



Orchestration within plastics governance – From global to Arctic

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ABSTRACT

The lack of coordinated global regulation of plastics with drivers such as increasing production and poor waste management continue to bring vast amounts of plastic pollution into our environments. Plastics are transboundary with often a complex value chain in production, use and waste handling and, until now, a fragmented regulatory response on how to solve this crisis. We utilize Abbott and Bernstein theory of orchestration to understand the actors at play attempting to regulate the life cycle of plastics within the ongoing treaty negotiations. When properly orchestrated, transnational governance can overcome the ineffective and fragmented mechanisms currently in use, thereby improving plastics regulatory performance. We utilize orchestration theory and participate observation at the ongoing treaty negotiations and explore to what degree the challenge of plastic pollution uses state orchestration to speed up the governance process.

1. Introduction

Orchestration is measured in terms of what actors can do and how they operate, including the involvement of private actors and institutions as partners in the operation towards a common goal. In collaborating with private actors, international organizations, such as the United Nations (UN) can support and shape their activities, increasing the legitimacy of the regulations and hoping for compliance with them. This Transnational New Governance (TNG) scheme consists of an intricate global network of public, private and mixed institutions and norms, orchestrated by the international organization in question. We examine orchestrated as a way TNGs can overcome regime ineffectiveness thereby improving their regulatory performance (Abbott and Snidal, 2010). This theory is suitable for international regulation as it demands less of states and intergovernmental organizations (IGOs) (Abbott and Snidal, 2021), and allows for private actors, to have a seat at the negotiation table and when following up with compliance of regulations. During traditional global governance paths, states negotiate collectively and through Intergovernmental Organizations (IGOs) to attempt to control how economic actors conduct their business. This can be done for example through the development of an International Legally Binding Instrument (ILBI) with monitoring and enforcement mechanisms (Abbott and Snidal, 2009), such as that which recently was finalized for regulating the harvest of marine genetic resources outside

of the state's exclusive economic zones within the context of protecting biodiversity in areas beyond national jurisdiction (BBNJ) (Tiller et al., 2019b). It can also be witnessed through the MARPOL Convention, which covers the *Prevention of Pollution by Sewage from Ships* and includes “treatment requirements for the discharge of these residues on the basis of the distance from the coast” (Martínez-López et al., 2020). This example is said to have strict enforcement and monitoring with noncompliance, but like many legally binding standards, it is riddled with grey areas and barriers to implementation (Animah et al., 2018).

Moreover, the evolving structure of multinational corporations with global production and supply chains poses challenges for these traditional paths of global regulations. Some argue that traditional old governance sometimes lacks accountability and legitimacy, as well as enforcement mechanisms, because of the absence of direct inclusion of actors that operate in the specific economic area, whether it be shipping, plastic production or extraction of marine resources in the ocean (Barkemeyer et al., 2015). As such, states find themselves not working in isolation in this globalized arena. They are in fact joined by transnational corporations (TNCs) and non-governmental organizations (NGOs) in the formulation of global regulations. Added to this is civil society, which also applies pressure on corporations and states alike through protesting, advocating for public support, and in turn influencing norms and behaviors in the governance arena (Clark, 1995; Westermann, 2013). Corporations sometimes even self-regulate as a

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response to these actions if there is a lack of state or global governance regulations existing (Carroll, 1991; Scherer et al., 2006; Abbott and Snidal, 2009). However, we cannot merely rely on them to do so. Previous studies have demonstrated participation of NGOs and industry actors in other Multilateral Environmental Agreements (MEA) such as the one on climate change that has the potential to increase democratic legitimacy and compliance (Kuyper and Bäckstrand, 2016). Other arguments include that the more non-state actors involved in negotiations hamper the effectiveness of a potential agreement (Kuyper et al., 2018) or as some say “too many cooks spoil the broth”. Nevertheless, these examples are within the frame of the Paris Agreement which has been known for its weak legal status and effectiveness with a strictly bottom-up approach (Bäckstrand et al., 2017). This approach comes with a lack of binding commitments and therefore countries may choose to take limited action or no action at all. There is therefore a need for new knowledge to understand the orchestration of upcoming MEAs such as the one to end plastic pollution to avoid previous MEAs mistakes.

