13 Women and SDG14 – Life under water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Healthy marine ecosystems are crucial to biodiversity and to counteracting and reducing the impacts of climate change. They also provide sustenance to human communities and support the development of a sustainable blue economy. The growth of litter and toxic substances in the oceans is not only damaging fragile maritime ecosystems but also affecting human health, especially that of children and pregnant women. Ensuring women's access to leadership positions and empowering women action on the oceans are fundamental to allow them to play a key role in protecting marine ecosystems, tackling marine litter and promoting sustainable fishing.

13.1. Key findings

This chapter touches on a number of key interactions between gender equality (SDG 5) and the health of the oceans (SDG 14). It reviews existing evidence and proposes a number of recommendations:

- Tackling marine little is key to healthy oceans and to human health. Pregnant women and children are highly sensitive to toxic materials contained in fish. Microplastics have the ability to cross the placental barrier and affect unborn children.
- Negative feedback loops between human damage to the oceans and human-induced climate change are intensifying and reaching tipping points with potentially devastating consequences. Coastal disasters have a differentiated effect as the growing intensity and frequency of sea storms strongly affect women and children. Studies show that women, boys and girls are 14 times more likely than men to die during a disaster.
- Globally, women occupy only 20% of the workforce in fishing and aquaculture and additionally they tend to hold lower paid jobs in the fishing industry. They are on the other hand more represented in artisanal fishing.
- Globally, in 2016, only 1 in top 100 seafood companies was run by a woman, and 54% had no women on boards. Increasing women's participation in high-level, decision-making roles in the fishing sector, could help towards achieving more sustainable fishing and marine conservation.
- Women can play a key role in protecting marine ecosystems and sustainably use marine resources. Local initiatives involving women are achieving a successful regeneration of mangroves across East African countries, protecting coastal areas and yielding more marine wildlife. Tackling discrimination, ensuring access to finance and developing skills are essential for such initiatives to prosper.
- There is a smaller gender gap in ocean science than in science overall. Female scientists represent on average 38% of the researchers in ocean science, about 10% higher than science overall.
- Gender equality also needs to be mainstreamed in development co-operation targeting the oceans, supporting initiatives to protect coastal areas and developing small-scale, sustainable fishing that benefit local communities and help decrease gender gaps.
- There is a need to improve evidence gathering and data collection on the differentiated impact of oceans degradation on women's and men's health, well-being and employment opportunities, with a focus on the most vulnerable, and addressing intersectionalities.
- Policy solutions to better conserve the oceans require a gender-lens, addressing the gender-specific concerns of degrading oceans, including the impact of coastal storms, the depletion of fish stocks and the increase in marine litter.

13.2. Key interlinkages between gender equality, sustainable management of marine resources, and other SDGs

SDG 14 touches on a vast range of issues – in sync with the very vastness of the ocean itself which covers 71% of the Earth's surface and contains 97% of the Earth's water (UN Atlas of the Oceans, n.d.[1]). Healthy marine ecosystems are crucial to counteracting and reducing the impacts of climate change (SDG 13), as well as providing sustenance (SDG 2). Fish, in particular, provide unique nutritional benefits for neurodevelopment and cardiovascular health (SDG 3). Small-scale fishing, as well as restoration and protection of ecosystems provide decent work opportunities (SDG 8), while desalination plants can help secure the supply of clean water in areas with limited fresh water (SDG 6). There are also new employment and economic opportunities in the conservation and sustainable use of maritime biodiversity (fish, mangroves, coral reefs) and in eco-tourism, as well as opportunities for innovation to reduce and clean up

ocean pollution (SDG 9). In addition, there is a growing capacity to harness the thermal and mechanical energy of oceans for affordable and renewable electricity generation (SDG 7).

Humans are highly dependent on maritime ecosystems and resources. The United Nations Atlas of the Oceans records that around 40% of the world's population lives within 100 kilometres (60 miles) of the coast and nearly a billion people rely on the oceans for their livelihoods. Coastal populations and entire industries, such as fisheries and tourism, are particularly exposed to the growing fragility of the oceans (UN Atlas of the Oceans, n.d.[1]). A conservative estimate of the value of ocean economy by the OECD put it at USD 1.5 trillion, or approximately 2.5% of world gross value added (OECD, 2016[2]). Human economic activity in the oceans, in particular fishing and maritime transport, directly affect the state of the oceans. But ultimately, all forms of unsustainable production and consumption end up affecting the oceans. Recent studies show the astonishing rate at which human activity has degraded oceans – with just 13% untouched and only 5% of ocean wilderness falling within marine protected areas (Jones et al., 2018[3]). Human action influences 97% of oceans, pressuring coastal marine ecosystems, water quality, and coastlines (IPBES, 2019[4]).

