Industrial Aquaculture: better production, better nutrition, better environment, and better life?



The Blue Transformation's Agenda Leaves Ocean, Waters, and Fisher Peoples Behind







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WORLD ALLIANCE OF MOBILE INDIGENOUS PEOPLES & PASTORALISTS





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Foreword

Industrial aquaculture is a perfect example of false answers to ending hunger in the Blue Economy. Why? Because food security cannot be measured by production volume alone. It must consider: Who controls resources; Who benefits; Who bears the risks. Evidence from fisher peoples' communities shows that aquaculture often undermines food security, livelihoods, and ecosystems rather than strengthening them. Industrial aquaculture causes: disease spread to wild fish populations, pollution and plastic contamination, territorial conflict and loss of access, elite capture of coastal lands, the list goes on... And critically, it depends on globalised feed chains. [...]

In 2020, the Norwegian salmon industry used approximately 144,000 metric tons of small pelagic fish from West Africa, fish that could have fed up to 4 million people locally. This is protein extracted from the Global South to supply luxury markets in the Global North.[1] ***That is not food security. That is nutritional dispossession.*** *We also highlight that aquaculture projects often collapse once external funding ends, demonstrating structural incompatibility with fisher peoples' livelihood realities.*

As we state clearly: Failed aquaculture projects leave communities more vulnerable. So again, who benefits? Transnational corporations. Export industries. Financial investors. Who loses? Ocean, water, and fisher peoples, women in the post-harvest sector, youth who are excluded from livelihoods, and low-income consumers. For real food, real justice, real survival, stand with those who truly sustain you and promote systemic change to benefit all small-scale food producers.

— Intervention by Nadine Nembhard, WFFP Co-Chair at the International Academic Conference 'Land, Life and Society', prior to the Second International Conference on Agrarian Reform and Rural Development (ICARRD+20, Colombia, 2026).



Acknowledgements

Industrial Aquaculture: better production, better nutrition, better environment, and better life? is the result of years of international solidarity, collective research, and collaboration among fisher peoples' movements; Indigenous Peoples; coastal, estuarine, and inland fishing communities; researchers; activists; and allied organisations across the world. We are deeply grateful to the leaders who courageously shared their testimonies and, through their contributions to this report, have joined the Global Fight Against Industrial Aquaculture. Their testimonies reveal the brutal reality imposed by industrial aquaculture on fishing communities, and their indignation and resistance are the fuel that fires our work. This report was made possible through the participation and collaboration of organisations and movements across different case studies, including:

- **Brazil:** Movimento de Pescadores e Pescadoras Artesanais do Brasil (MPP), Associação das Pescadoras e Marisqueiras do Povoado Porto do Mato, Movimento dos Atingidos pelas Renováveis (MAR), and Associação Quilombola do Cumbe, Ceará. We especially thank the leadership from Sergipe and the Quilombola community of Cumbe. We thank Edna Alencar, professor at the Federal University of Western Pará (UFOPA); Cláudio Negrão, of the MAR; and Beatriz Costa, environmental analyst at the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA).
- **Canada and the United States:** Healthy Bays Network, Passamaquoddy tribal members, Greenhorns, and Springtide Seaweed.
- **Chile:** Asamblea de Mujeres Insulares por el Agua and Slow Food Chile, Mapuche-Huilliche community organisations Pepiukelen de Pargua and Huilli Lafkén Hueichán, the artisanal fisherwoman from the Estuario del Reloncaví, and the Asociación Nacional de Mujeres Rurales e Indígenas (ANAMURI).
- **Colombia:** Researcher at Humboldt Universität zu Berlin.
- **The Gambia:** National Association for Artisanal Fisheries Operators (NAAFO).
- **Indonesia:** Sisterhood of Indonesian Fisherwomen (PPNI) and the Karimunjawa community. Indonesia: Sisterhood of Indonesian Fisherwomen (PPNI) and the Karimunjawa community.
- **Senegal:** National Collective of Artisanal Fishermen of Senegal (CNPS), the Coalition against Fishmeal and Fish Oil Factories, and TAXAWU CAYAR.
- **Sri Lanka:** National Fisheries Solidarity Movement (NAFSO) and the people of Vidataltivu.
- **Thailand:** Sustainable Development Foundation (SDF) and the community of Ban Pred Nai.