As the global plastic treaty negotiations have grown to one of the largest arenas for stakeholders involved with plastics to gather, it was the pragmatic choice for an orchestrating institution. We, therefore, focus on the plastic pollution crisis that has been riding increasingly high in the consciousness of the general public and beyond the last decade (Heidbreder et al., 2019; Otero et al., 2021). We examine orchestration as a theory in more detail and explore to what degree the challenge of plastic pollution uses orchestration to enhance and legitimize the governing process on a treaty to end plastic pollution. Plastics are a transboundary material (Pinheiro et al., 2021), meaning it will take TNG schemes and orchestration to effectively govern them - as one nation's regulation does not apply to the whole Ocean. There is a multitude of plastic orchestrators involved in the process, including producers, retailers, recyclers, NGOs, and like-minded groups. The proper orchestration of these actors must be present in the negotiations of a plastic treaty. Without legally binding measures and compliance with enforcement and monitoring mechanisms, what would such a treaty generate? However, without the support from orchestrations' indirect power on regulation, will the upcoming plastic treaty have legitimacy and be enforceable at all? Considering this, we organized the following research to examine the theory of Orchestration governance. We then apply this to the road towards UNEA5.2 (Cowan and Tiller, 2021) and the outcomes it had for global plastic governance in the adoption of a mandate to begin negotiations on a Global Plastics Treaty (GPT). Finally, we examine a case study in the Arctic, which is currently navigating between traditional governance and Orchestration to regulate plastics in the high north.

2. Orchestration

The term orchestration in international relations means bringing “... third parties into the governance arrangement to act as intermediaries between itself and the targets, rather than trying to govern the targets directly.” More specifically, an *Orchestrator* works through an *Intermediary* to govern a *Target* - this is also known as the O-I-T model (Abbott and Snidal, 2009). It is as such a strategy of indirect governance, whereby the Orchestrator, often an IGO, must identify, or help create, and support the voluntary cooperation of an Intermediary. The Intermediary may be a state or business association, a single entity or a network of NGOs, to reach a Target, such as ending plastic pollution. This typically is found when goals and ambitions are high, but governance capacities on the ground are low and clouded with conflicting views (Ferraro and Failler, 2020). These are Intermediaries that have the goals and capabilities that are needed to regulate or provide benefits towards policy Targets, such as targets aimed at reducing plastic pollution. New research on the matter separates the type of orchestration capabilities of the intermediaries by differentiating between ‘exclusive’ and ‘inclusive’ orchestration. The former connects like-minded intermediaries while the latter broadens inclusion and increases

democratic legitimacy (Thew et al., 2021).

A concern of an Orchestrator is the management of the relationships between any number of Intermediaries, promoting coherence and coordination between them (Abbott and Bernstein, 2015). The state, which can still act as a central player, has a role that centers on the capacity building of private actors through negotiating regulatory targets, using endorsements, facilitating collaborations, and providing incentives for self-regulations or even resources and assistance (Wood, 2002; Abbott and Snidal, 2009; Widerberg, 2017). It is still the state that holds a regulatory authority in that it can establish mechanisms for accountability for the actors involved and requires that they use external assessment agencies that are independent of them to account for this. The state can even step in with mandatory regulations if deemed necessary, which also adds incentives to compliance by the non-state actors (Abbott and Snidal, 2009). A separate example of this includes the Organization for Economic Cooperation and Development's (OECD) attempts to influence corporations directly through Guidelines for Multinational Enterprises (Abbott and Snidal, 2010) and relies on voluntary measures and guidelines rather than hard enforceable laws to allow for easier involvement by corporations. Similarly, the United Nations Global Compact also relies on soft law and voluntary actions of its members rather than the traditional treaties with hard laws that include enforcement and compliance elements. A prominent example of voluntary corporate environmental stewardship is the International Organization of Standardization, which is highly influential in developing environmental management systems and standards globally (Wood, 2002). The following Table 1 demonstrates Abbott et al. (2012), Indirect Governance through Orchestration Theory while including the relevant linkages when applying the theory to global plastic governance. We identified the intermediaries via our deep observations throughout the plastics negotiations¹ in person, as well as linkages between both academic and popular scientific articles featured in the media.

