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Introducing the Gender Dimension of Plastic Pollution in the Arctic

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Abstract

This short communication seeks to introduce a new perspective – a gender dimension – into ongoing conversations on the governance of plastic pollution in the Arctic. Specifically, it seeks to understand (1) the degree to which gender and plastic pollution intersect in Arctic research and policy-making to date; and (2) the degree to which negotiations of the UN Treaty on Plastic Pollution integrate diverse gender perspectives from the North. We first consider the extent of the plastics problem in the Arctic and the degree to which existing research addresses its gender-dimension. Then, we introduce existing regional and global responses to the plastics problem, including ongoing negotiations for a United Nations treaty on plastic pollution. Finally, we examine the degree to which gender has been mainstreamed into these governance mechanisms.

Keywords: plastic, pollution, gender, Arctic, governance, human rights

1. Introduction

There is growing awareness of, as well as ongoing effort to, address the global plastics problem. The human rights implications of plastic pollution, including the gender dimension thereof, are also garnering attention. In an Arctic context, there is an increasing interest to examine how the patchwork of global and regional responses seeks to limit and control plastic pollution in the Arctic while also engaging various rights- and stakeholders in the process. In this short communication, we thus seek to introduce a new perspective – a gender dimension – into ongoing conversations on how to limit and control plastic pollution in the Arctic. Specifically, it raises the following questions: (1) to what degree have gender and plastic pollution intersected in Arctic research and policy-making to date?; and (2) how do ongoing negotiations of the UN Treaty on Plastic Pollution integrate gender-diverse perspectives?

First, we consider the extent of the plastics problem in the Arctic and the degree to which existing research addresses the gender-dimension thereof. We then introduce the patchwork of existing global and regional responses to the plastics problem, and examine the degree to which a gender dimension is being integrated into these governance mechanisms. Finally, we highlight areas where northern, Indigenous, and gender-diverse perspectives might be integrated moving forward.

2. Background: The State of Plastic Pollution in the Arctic

The amount of plastic produced and consumed globally has grown exponentially since the 1950s (UNEP 2022), making plastics increasingly pervasive across all regions of the world. While the Arctic is located far from large, industrialized centers, various forms of human-induced pollution – including persistent organic pollutants (POPs), black carbon, mercury, and plastics – continue to be found. These pollutants are transported across vast distances by rivers, oceans, and air with potentially significant consequences for both the Arctic environment and northern communities; because of this, the issue of pollution has been central to Arctic environmental governance since the 1990s. The issue of POPs particularly highlighted the health-related effects of such pollutants on Arctic Indigenous peoples (Downie & Fenge, 2003), as well as the gender-differentiated impacts experienced by northern Indigenous women due to their exposure to toxic chemicals (AMAP 2009, 2015). What is more, it highlighted the importance of gathering gender- and sex-disaggregated data and the ways in which lifestyle choices, one's capacity to cope and access to health care factor into the equation (Rautio et al. 2021; Kafarowski 2009).

While POPs have received much of the focus to date, the issue of plastic pollution is gaining in prominence, both in relation to research and international cooperation. Although early reports of plastic pollution in the Arctic date back as far as the 1970s (Halsband et al. 2019), plastic materials are now ubiquitous with the Arctic more recently dubbed a cul-de-sac for plastic pollution (Cózar et al. 2017). A variety of plastics – including macro-, micro-, and nano-plastics – are increasingly found on Arctic beaches, in biota, surface and subsurface water, snow, sea ice, as well as on the ocean seafloor (for example, see the following contributions to the Marine Pollution Bulletin: Bergmann et al. 2017; Ramasamy 2021; Falk-Andersson et al. 2019). Notably, the Arctic Ocean now has one of the highest densities of surface microparticles globally (Barrows et al. 2018); and microplastics, in particular, can act as transport vectors for some organic pollutants like polychlorinated biphenyls (PCBs), which can gain in concentration as they move up the food chain (Zarfl & Matthies 2010).