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Just as the impacts of industrial aquaculture are not limited to the places where its operations are established, neither is the resistance against it. This network of solidarity connects communities and movements from different parts of the world, bringing local struggles together and making them stronger. Across borders and territories, this resistance rises with a closed fist, carrying the struggle for the liberation of peoples, the defense of their territories and ways of life, and food sovereignty.

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Key Messages

- **Four Betters?:** The Blue Transformation Programme of the Food and Agriculture Organisation of the United Nations (FAO) promotes the expansion and intensification of industrial aquaculture, targeting a 35% increase in production by 2030 and a further 19% (33 million tonnes) by 2050. Although the programme promises *'four betters'* — better production, nutrition, environment and life, leaving no one behind — accounts from ten country cases in Latin America, North America, Africa and Asia Pacific reveal the actual *worsening* of FAO's organising principles.
- **Debunking the 'transformation' narrative:** The evidence presented exposes the social and environmental harms of industrial aquaculture. It reveals how the Blue Transformation is further legitimising, institutionalising, and entrenching the same extractive model that has been promoted over the last five decades.
- **Wealth concentration and reproducing inequalities:** While claiming to serve impoverished groups, export-oriented industrial aquaculture is in fact concentrating wealth in the hands of a few, namely transnational corporations and elites. Driven by foreign and national capital from public and private investments, the concentration of wealth is occurring through the grabbing of customary commons, the exploitation of workers and the destruction of nature. Communities and ecologies across localities in global supply chains have experienced the compounded effects of the conversion of localised food systems, the displacement of risks onto workers, and related ecological destruction and contamination resulting from the expansion of industrial aquaculture.
- **Nutritional dispossession:** Industrial aquaculture is not solving hunger nor contributing to healthy diets, instead leading to *nutritional dispossession*, whereby accessible protein is removed from local communities and transferred, through feed supply chains, into feed or to consumers elsewhere. Small pelagic fish, for example — a primary protein source for coastal and fisher peoples — is transformed into fishmeal and oil to raise farmed species for export markets. The result is the violation of the right to food and nutrition, the undermining of artisanal fishing ways of life, and compounding pressures across land, water, and sea.
- **Destruction of ecosystems and food systems:** The expansion of industrial aquaculture has led to the undermining of customary systems of governance, impacting territories across mangroves, inland waters, and coastal seas. This threatens ecologies that sustain diverse food systems and underpin biodiversity. Commons are enclosed and converted into private production sites. Effluent contaminated with chemicals, pesticides and pharmaceuticals salinise soils, eutrophicate waters; severely impacting the health and livelihoods of oceans, waters, and fisher peoples. What is destroyed and threatened is not only ecosystems and biodiversity, but also the reproduction of fishing ways of life and traditions.
- **Human rights violations:** Industrial aquaculture concessions, licences, economic incentives, and reforms transfer customary commons and territories to the state and private capital, with uneven impacts on Indigenous Peoples, rural, and urban impoverished communities. Women fish processors and traders are systematically outbid and displaced in these processes. Violence is often racialised, caste-based and gendered, deepening inequalities, including between and within rural and urban areas. Communities resisting privatisation face human rights abuses and criminalisation, while precarious fish workers endure exploitative labour regimes and exposure to toxic pollutants. The exploitation of people and nature is not incidental to industrial aquaculture, but integral to its business model, which relies on profitability and expansion.