The growth in plastic litter, mercury and other toxic substances in the oceans is not only damaging fragile maritime ecosystems but also affects human health. Human activity also drives eutrophication, acidification, dead zones, and rising sea levels, negatively affecting marine ecosystems, and in turn human physical and mental health (Viviani, 1992[5]) (WHO Regional Office for Europe and European Commission, 2002[6]) (Falkenberg et al., 2020[7]) (EPA, n.d.[8]). Overfishing affects today one third of global marine stocks (Delpeuch and Hutniczak, 2019[9]).

Negative feedback loops between human damage to the oceans and human-induced climate change are intensifying and reaching tipping points with potentially devastating consequences. For instance, a square kilometre of coastal ecosystem such as mangroves forests can store up to five times more carbon than the equivalent area of mature tropical forests. But these areas are being destroyed three to four times faster than forests, releasing substantial amounts of carbon dioxide into the atmosphere and the ocean, thus contributing to climate change (IUCN, 2020[10]).

There are various links between gender equality and the protection of the oceans. Toxic substances contained in marine litter can get into food systems and affect men's and women's health differently (SDG 4). There may also be gender differences with regards to consumption, production and waste management and the impact they can have on pollution of our oceans (Target 14.1). Men and women may also play differentiated roles in protecting and restoring ecosystems (Target 14.2), and may benefit differently from the economic benefits from sustainable use of marine resources (Target 14.7). Target 14B on supporting small-scale fishers also has an important gender aspect, as many are women. Despite potentially important gender differences, none of the SDG 14 targets address gender equality or the relation of marine resources to the livelihoods of women and men, including the role they can play in food security, employment and poverty reduction.

13.3. Gender effects of marine litter and maritime natural disasters

Both men and women are vulnerable to marine debris, microplastics and chemicals, yet, the health of the oceans has a differentiated effect on their health and well-being. The growing pollution of the oceans, such as plastics and mercury ultimately ends up in the human body. Pregnant women and children are most sensitive to the toxic materials contained in fish. In particular, microplastics have the ability to cross the placental barrier and affect unborn children (Lloyd-Smith and Immig, 2018[11]).

Mercury bioaccumulates in food and deteriorates women's and men's health. In poor coastal communities, pollutants cluster in shorelines and, as supplementary fishers are often women, they are exposed to these dangerous chemicals. Mercury exposure can be managed through dietary advice. A recent study that

offered pregnant women dietary guidance for lowering their mercury intake by avoiding large predatory fish showed a significant decrease in mercury levels three months after (Kirk et al., 2017[12]).

Lastly, there is an issue of occurrence and adaptation to the growing intensity of natural disasters. Women living in coastal areas are also most affected by the growing intensity and frequency of sea storms, as studies show that women, boys and girls are 14 times more likely than men to die during a disaster (UNDP, 2016[13]) (UNDP, 2016[14]). The tsunami that took place in Sri Lanka in 2004 made these inequalities apparent as it was easier for men to survive as they climbed trees, which is mainly taught to boys (IUCN, 2008[15]). This led to girls and women in Sri Lanka to having less possibilities of surviving in natural disasters (Oxfam International, 2005[16]).

Feedback loops between climate change, environmental stressors and pressures over diminishing, degrading and/or depleting natural resources, has triggered a rise in gender-based violence. (Camey et al., n.d.[17]).

13.4. The blue economy

An inclusive blue economy offers the opportunity to improve the workplace conditions to make them more favourable to women, move towards unbiased recruitment processes, and support policies and actions that promote female role models. Overall, an inclusive blue economy can support the transition to a more sustainable and gender balanced fishing sector (Shaleh, Fui-Fui and Mustafa, 2020[18]). Policy support is imperative in order to trigger these necessary changes and ensure women achieve their share in stewardship of marine resources. It could also offer the chance to develop businesses that could provide women with economic independence and improve their well-being (Saleem and Abentim, 2019[19]).