When taking a closer look at the O-I-T model we begin to examine the ongoing global plastic treaty negotiations from both the Orchestrator and Intermediaries on the Target of an ILBI to end plastic pollution. Some conditions are of particular importance for successful orchestration as laid out by (Abbott and Bernstein, 2016): 1) Given that the Orchestrator is governing without any mandatory authority or coercive power, it needs legitimacy in its role as Orchestrator, and must also have 2) a central institutional position with political weight, and as such be a natural leader for the Intermediaries when it comes to steering them towards the Target (Abbott and Bernstein, 2015). A common example of the Orchestrator in Environmental Governance is the United Nations Environment Programme (UNEP) which is the leading global authority on environmental matters (UNEA, 2018a, 2018b, 2018c). The second condition falls upon the UNEP's Executive Directors, who are democratically elected on a four-year term cycle. This position throughout the GPT mandate adoption and negotiations is held by the Under-Secretary-General of the United Nations and Executive Director of the UN

Table 1

Using (Abbott et al., 2012) indirect governance through the orchestration model, we have developed who the O-I's would be for the Target of a LBI on plastics.

Orchestrator	Intermediaries	Target
UNEP	NGOs, Science and Technology, Industry, Civil Society, Business, ENGOs, Youth, Women, Indigenous groups	A legally binding treaty on plastics

¹ This includes when the mandate was adopted at UNEA5.2 in Kenya, the preparatory meeting of the Open-Ended Working group in Senegal, INC-1 in Uruguay and INC-2 in France.

Environment Programme, Inger Anderson.

Abbott and Bernstein write that two final conditions are important for successful orchestration: **3)** Appropriate Intermediaries are available; and **4)** the Orchestrator has sufficient resources available to enlist, support and steer the Intermediaries. UNEA5.2 and the subsequent treaty negotiations have included a multitude of Intermediaries during the negotiations. Here the Intermediaries listed had a firsthand engagement in the negotiations and were even given the floor to provide input into the decision-making process. For the third condition, we find evidence of NGOs and civil society on the grounds at UNEP and the GPT negotiations via side events and observations throughout the negotiations (Collins et al., 2022; WWF, 2020; IISD, 2022). Moreover, the mandate to end plastic pollution itself mentions the need for NGOs, Science, Businesses, and civil society to have an active role in the treaty negotiations (UNEA, 2022). For the fourth and final condition laid out by Abbott and Bernstein on successful orchestration requirements, we see the need for the Orchestrator to have sufficient resources, to support, steer and enlist intermediaries. According to the UNEP, their environmental income (contributions from UN member states) falls short at least 20 million USD of their indicated budget for 2021 (UNEP, 2021). This could hypothetically be a factor hindering the efficient implementation of a plastic treaty. However, we assume that because the political will is so high, this condition is not as relevant towards the beginning phases of negotiating an LBI on plastics. Table 2 summarizes Abbott and Bernstein's theory for successful orchestration requirements as demonstrated above.

3. Plastics governance

It is nearly impossible at this stage – within the field of environmental governance or anywhere really – to not know that plastic pollution is an environmental crisis. The literature on the topic has exploded (Jambeck et al., 2015a, 2015b, Geyer et al., 2017a, 2017b, Beaumont et al., 2019, Tiller et al., 2019a, Cowan and Tiller, 2021, Van Leeuwen et al., 2022) and the articles on governance thereof are well researched and discussed in the field of political science (Dauvergne, 2018; Haward, 2018; Raubenheimer et al., 2018; Tiller and Nyman, 2018; Vince and Hardesty, 2018; Stoett and Vince, 2019; Tessnow-von Wysocki and Le Billon, 2019; Stoll et al., 2020; Simon et al., 2021). To theorize how the mandate was adopted to begin negotiations on an ILBI, we examine both the traditional path of governance which features top-down mechanisms and then move to the Orchestration involved to achieve global negotiations on a treaty to end plastic pollution. This path provides a bottom-up style of integration. Utilizing the United Nations Environmental Assembly (UNEA) under UNEP is an important process in examining the Orchestration of the GPT mandate. Finally, a case study examining the orchestration of plastics governance in the Arctic is particularly interesting as the increase of melting glaciers and sea ice has led to an increase in human settlements and tourism which bring with

Table 2

Conditions for successful Orchestration according to (Abbott and Bernstein, 2015) and how this was visible at UNEA5.

