

POLICY BRIEF

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Empowering Women in Small-Scale Aquaculture and Fisheries for Resilient Food Systems

Executive Summary

Aquaculture and fisheries have long supported food security, livelihoods, and economic growth worldwide, from subsistence to commercial activities. However, the growth of the small-scale fisheries and aquaculture sector has been limited, largely constrained by gaps in data to guide policy and decision-making. Participation has also fallen short of its potential, as available information is often inaccessible, leaving key stakeholders, who could strengthen and expand the sector, unaware of the opportunities and benefits for themselves and their communities.

Over the past few decades, progress has

been made in community awareness, research, training, and capacity building. Governance structures have also improved and advancements have been made in policy and legislative frameworks. However, this progress remains gradual and requires substantial support, as well as robust, intentional, and dedicated interventions. Challenges related to climate change and other anthropogenic pressures also need to be considered in decision-making. Evidence-based approaches are fundamental to advancing equitable, inclusive, and sustainable development of small-scale fisheries and aquaculture.

This document presents a strategic framework to enhance the visibility, rights, and economic participation of women in the global fisheries and aquaculture sectors, particularly in Africa and the broader Global South. Recognising that women are critical but often undervalued actors—comprising up to 50% of the workforce in pre- and post-harvest activities—the framework addresses systemic gender inequality, which poses a significant threat to food security and climate resilience.

The approach is grounded in international and continental policy frameworks, including the Food and Agriculture Organization's (FAO) Small-Scale Fisheries Guidelines, and the African Union's Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa, and Africa Blue Economy Strategy. This document synthesises evidence from successful, gender-responsive projects in Africa and Asia to propose a series of actionable recommendations for G20 countries and beyond.

This policy brief makes key recommendations on topics including:

- secure tenure and governance
- economic empowerment
- capacity and leadership
- data and accountability.

By adopting the recommendations, G20 countries can unlock the full potential of women in fisheries and aquaculture, thereby

strengthening food systems, advancing gender equality, and building a more inclusive and climate-resilient blue economy.

Introduction

Aquaculture and fisheries production as a food source is well organised and managed globally. Many countries have made significant efforts to build capacity and grow the sector sustainably because of its significant contribution to food security. Recent FAO figures show the production of aquatic animals has increased from 19 million tonnes (live weight equivalent) in 1950 to over 185 million tonnes as of 2022, mostly driven by the growth of aquaculture (FAO, 2024).

The increase in production over the years has largely come from medium- to large-scale commercial production value chains. Small-scale actors have been recognised as a priority group in efforts to ensure resilient food systems, through guidelines, such as the FAO's Small-Scale Fisheries Guidelines and the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests. Noting that small-scale fisheries and aquaculture operators frequently pursue a blended subsistence–commercial strategy

whereby catches are first used to meet immediate food needs, with surplus sold in local markets to generate income, such guidelines aim to ensure not only broader participation but increased production in a sustainable manner (FAO, 2015; FAO, 2022a).

Within the food security system, women often play a critical but undervalued role in the production, processing and trade of aquatic or “blue” foods. In the African fisheries and aquaculture sector, women comprise more than a quarter of the workforce, and informal women traders represent 70% of fish traders (AU-IBAR, 2019). Despite this, women suffer from severe gender-stereotypic disadvantages. Women's roles are undervalued economically and generally overlooked in official labour data collection. Within the G20 framework, it would be valuable to elevate the visibility and needs of women in fisheries and aquaculture to enhance women's:

- access to economic and biodiversity resources
- rights to secure land and sea tenure
- rights in the context of ecosystem degradation and climate change.

The enhancement of inland and ocean-based fisheries and aquaculture sectors will require empowering policies and strategies that operate within conducive enabling environments.