13.4.1. Women's employment in the fisheries sector

The health of the ocean equates the health of the planet, with billions of livelihoods directly depending on them. Women represent more than half the workforce in processing, cleaning and trading fish, but in 2014 only represented 19% of all people directly engaged in catching or harvesting of wild fish and in fish farming (UN Women, 2020[20]). According to the UN Food and Agriculture Organisation (FAO), women accounted for just 14% of the 60 million people working in the aquaculture and fisheries sector in 2018 (FAO, 2020[21]). In Asia alone, women reportedly occupy 33% of the aquaculture workforce in China, and 42-80% in freshwater and cage culture in Indonesia and Viet Nam (OECD, 2015[22]).

Women have set roles in traditional fishing communities and often lack the institutional capacity and technical knowledge for boat fishing due to gender norms (UNEP, 2017[23]). Women are often more present on lower paid, seasonal and unstable positions in the fisheries sector (FAO, 2020[21]). Such jobs often do not benefit from health, safety and labour rights protections. Also, women earn on average 64% of men's wages for the same work in aquaculture (UN Women, 2020[20]).

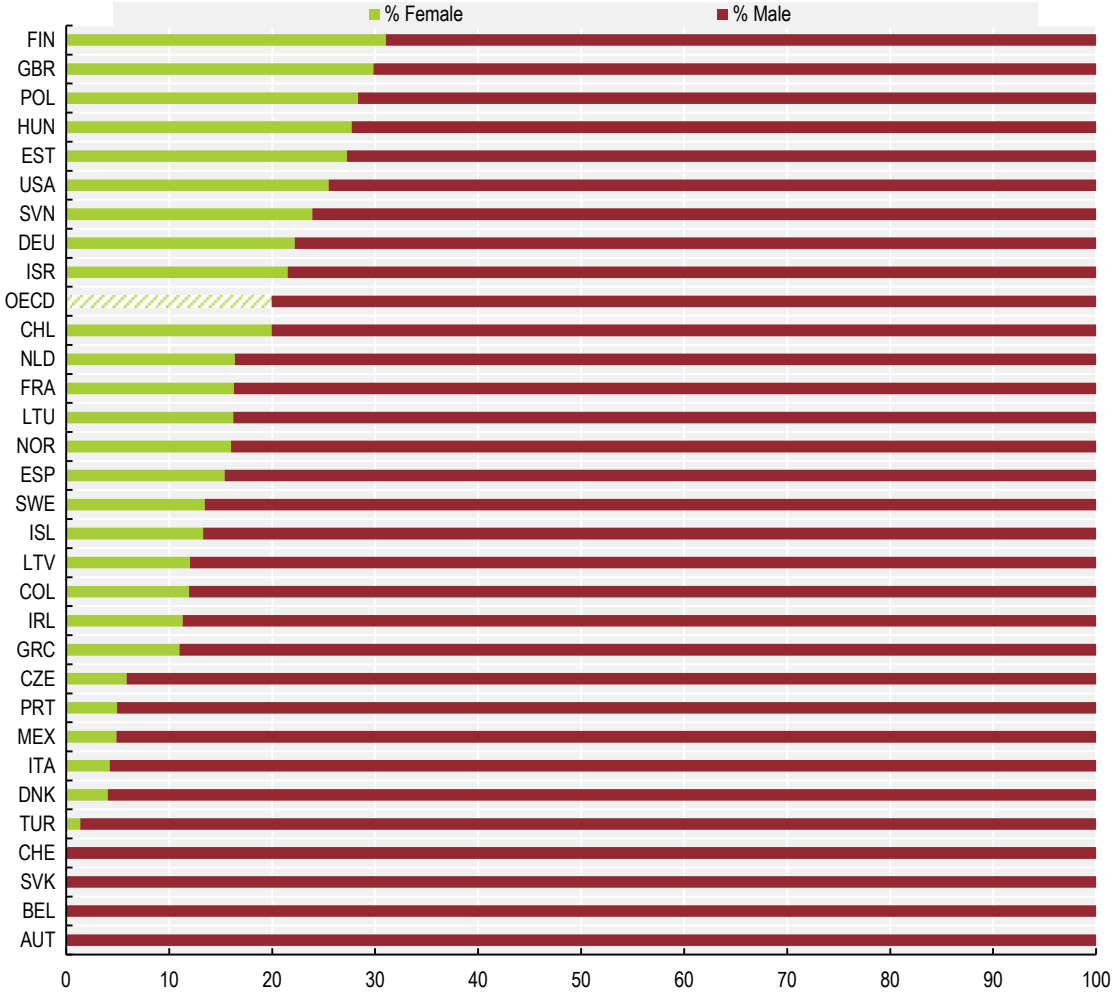
Given that fish is perishable, low-income women without access to storage technology and transport are most vulnerable to losses associated with its wastage (UN Women, 2020[24]). Women account for most (over 90%) of the workers in secondary marine-related activities such as fish processing, marketing and maintenance, which are often low-paid or unpaid jobs (UN Women, 2017[25]). Moreover, the post-harvest processing sector is associated with occupational health hazards. Women shrimp workers in Bangladesh have reported fungal disease of the hands; a study in Australia found significant incidence of urticaria and work-related asthma among seafood workers; and in South Africa, women have claimed to suffer from similar skin problems (Thirumoorthy et al., 2016[26]) (Jeebhay, Lopata and Robins, 2000[27]) (Jeebhay and Lopata, 2012[28]).