Successful orchestration conditions	
Four conditions	Demonstrated at UNEA5.2
1. Legitimized role as orchestrator	UNEA is legitimized as it is the world's leading global authority on the environment.
2. Political weight and leadership	Democratically elected Executive Directors on a four-year basis.
3. Appropriate intermediaries available	Throughout UNEA5.2 and the subsequent GPT negotiations numerous intermediaries were available and willing to provide advice to decision-makers. Although the budget falls short – we believe the political will outweighed resource needs as the mandate to begin negotiations was passed despite a lower budget than expected (as of January 2022).
4. Sufficient resources	

them plastic pollution, with a higher risk of leakage into the environment (Hallanger and Gabrielsen, 2018), and the evidence pointing towards the Arctic as a sink for marine plastic pollution (Van Sebille et al., 2020; Huserbråten et al., 2022).

3.1. Traditional path - pre UNEA

The occurrence of plastic pollution in the marine environment coincides with the growing manufacturing and production rate of primary polymers. Since the 1950s when the large-scale production of plastic began, a significant amount of plastics have ended up in our Ocean (Jambeck et al., 2015a, 2015b). This section examines the traditional governing pathways of environmental governance as it relates to plastic pollution. We argue that the 'old ways' of framing plastic pollution were too focused on 'marine debris' which does not allow for the full life cycle – production, consumption, and disposal of plastics to be considered in regulations. In 1984, the first international conference on the impact of marine debris was held (Hugo et al., 2021). The objective of the conference at the time went under the name 'Workshop on the Fate and Impact of Marine Debris' was to determine the extent of the problem, identify possible mitigating actions and make recommendations for future research (Shomura and Yoshida, 1984). In June 1992, during the Earth Summit conference in Rio de Janeiro, Brazil, Agenda 21 was launched, which recognized plastics as a threat to the marine environment (United Nations, 1993) and was adopted by 178 governments (UNEP, 2021a, 2021b, 2021c). The Commission on Sustainable Development (CSD) was created in December of the same year as a measure to ensure the implementation of Agenda 21 on the local, national, regional and international levels (UNEP, 2021a, 2021b, 2021c). Three years later in 1995, the Washington Declaration and the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities was adopted. This global intergovernmental mechanism facilitates and assists national and/or regional authorities in their role of addressing land-based impacts on the marine environment such as those resulting from sewage, heavy metals, litter, and persistent organic pollutants (UNEP, 2021a, 2021b, 2021c). The annual production of plastics more than doubled between 1995 and 2010, rising from 156 to 313 million tonnes (Geyer et al., 2017a, 2017b; Hugo et al., 2021). Despite efforts by the international community to combat plastic pollution, the amount of plastic ending up in the Oceans has increased (Hugo et al., 2021). We argue that these traditional paths towards governance of plastic were severely lacking and theorize that it may have been the result of both little Intermediary involvement and not enough concern of the growing crisis. We turn to Table 3 in (Cowan and Tiller, 2021) for an overview of the more recent instruments in place to regulate plastics and how these traditional pathways have hindered our ability to tackle the pollution problem comprehensively. The next section examines the efforts of the UNEA in the fight for a cleaner sea by tackling the problem at the source – production and management on land.

3.2. UNEA pre-2022

At the first session of UNEA in 2014, the resolution on 'Marine plastic debris and microplastics' was adopted (UNEP/EA.1/Res.6). Despite decades of global recognition of the marine plastic pollution issue, this was the first time the highest decision-making body of UNEP passed a resolution directly addressing this (Hugo et al., 2021). The resolution called on the Executive Director of UNEP for a study on marine plastic pollution. The study sought to prepare a background document on marine plastic debris. It defined what it is, identified why it occurs, explored its transboundary nature and proposed measures that could be taken to reduce pollution (Hugo et al., 2021). Further policy recommendations were provided such as "strengthen the implementation and enforcement of existing international and regional frameworks; prioritize actions for marine litter mitigation, and support efforts to promote a life cycle approach to plastic products" (Kershaw, 2016). The report was submitted to the second

Table 3

Statements made by UN member state delegates during UNEA5.2 at the UNEP headquarters in Nairobi, Kenya (February 28 – March 2nd, 2022) that include support in orchestration.