A substantial part of this marine litter stems from human activities on land, such as waste management or agriculture, and at sea, from fishing and shipping activities. As an example: plastic pollution is attributable to fishing activities including nets, floats, and other debris. These sources of pollution are both local and global, transported northward via ocean currents, rivers, and winds (Cózar et al. 2017). These sources of plastic pollution in the Arctic are both local and global, carrying buoyant plastic from highly populated areas northward by ocean currents, rivers, and winds to remote areas like the Barents seas. What

is more, as the Arctic Ocean becomes more accessible over time, due to melting sea ice, the risk of plastic pollution from ship traffic (fisheries, tourism, etc.) increases (Svavarsson et al. 2021).

3. Gender-Dimension of Plastic Pollution in the Arctic

The entirety of the plastic cycle – from the extraction of fossil fuels to the production, transportation, waste mismanagement, and disposal of plastic – contributes to an ongoing environmental crisis with significant costs for both human and ecological health (UNEP 2022; Lynn et al. 2017). Many of the plastic cycle's impacts, including its contribution to climate change and heightened levels of exposure to hazardous chemicals, are differentially experienced, for instance based on gender. In the context of this short communication, we define gender as the socially constructed and learned identities, roles, behaviours, responsibilities, and expectations associated with women, men, and gender-diverse persons. As is highlighted in this journal, gender is shaped by both cultural and social norms, influencing how people see themselves and others, behave, and interact with power. While this communication cannot integrate the full scope of definitions of gender in the Arctic, it is important to highlight that Arctic Indigenous peoples hold a range of views on gender, based on both traditional cultures and the dominant Western cultures with which they interact (Ágústsson & Oddsdóttir 2021). Gender is also referenced by all human rights treaty bodies (Freeman et al. 2012 as cited in Ágústsson & Oddsdóttir 2021)

Research on the socio-economic impacts of plastics, including their gendered dimension, is advancing in some regions of the world (see for instance, Dias & Ogando 2018). The 2016 *Gender and Environment Outlook* (137) highlights some of the significant, and often specific, gender-differentiated experiences, knowledge, and impacts related to marine plastic pollution globally. For instance, men tend to be more active in industries like commercial fishing and offshore oil and gas development, while women often participate in near-shore fishing and waste management (Lynn et al. 2016). What is more, the estrogen mimicry and endocrine disruption that is associated with plastics – and is linked to reproductive disorders, among other things – affects men and women differently (McLachlan et al. 2006; Rochman et al. 2013; D'Angelo & Meccariello 2021).

Although some parallels can be drawn, based on research related to the health impacts of POPs or the gender composition of particular industries, far less is known about the gender-differentiated sources and impacts of plastic pollution in the Arctic, despite the growing presence of plastics in the area (Ágústsson & Oddsdóttir 2021). As in other parts of the world, there is also a dearth of gender- and sex-disaggregated data on the number of works, their exposure to hazardous chemicals, and the resulting health effects across the entirety of the plastics cycle – ranging from the extraction of fossil fuels, to the production, transportation, waste (mis-)management and disposal of plastics. In an Arctic context, the impacts of plastic pollution can be compounded by distinct vulnerabilities at the intersection of diverse identities; this has previously been documented – both qualitatively and quantitatively – by Canada's Northern Contaminants Program in relation to the health impacts of POPs on Inuit women in the 1990s (see for example Downie & Fenge, 2003). The same program currently funds community-based research programmes on litter and microplastics in the Canadian Arctic.

4. Global & Arctic Governance Responses to Plastic Pollution

Beyond a gap in the comprehensive understanding of both the sources and impacts of plastic pollution in the Arctic, we focus our attention on existing policies and monitoring programs that seek to enable, as well enforce, the prevention, reduction, and tracking of marine plastic pollution at a regional and global level (Linnebjerg et al. 2020). Since gender equality is understood to be fundamental to sustainable development, both globally (see Sustainable Development Goal 5) and in the Arctic (Ágústsson &

Oddsdóttir 2021), we specifically focus on the degree to which a gender dimension is, or is not, integrated into these governance mechanisms.