Overall, women have much lower economic gains from their participation in the fisheries sector (FAO, 2011[29]) and do not participate fully and equitably in the industry (FAO, 2015[30]). The problem extends

across countries, both developing and developed, with different intensity. For instance, a study of women fishers in Norway found that there is an intrinsic subordination of women in the fisheries sector (Gerrard and Kleiber, 2019[31]).

Figure 13.1. Only 20% of women in fishing and aquaculture in OECD countries

2017 data



Note: All data for 2017, under "Economic activity (ISIC-Rev.4), 2 digit level: 03 - Fishing and aquaculture", except for Austria and Israel (2016); Belgium and Slovak Republic (2015); and Slovenia (2013). For Chile and Colombia data are under "Economic activity (ISIC-Rev.3.1), 2 digit level: 05 - Fishing, aquaculture and service activities incidental to fishing". Data not available for Australia, Canada, Japan, Korea, Luxembourg and New Zealand.
Source: ILOSTAT (ILO, 2020[32]).

In OECD countries, women occupy only 20% of the workforce in fishing and aquaculture, even though in countries with large coastal areas, such as Finland and the United Kingdom, women are around 30% of the workforce in the sector (Figure 13.1). Men are mostly involved in fish and aquaculture harvesting (81% in 2014 in OECD countries), and women are overwhelmingly involved in secondary fields such a fish processing, marketing and fishing machinery maintenance (90%), which are often low paid or unpaid (European Commission, 2002[33]) (FAO, 2018[34]). Moreover, documentation and research on the

subjects of marine industry including shipping, deep sea and offshore exploration tend to be rather gender-blind (UNEP and Water Alliance, 2019[35]).

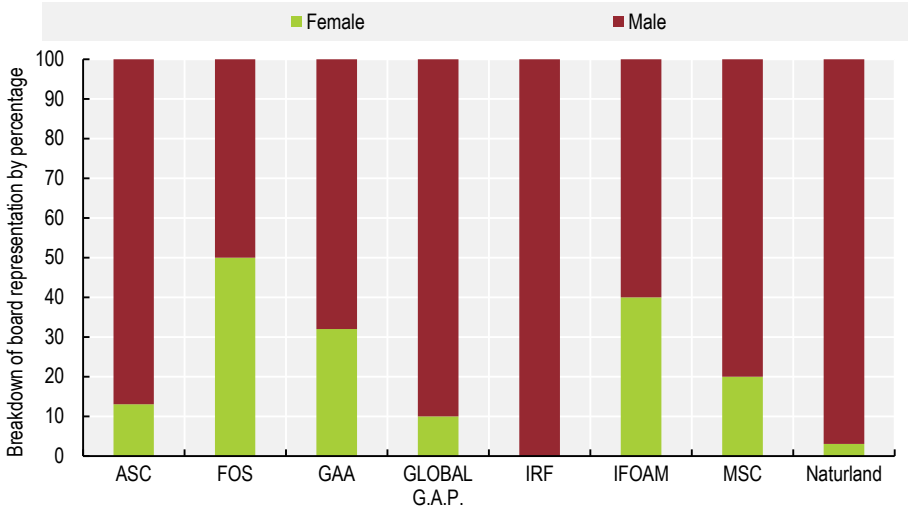
When it comes to industrialised fishing-related activities, such as fish processing, women are increasingly gaining share of the workforce in the fishing sector. Women, however, are usually covering the low-skilled low-paid jobs (Biswas, FAO and ICSF, 2017[36]).