Country/delegate	Session	Quotes from statements
UN MS delegate		
Honduras	National statements	<p>“We believe in the necessity to include the most effected population. Our government has decided to work where...human profit is placed before capital, so we provide a dignified life for the most vulnerable. We must involve the <i>private sector</i> and develop projects that are sustainable.”</p> <p>“We will harness the power of nature in every aspect to make our communities more resilient to climate change. We will accelerate transition of a plastic free <i>economy</i> and expand use of <i>recycled</i> materials...we look forward to discussions of a global plastic agreement and will actively engage in the <i>community</i>.”</p>
Republic of Korea	National statements	<p>“We are in strong support to stop waste from getting into sea and ocean. We are an industrial country; we are trying to pressure our <i>manufacturers</i>. This represents a recovery and resilience plan, to effectively combat climate change and become climate neutral.”</p> <p>“...It's also important that we work together with <i>stakeholders</i>, to find substitutes for plastic and produce the substitutes in a friendly economically way. It's important to <i>raise awareness</i> on the use and consumption of plastics. This way we can be sure plastics are reused and recycled.”</p>
Slovakia	National statements	<p>“...We have worked with the <i>private sector</i> to fund recycling programs to deal with plastics that have no sustainable alternative. We know the importance of involving all <i>stakeholders</i>, it has been critical to put people at the heart of ending plastic pollution...”</p> <p>“<i>Youth</i> makes up a portion of the world's population. The costs and consequences catch up with us eventually. We are facing three planetary crises at once - which are all driven by human activity. <i>Science</i> has brought us knowledge about the drivers of degradation...”</p> <p>“Today it is clear we need to work together like never before...plastic pollution fouls our waters and lands. We seek a plastics agreement that is innovative and ambitious. Addressing the crisis requires <i>stakeholder engagement</i>... We must tackle the pollution crisis with <i>strong science</i> and equal ambition.”</p> <p>“We congratulate UNEP on adoption of ground-breaking resolutions. Agreeing on language is one thing, implementation on the national level needs trust and support of MS. All resolutions including the ones on plastics must fully respect and build on rights and knowledge of <i>indigenous peoples</i> and <i>women</i>...”</p>
Peru	Flagship side event	
Rwanda	Flagship side event	
Norway	National statements	
United States	National statements	
Major group stakeholder representative	Closing Plenary	

edition of UNEA which took place in Nairobi in May 2016. The theme of the session was to strengthen the science-policy interface (UNEP, 2021a, 2021b, 2021c). Building upon the findings of the report, the second session of UNEA adopted a second resolution on combating marine plastic litter and microplastics (UNEP/EA.2/Res. 11) (UNEA, 2016). In

addition to linking the efforts of combating marine plastic pollution to the SDGs, the resolution requested UNEP to “undertake an assessment of the effectiveness of relevant international, regional and subregional governance strategies and approaches to combat marine plastic litter and microplastics” (UNEA, 2016). As a response to the UNEP/EA.2/Res. 11, the ‘Combating Marine Plastic litter and Microplastics’ report was published in 2017. The report assesses the effectiveness of relevant international, regional and subregional strategies and approaches such as the United Nations Convention on the Law of the Sea (UNCLOS, 1982), the Convention on Biological Diversity and the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention) (Raubenheimer et al., 2017).