a. International

At this time, a patchwork of international treaties – fragmented by region, chemical and waste type – seeks to address various aspects of the global plastics crisis (Prior & Seck, forthcoming). They include the Basel, MARPOL, and Stockholm Conventions. In 2019, amendments to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes, together with a ban amendment in force in force that same year, sought to take action on the export of plastic waste from developed to developing states, but does not address the transboundary movement of plastic, which is "almost free from contamination", destined for recycling . The Stockholm Convention on Persistent Organic Pollutants also is important as it has listed several POPs which are additives in plastics, or generated from plastic incineration, for elimination. Furthermore, the MARPOL Convention (International Convention for the Prevention of Pollution from Ships) prohibits the discharge of any plastics into the sea (under Annex V) and pollution by harmful substances carried by sea in packaged form (under Annex III). Meanwhile, the reduction of inadvertent spillage of plastic pellets in maritime transport, as well as the need to ensure adequate facilities at ports that receive plastic waste, are subjects of study by the International Maritime Organisation (IMO).

Due to the fragmented nature of plastic governance to date, the UN Environment Assembly (UNEA) adopted several resolutions with the aim of tackling the plastics crisis; first from the perspective of marine litter and microplastics, then single-use plastics. A March 2022 UNEA resolution (UNEP/EA.5/L.23/Rev.1) established the intergovernmental negotiating committee (INC) tasked with developing an internationally binding instrument to tackle plastic pollution, through a lifecycle approach, including in the marine environment. These negotiations are to be completed by the end of 2024 with delegates supporting wide stakeholder participation, through written statements (during intersessional periods) and participation in the process (IISD 2023).

The first INC session (INC-1), which convened in Uruguay in November/December 2022, focused on the form and substance of the treaty. It also included stakeholder dialogue with two panels addressing (1) up- and downstream approaches to plastic pollution and (2) the mid-stream stage of the plastic lifecycle. Another multi-stakeholder dialogue with over 1,000 participants was held prior to the meeting, as well. Human rights concerns were referenced by both stakeholders and delegates. The second session of the INC (INC-2), set to take place in Paris in May/June 2023, will aim for a comprehensive approach that addresses the full plastics lifecycle, when outlining options for elements of the instrument (including its objective, core obligations, control measures and implementation). Intersessional submissions to INC-2 from member states and various stakeholders, including Arctic and gender-related organizations, have been posted on the United Nations Environment Programme (UNEP) website. Together with the views expressed by members at INC-1, these submissions will inform the drafting of a document.

Gender equality has been integrated into these mechanisms in various ways. The Secretariat of the Basel, Rotterdam, and Stockholm Conventions (BRS Secretariat) has begun to examine a range of issues – including a lack of female representation among meeting participants, staff, and Secretariats – which have also been recognized and responded to with decisions and action plans from parties to the Conventions (CIEL 2022). These actions include a Gender Task Team and Gender Action Plan (BRS Secretariat 2019). In the ongoing negotiation process for a global plastics treaty, gender equality has played a minimal role to date. Nevertheless, stakeholder groups including the Centre for International Environmental Law (2022) have argued for "equitable and inclusive representation, with perspectives from all genders present during discussions." In a similar vein, the Inuit Circumpolar Council, in its submission to INC-1, highlighted the importance of integrating a human rights-based approach (including with attention to women (ICC 2023). This call aligns with reports by Special Rapporteurs of the United Nations Human Rights Council on toxic

substances (OHCHR 2021), and on human rights and the environment (OHCHR 2023) on the importance of a human rights based approach to the plastic life cycle that integrates attention to gender.

b. Regional

The regional approach to governance response to plastic pollution in the Arctic is similarly fragmented among international, regional, national, and subnational frameworks, strategies and programs. On a regional scale, the UNEP's Regional Seas Programme, launched in 1974, implements activities related to the prevention and reduction of marine debris through a series of regional seas conventions; the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) is the only agreement relevant to the Arctic. Meanwhile, the *Marine Strategy Framework Directive* and *Plastics Strategy* of the European Union provide a harmonized monitoring framework and implementation measures against marine litter in the waters of EU Member States, including three Arctic states – Denmark, Finland, and Sweden. Additionally, the Nordic Ministers (of Denmark, Finland, Iceland, Norway, and Sweden) launched a Nordic programme to reduce the environmental impact of plastic pollution in the Arctic in 2017.

The Arctic Council (AC), the predominant forum for international cooperation on the Arctic, has worked to address the issue of marine litter since its inception in 1996. Its work related to marine litter, and more recently plastic pollution, takes place under the auspices of three of its working groups: the Protection of the Arctic Marine Environment Working Group (PAME); the Arctic Monitoring and Assessment Programme (AMAP); and the Sustainable Development Working Group (SDWG).