Globally, in 2016, only 1 in 100 top seafood companies were run by a woman, and 54% had no women on boards. Increasing women's participation in high-level, decision-making roles in the fishing sector, could help towards achieving more sustainable fishing and marine conservation. Spreading out the power imbalances in the sector, by for instance facilitating women's access to microfinance, fishing resources and decision-making positions could enable women to play a more important role in marine conservation. Studies have shown that including women in leadership and management positions fosters community well-being, economic growth and positive outcomes for families' well-being (FAO, 2015[37]).

Women representation in some of the largest fishing conglomerates is minimal, except for some cases where they have implemented quotas in order to achieve a 50% balance (Figure 13.2). The Galician Foundation for Fishing and Shell Fishing, together with FARNET, are EU-funded projects (European Maritime and Fisheries Fund [EMFF]) that help women capitalise on their knowledge and determination through targeted funding and local partnerships (European Commission, 2019[38]).

Figure 13.2. Board representation in fishing conglomerates, by gender

2015 data



Note: ASC: Aquaculture Stewardship Council; FOS: Friend of the Sea; GAA: Global Aquaculture Alliance; GLOBAL G.A.P. Global Partnership for Good Agricultural Practice; IRF: Iceland Responsible Fisheries; IFOAM: International Federation of Organic Agriculture Movements, MSC: Marine Stewardship Council. Information unavailable for China G.A.P.
Source: (Potts et al., 2016[39]).

Creating strong networks to advocate for women in fisheries is also crucial to ensure their participation in decision-making processes and access to leadership positions. Such networks can emerge from grassroots mobilisation such as the MBKMMVS group of women fish vendors in Mumbai, India, who organised themselves and are now the official managers of their local fish market. Similarly, institutional initiatives such as the African Network for Women Fish Processors and Traders (AWFISHNET) created in

2017, gives a platform for the exchange of best practices, knowledge and technologies, and improve access to markets (FAO, 2017[40]).

13.4.2. Supporting women engaged in small-scale fishing

Half of global fish catches come from small-scale fisheries, which in turn occupy more than 90% of fishers worldwide (FAO, 2020[21]). At the global level, women seem to be more engaged in fisheries-related activities close to the household and when women are directly engaged with fishing, they seem to focus more on small catches of highly nutritious fish and other aquatic animals for immediate household consumption, instead of trade-oriented activities (FAO, 2018[34]).

Women account for a large share of the millions of people who are involved in artisanal fish processing. This usually leads to women's role not being sufficiently recognised, as it is considered as part of domestic/household work and therefore not valued in economic terms, and overlooked in statistical data collection (Biswas, FAO and ICSF, 2017[36]). Women's marginalisation may also be linked to ownership rights of fishing communities, as well as to the impact of climate change on coastal areas (UN WomenWatch, 2009[41]).

Women are affected by both explicit and implicit discrimination in the fisheries sector, which at times can intersect with environmental mismanagement. For instance, in the case of Lake Victoria in Tanzania, only bigger size fish was prioritised, thus excluding women's participation in formal trading activities. As a result, women tend to partake in small size fishing due to specific techniques and lack of access to large boat fishing. This is despite the Lake's fisheries co-management system which sets a quota for the minimum inclusion of women in community-based structures (Nunan and Cepić, 2020[42]). At the same time, the human pressure on the catchment area of the lake and the introduction of alien species has impacted in a negative way on its biodiversity causing eutrophication and increased algal blooms (Njiru et al., 2008[43]). Hence, the intersection of both social and environmental impacts on the lake highlights the importance of having comprehensive strategies for nature restoration and conservation.

Multiple women's empowerment projects in the fisheries sector have resulted in women pooling savings to fund ongoing projects and provide financial security. A number of microfinance initiatives illustrate that women make better use of small loans or credit than men. Women appear more focused on using the money to ensure business sustainability over time, while better protecting marine ecosystems (Galtung, Colonia and Sacramento, 1997[44]). Research looking into the West Madagascar Octopus community-based small-scale fishing, finds that current female involvement in enclosure fisheries management is low considering the financial importance it represents for women. The conclusions recommended women's participation should be strengthened, wherever possible, to encourage and enhance community benefit sharing, thereby increasing buy-in to enclosure fisheries and rethinking community based management initiatives that tend to reinforce gender inequalities, because they are based on traditional, usually male-dominated, decision-making (Louise et al., 2014[45]).