Recommendations

To safeguard land and sea tenure, improve women's access to economic and biological resources, and defend women's rights in light of climate change and ecological degradation, G20 is called upon to:

- **Promote women's participation** in small-scale fisheries and aquaculture as drivers of poverty alleviation and nutrition, by creating enabling policies that strengthen women's decision-making roles and ensure culturally appropriate, climate-resilient food choices.
- **Increase women's participation in ocean sectors** through the implementation of mandatory gender training, STEM education to foster awareness and commitment to gender equality principles, enable women's participation and cultivate future leaders in ocean sectors.
- **Enhance women's representation in leadership and influential climate decision-making forums.** Establish mentorship programmes for women's career development at all levels of the ocean sectors.
- **Develop and co-produce climate-informed advisories** with women's groups to prepare fisheries and aquaculture communities for species shifts, livelihood diversification, and climate-related risks.
- **Scale up affordable, accessible, and community-driven digital tools**, and ensure equitable data sharing to empower women and local networks in adapting to climate pressures.
- **Guarantee equitable and secure tenure** for women by simplifying compliance processes, reducing regulatory costs, and protecting customary rights to coastal and inland resources.
- **Establish a full-time gender focal point** dedicated to promoting gender equality and women's empowerment that ensures that gender perspectives are integrated into all policies, programmes, and activities in the ocean economy and value chains. The office's mandate is to act as a hub for expertise, advocacy, reporting and guidance on gender-related issues.
- **Develop fairer workplaces and practices and work-life balance** that considers women's caregiving responsibilities to limit the barrier of entry for women.
- **Provide financial support and investments programmes** to promote gender equality and empower women in marine roles, entrepreneurship and throughout the ocean value-chain.
- **Promote the use of technology** in the ocean economic value chain to enable efficiencies and early warning systems through safety and security communication technology, digital financial services, such as marketplaces and e-commerce, post-harvest processing and preservation technology, data and information management, automation and smart systems.

- **Collaborate with men to address gender dimensions** in ocean science and climate adaptation and mitigation.
- **Collect gender-disaggregated data** to inform policies that address gender disparities, enable gender mainstreaming efforts, and apply a gender lens to report progress.

Research Evidence

Food Security and Nutrition

Food security is fundamental to human wellbeing and social stability, ensuring that communities have reliable access to safe and nutritious food. Increasing pressures such as climate change, economic challenges, and environmental degradation threaten the resilience of global food systems. Fisheries and aquaculture provide a critical source of food security and nutrition globally. In Africa, aquatic animal foods supply an estimated 18% of all animal protein – well above the world average of 15%. Although the per capita consumption of fish in Africa stands at 9.4 kg/year, this is less than half the global average of 20.6 kg/year (FAO, 2024). While production levels are expected to continue rising, growth must accelerate to meet the increasing demand for aquatic foods.

In January 2025, the African Union (AU) Member States adopted the Comprehensive Africa Agriculture Development Programme Kampala Declaration, Strategy and Action Plan (2026–2035), which articulates the African priorities for food systems (AU, 2025).

The Kampala Declaration centres an agri-food systems approach following circular economy principles, for example, developing the full value chain of agriculture activities from production to the disposal of food and agricultural products. The Comprehensive Africa Agriculture Development Programme Framework, complements the AU's Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa and the Africa Blue Economy Strategy, promoting small-scale fisheries and sustainable aquaculture as drivers of poverty reduction, food security, livelihoods, and inclusive economic growth across the continent (AUC-NEPAD, 2014; AU-IBAR, 2019). These policy frameworks promote enabling environments, participatory governance, aquaculture mainstreaming, and gender equity. They call for disaggregated data and women's leadership across value chains, recognising women's central role in household food choices and culturally appropriate species selection.

Climate Resilience

Fisheries and aquaculture rely on healthy ecosystems. Habitat loss disrupts production cycles, while climate change impacts – including extreme weather events, warming oceans and shifting currents for marine systems, and changing rainfall patterns and reduced river flows for inland aquatic systems – require preparation for changes in species abundance and distribution, and for diversifying livelihoods. Climate-informed advisories for small-scale fishers and farmers (seasonal forecasts, distribution shifts, early warnings),

as well as disaster response actions, should be co-produced with women's groups to guide gear, effort, safety, transport, and market choices.

In a project in India, women were empowered through training to lead “beach profiling” initiatives, in which they collect data on shoreline dynamics and coastal erosion while integrating traditional knowledge to support the restoration and preservation of local coastal ecosystems (Coelho et al., 2018).

In Senegal, women have been disproportionately affected by mangrove degradation and coastal erosion, which have led to loss of income and habitats. The Natur'ELLES project empowered 5,600 women through nature-based solutions to restore mangrove ecosystems and biodiversity, integrating women into climate adaptation leadership, providing literacy and education programmes, and using community media to foster gender equality. Tools like Sustainable Asset Valuation help policymakers assess the gender-sensitive economic impacts of environmental decisions to build resilience, prioritise inclusive governance policies, scale up nature-based solutions with a gender lens, and invest in education and leadership development for women and girls (IISD, 2025).