In 1998, the Council adopted a Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-Based Activities (RPA), which was updated shortly after the adoption of the first Arctic Marine Strategic Plan in 2004 (which was also amended in 2009). The RPA serves as a comprehensive action plan for the Council's work on the protection of the Arctic marine environment from land-based activities and responds to a corresponding global programme. Additionally, two iterations of the *Arctic Marine Strategic Plan (2005-2015* and *2015-2025)* serve as a framework to guide the Council's actions to protect Arctic marine and coastal ecosystems and address marine litter through various strategic actions. The 2017 *Fairbanks Declaration*, following from the US Chairmanship of the AC (2017-2019), encouraged the continuation of "efforts to address growing concerns relating to the increasing levels of microplastics in the arctic and potential effects one ecosystems and human health."

Iceland made marine litter and plastics a priority Chairmanship of the AC (2019-2021) by designating Magnús Jóhannesson as its Special Coordinator on Plastics and Marine Litter. During this time, PAME conducted a desktop study on marine litter (2019) and developed a *Regional Action Plan on Marine Litter in the Arctic*, which aims to support Arctic states in their efforts to reduce marine litter in the Arctic marine environment, mitigate the risks it may pose, and improve cooperation on and awareness of these shared objectives through eight strategic actions, including international cooperation (Prior & Seck, forthcoming). However, it does not make any reference to gender. Meanwhile, AMAP established an Expert Group on Litter and Microplastics, developed the *AMAP Litter & Arctic Monitoring Guidelines*. Following from Iceland's Chairmanship, the 2021 *Reykjavik Declaration* – signed by all eight Arctic states – noted its concern with marine litter and microplastics in the Arctic and encouraged, among other things, Arctic states to "cooperate with relevant regional and international organizations to address waste and marine litter, through a circular and lifecycle approach," and called on AC Observer States to take actions to reduce marine litter from outside the Arctic. The same declaration also encouraged the "mainstreaming [of] gender-based analysis in the work of the AC and call[s] for further action to advance gender equality in the Arctic".

Under Russia's Chairmanship of the AC (2021-2023), PAME was set to develop an implementation plan for the *Regional Action Plan,* in close coordination with other Working Groups, until all AC formal meetings were put on hold in March 2022 following the war in Ukraine. Recently, there has been a partial resumption of 130 projects of the AC, specifically those without Russian participation. However, it is unclear whether the implementation plan is moving forward at this time. At the same time, AMAP (2023) submitted a written response the INC Secretariat with potential options for elements towards an

international legally binding instrument, suggesting that "[i]t should be mandatory for parties to ensure and conduct monitoring of plastics in the environment, based on the best available knowledge" through the recognition, support and utilization of existing national and regional plastics and contaminant monitoring activities and programs, such as the AMAP. Looking forward, the government of Iceland is planning to host a second International Symposium on Plastics in the Arctic and Sub-Arctic Region in November 2023.

5. Conclusion

A stronger focus on the gender-dimension of plastic pollution, both in the Arctic, can better inform policy choices in the search for solutions to this global crisis. In this short communication, we have highlighted that research, policy, and law leave room for the integration of a gender dimension. Despite a growing understanding of the sources and impacts of plastic pollution in the Arctic, a significant dearth in gender- and sex-disaggregated data remains. What is more, Arctic regional initiatives can play a crucial role in the integration of a gender-dimension into the management of plastic pollution in the Arctic. More precisely, as it advances, the Implementation Plan for the *Regional Action Plan on Marine Litter in the Arctic* should consider mainstreaming gender into its plan. Arctic policymakers, stake- and rights-holders should also push for free, active, meaningful and informed participation in the Plastics Treaty negotiations and thereafter (CIEL 2022).

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Author contributions

Conceptualization, T.L.P.; writing—original draft preparation, T.L.P..; writing—T.L.P. and S.L.S.; supervision, S.L.S; project administration, T.L.P. and S.L.S.; funding acquisition, T.L.P. and S.L.S. Both authors have read and agreed to the published version of the manuscript.

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