In December 2017 the third session of UNEA took place. During this session, the inefficient global governance in terms of marine plastic pollution was recognized and the assembly sought to find a common vision going forward. Outcomes of the session included several resolutions such as UNEP/EA.3/Res.3 Contributions of the United Nations Environmental Assembly to the high-level political forum on sustainable development (UNEA, 2018a, 2018b, 2018c), UNEP/EA.3/Res.7 Marine litter and microplastics (UNEA, 2018a, 2018b, 2018c) and UNEAP/EA.3/Res.10 Addressing water pollution to protect and restore water-related ecosystems (UNEA, 2018a, 2018b, 2018c). Following UNEA 3 the Ad hoc Open-ended Expert Group (AHEG) was established in response to the UNEP/EA.3/Res.7. The AHEG had two meetings in 2018, the meeting covered a broad range of questions related to the barriers and response options (Hugo et al., 2021). The experts highlighted the ‘urgent need for action’ and the importance of addressing the production of plastic as well as marine litter and microplastic that already exists (Hugo et al., 2021). While the meetings recognized that several of the existing international agreements provided opportunities for strengthening the global governance framework on marine litter, several representatives believed it to be necessary to establish a new LBI to adequately address the issue (UNEP/AHEG/2018/2/5) (AHEG, 2019a, 2019b). Moving forward, in 2019, the fourth UNEA session convened and covered a wide range of topics under the overall theme of ‘innovative solutions for environmental challenges and sustainable consumption and production’ (UNEP, 2021a, 2021b, 2021c). During UNEA 4 it was decided to extend the mandate of the AHEG. This happened despite some states having expressed an interest in establishing a new AHEG that would focus more specifically on “the design and elements of a new and comprehensive global governance and coordination agreement (including the consideration of a legally binding agreement)” (Hugo et al., 2021).

We witnessed an Orchestrator (UNEA) supporting its Intermediaries at the third meeting of AHEG in 2019. During this meeting, the discussion of a new global agreement on marine plastic pollution continued. Several governmental experts called for such an agreement and expressed concerns that the existing legal frameworks covering plastics were too fragmented and inefficient (UNEP/AHEG/2019/3/6) (AHEG, 2019a, 2019b). The fourth AHEG in 2020 was held online due to the outbreak of the COVID-19 virus. In these meetings, the calls for a new global agreement continued to grow in strength. Several Member States (MS) recommended UNEA 5 to adopt a mandate for negotiations for such an agreement (Hugo et al., 2021). The fifth session of UNEA was also largely affected by the COVID-19 pandemic and its related restrictions, MS and stakeholders decided that the meeting should be split into two sessions. UNEA5.1 took place digitally in February 2021 and UNEA5.2 where the resolution mandate to begin negotiations on an LBI took place at the UNEP headquarters in February 2022. The following section will examine the extent of which orchestration was prevalent at UNEA5.2.

3.3. Orchestration within UNEA5

After many years of floating around the idea of producing an ILBI to end plastic pollution, a mandate was officially adopted at UNEA5.2. The

previous section examined the road to get to this position, in this section we dive further into the orchestration of the resolution itself, bringing examples of Intermediary participation witnessed at the assembly itself.

The negotiations of the plastic resolution text took place the week before UNEA5.2 and included the Open-ended committee of permanent representatives (OECPR) which comprised not only MS delegates, but a wide range of plastics and ocean NGOs such as WWF, Ellen MacArthur Foundation and even private actors such as waste pickers, indigenous groups, and youth observing the process. As the negotiations included the observations of non-state actors polycentric governance theory would suggest that as in the case of climate governance, this could in fact increase the resilience of negotiations (Abbott, 2017) (Dorsch and Flachsland, 2017). The integral part these Intermediaries played during the negotiations at the OECPR's week, as well as the role they are expected to have within the treaty negotiations can be examined in Table 3 below. UN Member State delegates made interventions during UNEA5.2 on the importance of these actors in creating the right LBI for all.

Regardless of which Intermediary participation the member states were calling upon, e.g., the scientific community, NGOs, industry, or civil society such as youth, women, and indigenous knowledge – the conclusion was clear: We cannot tackle the crisis from a traditional top-down governing mechanism alone. The last words spoken in the conference room during the closing plenary of UNEA5.2, by President Espen Barth Eide, demonstrate the necessity of Intermediaries within plastics governance, to achieve the Target of an LBI on plastics - "...we need to use every level of governance to drive this agenda. We need to partner with civil society, business, and youth. It's the planet that we are shaping or destroying now." Decision-makers in plastic governance appear to be keen to include Intermediaries in the process of creating an ILBI. Does the same apply to local initiatives? There are examples of plastic orchestrators operating on a local scale as in the case of the Arctic, which is heavily affected by plastic pollution (Hjeljord, 2019). This is examined as a case study in the following section, whereby we seek to understand the orchestration of governance mechanisms in the Arctic. We have studied Svalbard and identified the constituent elements of a legal and political platform for the prevention and remediation of plastic pollution in the Arctic.