The IISD report on “Advancing Gender-Responsive and Socially Inclusive Practices

in Nature-Based Solutions for Adaptation” showcases evidence on successful projects that integrate gender equality and social inclusion into nature-based climate adaptation initiatives (Jang et al., 2025). The report highlights case studies, including three small-scale cooperatives – seaweed, lime, and honey production – that applied a gender-responsive and socially inclusive approach to their climate adaptation planning and decision-making processes. The output from the case studies was the development of the “Pamoja Voices Climate-Resilience Planning Toolkit” which consists of four participatory exercises for collecting data and developing action plans, and highlights the importance of recognising the barriers women and youth face and ensuring they have input in decision-making (McIvor et al., 2020; Jang et al., 2025).

Climate Smart Technology

Adaptation to climate change is a crucial step to ensure that the production of aquatic foods through fisheries and aquaculture continues to increase, and is able to meet the growing demand for healthy and affordable protein.

In the same light, supporting technologies are being developed, and these must be underpinned by accessible, reliable, and trusted data. State and non-state actors that interact directly with communities should be mandated to make any data or information collected from the communities locally accessible, with priority given to acknowledgement of co-produced information. This should be in consultation with local networks, such as the Aquaculture Network for Africa, the African Women Fish Processors and Traders Network, and other non-state actor platforms that have strategies that support community empowerment.

Successful models of innovative smartphone-based technologies include ABALOB (South Africa), which evolved from a community environmental data capturing app into a platform connecting fishers to buyers, and

Machli (India), which provides forecasting of potential fishing zones, allowing fishers to save time and reduce fuel costs (Calderwood, 2022). While these initiatives were developed for marine fisheries, their core functions could be adapted to include inland aquaculture and fisheries.

To increase food security and safeguard livelihoods through technology for food preservation in Kenya's Lake Victoria region, the WorldFish team introduced three key interventions: solar tent dryers, solar-powered freezers, and fish smoking kilns (CGIAR, 2025). These initiatives reduced women's reliance on inefficient traditional drying methods that are highly dependent on sunny weather. The solar tent dryers enabled faster, cleaner drying of silver cyprinid fish on both rainy and sunny days with minimal intervention. Solar-powered freezers help preserve fish shelf life, reduce waste, support income and food security. Fish smoking kilns extend the shelf life of larger fish, such as tilapia and Nile perch, boosting local economies and women's livelihoods.

The aquaculture sector can significantly enhance efficiency and sustainability by adopting smart technologies. Research by Sarwar and Iqbal (2022) highlights the practicality of using a network of sensors for real-time cloud monitoring of critical water parameters, such as oxygen, pH, and temperature. The cloud

platform enables farmers to receive instant mobile phone alerts when farming conditions become critical, allowing for immediate corrective action, preventing disease outbreaks and income loss, and ultimately supporting the economic and environmental viability of aquaculture operations.

Tenure Rights

The resilience of fishing communities in the face of economic and social challenges depends largely on their access to resources and surrounding assets. However, many communities have been displaced or denied access to coastal lands and areas adjacent to their waterbodies, often due to public initiatives, such as nature reserves or marine protected areas, as well as private sector use. Although some of these assets are state-owned, government agencies have struggled to make them equitably accessible. In many cases, preference is given to individuals or groups with greater financial capacity, leading to leases at prices that marginalised communities cannot afford. This has created ongoing tensions, with local users forced to cross private property to reach resources – even when they hold valid rights and permits to fish in those areas. For women, these challenges may be compounded as they often rely on nearshore areas, ponds, or landing sites for fishing and aquaculture, or processing activities, and their tenure is frequently linked to customary arrangements.

Additional restrictions may exist for women aquaculture operators in inland freshwater ecosystems, which may require additional regulatory and institutional requirements. These include the prohibitively high consultant fees for environmental compliance processes, such as environmental impact assessments, which make these inaccessible to small-scale

women producers. Limited guidance and awareness from relevant resource users or economic development departments further complicate compliance, leaving women without the necessary support to navigate regulations. It is therefore essential that targeted support mechanisms be established to assist women aquaculture operators in understanding and meeting environmental compliance requirements, ensuring their inclusion and success in the sector. Restrictive permitting and licensing systems also prevent women from diversifying into other aquaculture species that could strengthen their economic growth and resilience.

