to GHG regulation in shipping. While global efforts to decarbonize shipping under the IMO leadership are paramount, the IMO and its member states shall welcome a multitude of public and private initiatives that have emerged and will be functioning in parallel with the global roadmap. Policy experimentation within the EU, such as inclusion of shipping emissions into the EU-ETS, as well as other regional and local approaches to reduce shipping emissions, such as Maritime Singapore Green initiative for energy efficiency, are a way to learn at different scales about best practices in policy design, implementation and enforcement.

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