4. Orchestrated shift in the Arctic

While much is being done at the local level to address the harmful impacts of plastic pollution, such as building a state-of-the-art recycling plant in Longyearbyen (Schmaltz et al., 2020), the legal and regulatory framework for addressing plastic in the Arctic remains inadequate. However, this does not mean that orchestration itself is ineffective in the Arctic (Young and Zürn, 2006). The Arctic was chosen as a case due to the transport of persistent pollutants such as plastics to the globe's upper latitudes via wind and ocean currents (Cózar et al., 2017). The resolution on plastics calls for global action, but this will also require concentrated efforts locally as there is no 'on-size-fits-all' for plastic pollution solutions (Cowan et al., 2021).

Environmental governance in the Arctic is complex as it includes numerous systems of implementation (Berkman and Young, 2009), all of which are currently fragmented (Young, 2016). There are intergovernmental arrangements, such as the Arctic Environmental Protection Strategy, the Barents Euro-Arctic Region, and the Arctic Council. There is also collaboration among sub-national units of government, indigenous peoples organizations, scientific bodies, educational organizations, and environmental NGOs (Young, 2010). Previous research brings attention to the Arctic Council's effectiveness in identifying issues and placing them on the policy agenda (Kankaanpää and Young, 2012). In this paper, we examine the Arctic Council's role in localized plastic regulations by studying the policy-making process.

A relevant question is: How has the Arctic Council worked as an Orchestrator for plastics governance in the Arctic? Under the Iceland Chairmanship from 2019 until 2021, the Arctic Council worked to draw

attention to Arctic plastic pollution and bring it to the forefront of environmental policy decisions (Loukacheva, 2020). The Arctic Council has also orchestrated solutions to manage waste, monitor waste, and prevent waste (Arctic Council, 2020). For example, with regard to preventing waste, through the Arctic Council, the Arctic States and Indigenous peoples are working to develop the first regional action plan to address marine plastic (PAME, 2021). We, examine Table 4 to demonstrate that outside of UNEP and the global plastics negotiations, environmental agreements have been built in specialized regions like the Arctic. These agreements likewise require the involvement of Intermediaries as well as knowledge transfer to the global agreement. However, it's important to note that the primary responsibility for plastics governance, including regulation and enforcement, rests with individual Arctic states and relevant international agreements. The Arctic Council's role is more advisory and cooperative in nature.

As Magnús Jóhannesson, the current Arctic Council's designated Special Coordinator on Plastics and Marine Litter, stated, "Plastic pollution is a global problem that eventually will need a global solution, but it will take time to create" (Arctic Council, 2021). The Arctic Council has directed efforts to curb plastic pollution through its different working groups. The ML-RAP – Marine Litter – Regional Action Plan, was adopted in 2021, the work coordinated by the Arctic Council working group PAME Protection of the Arctic Marine Environment. Other Arctic Council working groups increase their attention towards the plastic pollution problem. Five of the Arctic Council's six working groups have worked or are working on plastic pollution projects: AMAP Arctic Monitoring and Assessment Programme has a Litter and Microplastics monitoring plan and supporting guidelines for the entire Arctic ecosystem. CAFF Conservation of Arctic Flora and Fauna has a Plastics and Seabirds project, while the ACAP Arctic Contaminants Action Program and SDWG Sustainable Development Working Group join efforts on Waste Management in small Arctic rural communities, addressing Alaska / Canadian territories and the Murmansk region.