In another example, Kwale women in Kenya have begun a sustainable seaweed farming project that provides them with financial security and maintains steady growth of fish stock in the sea (ODINAFRICA, 2020[46]). Supporting the findings from various reports on the successful examples of Blue Economy in Africa, this project is people-centred and aids overcoming women's marginalisation (Okafor-Yarwood et al., 2020[47]).

FAO has developed Voluntary Guidelines for Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication that mandate gender mainstreaming, together with building fisheries' resilience to climate change and extreme weather (FAO, 2018[48]). These guidelines constitute the first internationally agreed instrument for the small-scale fisheries sector. They both prioritise gender mainstreaming and support investing in health, literacy, technological education, eradicating forced labour, promoting social security protection and building fisheries' resilience to climate change, and extreme

weather. Building on these guidelines, FAO is implementing a five-year Western Africa project that is part of a larger Global Environment Facility financed by the Coastal Fisheries Initiative in Cabo Verde, Côte d'Ivoire and Senegal. FAO studies value chains in order to find ways to improve both fisheries management and post-harvest processes while examining the "invisible" role of women in fisheries (FAO, 2018[48]).

A 2019 IUCN report highlighted the need for more evidence on the interlinkage between women's empowerment, access to finance and sustainable fisheries, based on past and ongoing pilot projects in Ghana, Indonesia and the Philippines. The initiative Mangroves for the Future (MFF) a partner-led initiative to promote investment in coastal ecosystem conservation for sustainable development has developed a gender toolkit for coastal management practitioners (MFF, SEI and SEAFDEC, 2018[49]) Along the Densu River in Ghana, initiatives addressing and strengthening women's empowerment in the fisheries sector resulted in increased monitoring of water conditions and illegal fishing, restoration of mangroves by planting thousands of new seedlings, advocacy and pressure campaigns to thwart plastic waste, increased community efforts to clean fisheries habitats, and the establishment of a village savings and loan group to provide financing for women fish processers (IUCN, 2019[50])

Development co-operation projects financed by Japan specifically target women against poverty in the fishing sector, providing assistance to women in the dried fish business in Sri Lanka. Results show that assistance can help women earn steady incomes while they also carry out sustainable fishing practices (Ministry of Foreign Affairs of Japan, 2014[51]).

13.5. Leveraging women's role to protect the oceans and sustainably develop marine resources

If properly empowered, women can be powerful agents of change, protecting the oceans and sustainably developing marine resources. Initiatives to engage women in sustainable marine activities will help progress towards SDG 14, while also buttressing greater gender equality.

13.5.1. The role of women in tackling marine pollution

There are multiple forms of marine pollution that threaten biodiversity and human health, including sewage related debris (SRD), agricultural runoff and plastic litter. One of the most effective tools for combatting plastic and trash entering the ocean is by improving waste management and women have an important role to play. Partly in the types of products they choose to buy and use, and partly by pioneering alternative, eco-friendly and renewable products based on the female experience (see Chapter 11).

Food, health, clothing or household products are often packaged in or made up of plastic components. Women drive the majority of consumer purchasing and predominately manage their households, meaning that, as consumers, they have a strong impact on perpetuating or curbing plastic waste. An estimated 13 million metric tons of plastic end up in the oceans each year, with land based sources accounting for up to 80% (Le Guern, 2020[52]); (Reddy, 2018[53]).

As explored in Chapter 11 pertaining to sustainable consumption and production, the impact that a change in behaviour can have on environmental sustainability is enormous. Another takeaway from existing research is that women tend to be more environmentally conscious and more willing to take efforts to reduce their carbon footprint and protect the environment (Kassinis et al., 2016[54]). Women's sustainable consumption patterns and engagement in waste management can support the decrease of marine litter through programmes such as those implemented in East Asian Seas (UNEP, COBSEA and SEI, 2019[55]). East Asian Seas enables sustainable, resilient and inclusive blue economies while fighting for cleaner seas.

