

Gender and marine plastic pollution

Marine plastic pollution is a serious problem, with deeply gendered impacts that are yet to be adequately understood and addressed

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It is estimated that more than 8 million tons of plastic enter the oceans each year. Islands of plastic are now being reported by the oceans, while disintegrated micro plastics are permeating our food, our water and even our own bodies. Marine debris cost the economies of countries in the region US\$10.8 billion in 2015, of which the fishing and aquaculture industry lost US\$1.47 billion. The top six countries responsible for marine waste are in East Asia.

It is now a well-acknowledged fact that marine plastic is a cause for serious concern. Micro plastic in sea food, losses to world fisheries trade due to reduced catch and plastic in fishing nets, damage to boats, and damage to marine life have all been highlighted by researchers in the past couple of decades. The impact of marine plastic on fisheries has been highlighted by shocking images of turtles dying after being trapped in ghost nets or whales/dugongs dying due to plastics filling their stomach as they forage for food. Abandoned, lost, or otherwise discarded fishing gear, also called ghost nets, have been identified as a major problem, although most marine plastic originates from the land. While 90 percent of marine plastic originates from land, it is the fisheries and fishing communities that are devastated by its impact. In other words, only 10 percent of marine plastic come from fisheries-related activities; however, 100 percent of the damage caused by marine plastic is borne by coastal communities who are greatly affected both directly and indirectly by marine plastic debris and yet receive little or no attention in terms of compensation or redress. Further, there has been little research on the gendered impact of marine plastic on fishing communities.

Fishing communities incur four kinds of costs due to marine plastic: (i) repair and replacement of fishing gear damaged by marine litter; (ii) reduction in harvest and subsequently in income due to fishing gear and fishing grounds damaged by marine litter; (iii) welfare costs, including health impacts of dirty environment, lack of nutrition, and so on; and (iv) costs incurred due to loss of ecosystem services such as recreation and aesthetics. While there has been some estimation of the loss to fishing gear and loss of income, currently there is no way to quantify the welfare costs and costs due to loss of ecosystem services. Further, these effects of marine plastic on fisheries are deeply gendered.

This article aims to flag some key issues that need further research and analysis to understand the gendered impact of marine plastic on fishing

communities in three different dimensions: their fishing activities, post-harvest activities, and within the relations in the households.

Fishing communities across southeast Asia tend to practice gender-based division of labor in fisheries. Men go fishing in the ocean/sea, while women engage in gleaning, part-time fishing, and post-harvest activities. Men have exclusive access to high-value species whereas nearshore & shallow ecosystems are controlled by both women and men. Women contribute significantly to postharvest processing, and marketing.

Men face reduced incomes due to depletion of fish catch when marine plastic waste, especially near the shore, increases. This generates pressure on women to increase their contribution to the family income through other forms of livelihood. At the same time, women's income from gleaning in nearshore habitats including beaches, mangroves, estuaries, and intertidal zones, is also reduced due nearshore plastic litter. The litter not only causes loss of income but also compromises the health and wellbeing of women gleaners.

When there is a fall in fish catch, women's work in postharvest activities also drops, reducing their incomes. Women's roles in postharvest however are seen as support roles; women are not considered as fishers and are not included in community decision-making. This excludes them from membership in fisher organizations, access to insurance, and loans and grants due to loss of fisheries resources, which are all aimed at men. Lack of recognition of women as fishers has led to the invisibility of women's involvement in fishing activities at the local, national and international levels, especially in policy making. Similarly, while men's losses in fisheries are accounted for, women's losses are not and there is little effort to compensate women for losses due to marine plastic, reduction in catch and other such disasters. Thus, we see that the impact of marine plastic on women's work in fisheries is not acknowledged since women themselves are not acknowledged as fishers and lack access to resources that are available to fishers.

Further, since women are not recognized as fishers, any marine plastic management project targeting fishers would tend to exclude women. This is a waste of opportunity, since women are highly aware of the damage caused by marine plastic and would be able to play a large role in the management of plastic as well as plastic debris. Women's knowledge is thus marginalized and forgotten.

It is critically important to ensure the involvement of affected women in marine plastic-related and fisheries-related policy making

The gender-based division of labor is also noted at the household level in fishing communities, which has an impact on women's workload, women's responsibilities, as well as women's health. Women in fishing households are responsible for the bulk of the reproductive or care work, including ensuring that the family is fed, irrespective of how much or little income the men bring in. Therefore, the burden of earning or borrowing money to feed the family falls on women. Men are not considered primary caregivers in the household, whether they are involved in fishing or in other income-generating activities.

Plastic debris near the shores and around fishing villages supports the growth of different pathogens which are harmful to human and marine life. People working or living in habitats polluted by marine litter face health problems, which in turn increases women's workload as they are the primary caregivers in the household. Additionally, women from fisheries communities who are working in polluted areas also face increased risk to their own health due to environmental pollution caused by marine debris. Further, loss of men's income tends to increase violence against women within the household and in the community, which causes additional physical and emotional burden for women. Women's care work in the household as well as women's work in fisheries are both undervalued at the household and community levels. Therefore, it may be concluded that the impact of marine plastic on women in fishing

communities is exacerbated due to rigid gender roles and social norms.

Due to the gender-based division of labor in fisheries and in the household and community, marine plastic debris has a differential impact on women and men in fishing communities. There is an urgent need to conduct field research on the specific impacts of marine plastic on every demographic within fishing communities across southeast Asia. Although there is considerable research on marine plastic and plastic pollution, significant gaps remain that limit evidence-based decision making.

Inclusion of women from fishing communities in decision-making processes and inclusion of women's voices and concerns in decision-making is critical for both women and for the environment. Given the low status of women in fishing communities, their gendered knowledge of marine resource management as well as environmental conservation is being lost. Marginalization of women leads to a loss of women's contribution to fisheries, conservation and mitigation efforts. It is critically important to ensure the involvement of affected women in marine plastic-related and fisheries-related policy making at the local, regional, national and international levels. Due to their physical location, social status and their economic status, women in fishing communities are not directly involved in policy making and hence policies do not address their concerns. There is a need to move policymaking from the capital to the village, from the centre to the margins. ❏