We argue that solutions will require deliberations towards developing knowledge to support policy formulation by the Arctic Council and other bodies working to put in place an international regulatory framework such as UNEP and the ongoing GPT negotiations, and subsequently minimize plastic litter in the Arctic. These regional case studies as well as the numerous others across the globe should be further studied to advance analysis of their effectiveness in implementing the future global plastic treaty on the local level. Efforts to address plastic pollution in the Arctic are complex, involving multiple stakeholders, including national governments, indigenous communities, environmental organizations, and industry. While the Arctic Council can contribute to these efforts, a comprehensive approach to plastics governance in the Arctic requires the active involvement and commitment of all these stakeholders, as well as the development of international agreements and regulations that specifically address the issue.

5. Discussion & conclusion

This study examines Orchestration theory in relation to the ongoing

Table 4

Using (Abbott et al., 2012) Indirect Governance through Orchestration model, we developed the O-I-T overview for Arctic Governance, specifically in Longyearbyen, Svalbard.

Orchestrator	Intermediaries	Target
Arctic council	Local government (Longyearbyen local council, Governor's office, Environmental department), science and technology, waste management and tourism industries, Indigenous peoples	Reduction of Arctic plastic pollution

global plastic treaty negotiations. Orchestration includes collaborating with both public and private actors in the realm of governing plastic pollution and identifying solutions. We argued that orchestration, via the support of intermediaries is better able to support and shape regulations, increasing the legitimacy and compliance with them. This study sheds light on the pressing issue of global plastic pollution regulations and highlights the challenges posed by the lack of coordinated global governance of the past. We examined previously adopted regulations attempt to govern 'marine debris' such as the 1984 first international conference on the impact of marine debris, or the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities. We argued that these traditional paths towards regulating plastic pollution were severely lacking the involvement of intermediaries as well as public support which hindered implementation and hence comprehensive mitigation actions to take place. We then provide an overview of the outcomes of the previous UNEA sessions 1–4 and their efforts which brought us to UNEA5.2 and a mandate to begin negotiations on an ILBI to end plastic pollution. This was followed by an examination of orchestration efforts which took place at and since UNEA5.2. Our analysis underscored the potential of orchestration as a strategy to enhance the legitimacy of plastic pollution regulations by including intermediaries to aid in fostering compliance. The use of participant observation during the plastics negotiations has provided valuable insights into the progress of these critical discussions and the extent to which orchestration can accelerate the governing process. Multiple UN delegates were observed bringing attention to the importance of Intermediaries in negotiating a plastic treaty. The momentum to include Intermediaries to be specified in the resolution mandate as well as the recent zero draft text on the treaty. Within this is the option to designate a national coordination body for relevant stakeholder engagement throughout the treaty negotiations and eventual implementation. By leveraging the strengths of Intermediaries throughout the process it can bridge existing gaps within the regulatory plastics landscape. Future work may examine the effectiveness of this method and test if orchestration was useful in crafting the future GPT.

Finally, we examined the case of plastic governance Orchestration in the Arctic. Unlike that of global plastic governance, which has UNEP as an orchestrator – Arctic plastic governance can be seen as being Orchestrated via the Arctic Council. It brings with it its intermediaries to ensure effective monitoring and implementation. However, the Arctic Council case demonstrates the vulnerability of a multi-actor / international Orchestrator. Cases, like that of the Arctic, are an important avenue to detail how the global agreement to end plastic pollution may be implemented on the ground, as well as the hurdles each region faces when implementing such an ambitious agreement. In summary, this research contributes to our understanding of the complexities surrounding plastic pollution regulation and offers an avenue for using Orchestration to address this global challenge. The final three negotiation sessions (INC3–5) will require knowledge from all sectors of society, and future studies will benefit from following the negotiations from both the global and regional perspectives. Through orchestration and the engagement of a diverse set of stakeholders, we can work towards a more coordinated and impactful approach to managing plastic and mitigating its adverse effects on the environment.

CRedit authorship contribution statement

Emily Cowan: Conceptualization, Validation, Formal analysis, Investigation, Writing – original draft, Writing – review & editing. **Rachel Tiller:** Conceptualization, Writing – review & editing, Supervision. **Thea Lurås Oftbro:** Writing – original draft. **Mimmi Throne-Holst:** Writing – review & editing, Project administration. **Anne Katrine Normann:** Writing – review & editing, Project administration.

Declaration of competing interest

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Data availability

No data was used for the research described in the article.

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