Beyond female-led efforts to replace widely used necessities with renewable options, is the role they can play in improving waste management, especially in coastal areas. Collective action – such as coastal clean-ups – can have profound effects. A 2019 report by the Ocean Conservatory, focusing on India, Indonesia, the Philippines and Viet Nam, recommends that in order for collective action to tackle the plastic pollution crisis effectively, it should include global, inclusive solutions that tackle global supply chains and engage both men and women (Center for Ocean Conservancy, 2019[56]).

The case of the Mexican coastal town of Celestún, a biodiversity-rich town where women have organised in participatory grassroots recycling organizations, is an example of how women's knowledge and action can be central to creating innovative conservation strategies. While national and international programmes have prioritised protection of wetlands from unsanitary activities in Celestún, they have often neglected dealing with sanitation and solid waste and wastewater management directly. Women have been burdened with the extra care work of looking after the sick due to the rise of diseases linked to poor waste management. Using their local knowledge and community network, women in Celestún organised in grassroots recycling and composting groups which considerably benefited the community's environmental health and reversed much of the beach erosion and wetlands ecosystems' disruption. Key to their success was also national and state-level recognition as key actors in conservation. This example of local mobilisation shows how conservation programmes can benefit from a gender perspective that accounts for gendered division of labour in each specific context and embraces local women's knowledge (UNEP and Water Alliance, 2019[35])

While all these initiatives certainly make a difference, much of the plastic in our oceans and seas is beyond collection, whether it is submerged plastic debris found on the ocean floor and in benthic creatures, or plastic accumulating through rainfall. Women can also play a key role in initiatives to clean the oceans.

13.5.2. The role of women in protecting marine ecosystems

Protecting mangroves and coral reefs can make a major contribution to sustaining life under the seas while helping to combat climate change. Coral reefs and mangrove swamps also provide invaluable protection from cyclones and tsunamis for those living on coasts. Given their success, women-led initiatives to protect coasts and marine life should be promoted and scaled up.

Small-scale local women-led initiatives have achieved a successful regeneration of mangroves in Kenya and other East African countries, protecting coastal areas and yielding more marine wildlife. Accounts of microfinance initiatives show that women prioritise business sustainability in the long term more than men, in turn leading to better protection of marine ecosystems (Stevenson and St-Onge, 2005[57]). A recent UN Environment report has also highlighted the role of women-led initiatives to clean up and protect coastal areas, including via mangrove regeneration in parts of India, Mexico and the Philippines (UN Environment, 2020[58]).

Women are also making an important contribution in ocean science. There is actually a smaller gender gap in ocean science than in science overall. Female scientists represent on average 38% of researchers in ocean science, about 10% higher than science overall (UNESCO, 2017[59]). To cite an example, during the 2018 academic year in Mexico, the participation of women corresponded to 71% of the school staff at the undergraduate level in the academic areas of biology, earth sciences and sustainable management in coastal areas. Likewise, it represented approximately 54% of graduate students related to biology, marine sciences and limnology and sustainability sciences across all educational institutions (UNAM, 2020[60]). However, much more should be done to retain women in science fields, and more particularly in those linked to the ocean and marine environment. This can be achieved by developing mentoring schemes, supporting working environments and conditions that are better adapted for women, and tackling unconscious biases (Kappel, 2014[61]).

13.6. Key actions for advancing the agenda and ongoing work

There are a number of actions that can be taken to promote gender mainstreaming in policies and actions to better protect and conserve the oceans and precious marine life:

- Collect evidence on the impact of oceans degradation on women's health, well-being and employment opportunities, with a focus on the most vulnerable and an intersectionality lens.
- Design policy solutions to better conserve the oceans with a gender-lens, addressing the specific differentiated concerns of degrading oceans, including the impact of coastal storms, the depletion of fish stocks and the increase in marine litter.
- Empower women to contribute to preserve marine ecosystems and sustainably use of marine resources.
- Design and implement legislation that enables and supports associations, organisations and networks of women within the fisheries and aquaculture sector.
- Ensure women's full integration in the blue economy through policy that recognises women's work in harvest and post-harvest and provides access to credit and markets, comprehensive social security and occupational health and safety measures based on women's needs.
- Mainstream gender in development co-operation targeting the sustainable management of oceans, supporting women's initiatives to protect coastal areas (in particular mangrove swamps and coral reefs) and developing small-scale, sustainable fishing that benefit local communities. There is potential in replicating the benefits from small-scale projects to a more global scale.

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