Identifying mechanisms for simplifying compliance processes, including providing targeted subsidies to offset regulatory costs to ensure environmental sustainability, and creating women-focused fisheries and aquaculture support programmes, could unlock significant opportunities.

The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests set global standards for secure and equitable tenure rights across public, private, communal, indigenous, and customary systems. They provide a framework for national policies to safeguard communities from displacement and to ensure responsible, inclusive governance of land, fisheries, and forests (FAO, 2022b).

Balancing Ecology and Economy: Aquaculture Lessons from Saldanha Bay

In Saldanha Bay, South Africa, a promising aquaculture project faced significant challenges that ultimately prevented it from meeting its expected business goals. Despite a well-prepared business case, the regulatory authority allocated a smaller sea space than proposed, focusing solely on environmental considerations without accounting for the economic viability of the venture. The reduced area meant that operators were unable to harvest sufficient resources to sustain financial profitability.

Compounding this challenge, the business operators lacked access to essential infrastructure, such as boats and harvesting equipment, limiting their ability to expand operations within the restricted space they were granted. This combination of regulatory constraints and inadequate infrastructure illustrates how gaps in integrated planning can undermine both livelihoods and sustainable development objectives. The experience highlights the importance of balancing environmental management with socio-economic needs to ensure aquaculture ventures are both ecologically sound and economically viable.

Reflections from the South African Network of Women Fisheries and Aquaculture (SANWFA)

Gender Equality and Inclusion

The UNESCO report titled “Uncharted Waters: An Exploration for Gender Equality and Ocean”, presents persistent and systemic gender inequality across various sectors of the ocean economy and related fields (UNESCO, 2024). Despite making up 50% of the ocean economy (Fisheries Commission, 2023), data consistently show that women are a minority in positions of power and technical expertise, evident in the unchanging number of women ocean science researchers (38% since 2015), the low percentage of women in seafarer roles (2%), and the small number of female leaders at international climate conferences. This is compounded by significant economic disparity, a 45% pay gap in the private maritime sector and only 1% of global climate financing going to women-led organisations (UNESCO, 2024). Women are disproportionately vulnerable to climate change and natural disasters, leaving them displaced and pushed into poverty.

In several countries, research on “Women in Global Fisheries Industry Fall Through the Safety Net” found that women remain invisible, unpaid or underpaid, or their contributions viewed as an extension of household labour in most of their post-harvest fisheries and aquaculture work (University of East Anglia, 2024). The FAO shows that women account for 18% of participants in fisheries, 28%

aquaculture, and 50% in pre- and postharvest activities (FAO, 2022b). The nature of the invisible labour is not only in women being unpaid or underpaid, but also that women may be undocumented, lack standard benefits associated with employment, are exposed to unsafe working conditions, and are excluded from critical safety nets, social protection programmes, and training opportunities.

The gender-responsive practices outlined in the Commonwealth’s “Turning the Tides of Inclusion Toolkit” aim to promote equity and inclusion across ocean sectors (The Commonwealth Secretariat, 2024). These practices include appointing full-time gender officers to lead gender mainstreaming efforts, mandating gender equality training for staff, and ensuring women’s representation in leadership roles within climate and ocean governance. The toolkit also recommends implementing inclusive workplace policies that support work–life balance and prevent discrimination, while encouraging collaboration with men to shift gender norms. It emphasises the importance of promoting STEM education for girls, collecting sex-disaggregated data to inform policy, and providing financial support for women entering non-traditional marine roles (The Commonwealth Secretariat, 2024).

Additional strategies include establishing mentorship programmes and revising work practices and promotion criteria to account for caregiving responsibilities, ensuring fair and equitable career advancement.

The above-mentioned cases and research evidence illustrate persistent and systemic gender inequality that requires a strategic approach to ensure gender equality that will enhance sustainability and resilience, benefit from diverse perspectives, ensuring equity and

justice. They charge leaders to employ gender-responsive policies, improved data collection, and investment in social protections to ensure women in the fisheries and aquaculture industry are no longer left behind. This will not only advance the broader objectives of Sustainable Development Goal 5 (Gender Equality) and Sustainable Development Goal 14 (Life Below Water), but will also contribute to goals related to poverty reduction, food security, climate resilience and, ultimately, economic growth.

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