- **Breaching of obligations:** The attempt to recast complex harms caused by industrial aquaculture through the Guidelines for Sustainable Aquaculture (GSA) and other certification schemes, framing these as sustainability problems awaiting technical remedies overlooks ongoing and historical social and environmental impacts. At the same time, implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines), remains largely unenforced and unimplemented. The SSF Guidelines foreground a human rights-based approach to governance and management of fisheries, with commitments to protecting the customary tenure and use rights of ocean, waters and fisher peoples their territories and fisheries. Similarly, governments have failed to uphold the commitments and obligations in the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP) and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). These declarations provide essential frameworks for defending the rights, territories and ways of life of peasants, Indigenous Peoples and other rural and fishing communities, and for advancing food sovereignty, agroecology and aquaecology in the face of land, coastal and ocean grabbing, and the dispossession driven by global financial institutions such as the World Bank and the International Monetary Fund (IMF). The cases documented here, and decades of evidence of the violence and destruction driven by the industry, show that these obligations remain unenforced. Efforts are urgently needed to secure the implementation of social and environmental safeguards; and insist that governments fulfil their commitments to implement the UNDROP and UNDRIP.
- **Other ways are possible:** Ocean, waters, and fisher peoples and their artisanal fisheries work with nature and are vital for healthy food and nutrition for millions of people. As highlighted in the State of World Fisheries and Aquaculture 2026 (SOFIA) report, small-scale fisheries provide 90% of the employment in capture fisheries and support the livelihoods of at least 500 million people. The solution to meet FAO's goals of feeding people must be rooted in small-scale, traditional, and artisanal fisheries.
- **Food sovereignty pillars:** The demands of the global fisher peoples movements are clear and have persisted for decades. They are grounded in the six pillars of food sovereignty: focusing on food for people, valuing food providers, localising food systems, putting control locally, building on traditional ways of knowing and skills, and working with nature. A political agenda for food sovereignty must:
    - *Recognise*, restore, and protect the customary and tenure rights of ocean, waters, and fisher peoples;
    - *Roll back* the industry by returning coastal, riverine, and marine spaces seized for aquaculture to dispossessed communities;
    - *Redistribute* tenure rights, breaking up the concentration of benefits in its many forms and reallocating access to the customary commons to affected peoples;
    - *Stop the expansion* of industrial aquaculture and mobilise against the violence, killings and criminalisation of ocean, waters, and fisher peoples, as well as industrial workers;
    - *Resist* the grabbing and destruction of the customary commons, gendered violence in production and processing, violence against Indigenous Peoples, and the exploitation of workers across globalised food systems; and,
    - Work with ocean, waters, and fisher peoples to *regenerate* what has been destroyed, following their territorial and collective healing practices and defending their autonomy.

- **Building international solidarity:** Food sovereignty and social justice movements through the Nyéléni Common Political Action Agenda (CPAA) have committed to an internationalist agenda and solidarity. This situates the struggle against industrial aquaculture alongside other forms of capitalist violence and commits movements to collective action against the political structures that sustain oppression.
- **Complicit governments or real transformation?** What is at stake at the FAO Committee on Fisheries (COFI37) and the Small-Scale Fisheries Summit (SSF Summit) is not better guidance for a sector whose expansion depends on violence. It is whether governments will listen to global food sovereignty and fisher movements, and enforce the human rights that they have recognised and committed to uphold, or stay complicit and continue to profit from their violation.



Introduction

The State of World Fisheries and Aquaculture (SOFIA) 2026[2] describes a continuing shift in global aquatic food production from capture fisheries towards aquaculture. While SOFIA reports that capture fisheries have remained relatively stable for more than four decades, aquaculture has intensively expanded and now supplies more than half of the aquatic animals produced globally.[3] Much of this growth comes from freshwater aquaculture, particularly in inland systems, alongside continued expansion of marine and coastal aquaculture. Aquatic products are among the most highly traded food commodities, with export-oriented aquaculture centred on a small number of commercially important species. In the SOFIA report, The Food and Agriculture Organisation of the United Nations (FAO) presents this expansion as central to "*feeding a growing world population*" projecting that aquaculture's animal food production will need to expand and intensify 35% by 2030 and a further 19% (33 million tonnes) by 2050.[4]

Growth rhetoric dominates, sidelining social and environmental sustainability safeguards. This singular focus on production is conspicuously absent from the FAO's own *The State of Food Security and Nutrition in the World 2026*[5], which states that the biggest obstacle to ending hunger is no longer availability, but affordability. Yet, is more production leading to lower prices? Healthy diets remain out of reach for 2.7 billion people worldwide.

What the FAO's projections stay silent on is how, across the world, industrial aquaculture is displacing fishing communities, contaminating and destroying customary commons, consolidating ownership of seafood production, and flooding markets with farmed species. All of this relies on depleting pelagic fish populations and converting land to monocultures to grow feed for farmed fish, using a catch that could otherwise feed people directly.[6] The evidence of harmful impact of industrial aquaculture on people and nature is not new. Decades of reports, legal cases, and resistance reveal that **industrial aquaculture is not a solution to hunger; it is an affront to food sovereignty.**[7,8,9] Food sovereignty understood as the realisation of six interconnected pillars: 1) food for people, 2) value food providers, 3) localised food systems, 4) putting control over land and water territories locally, 5) building knowledge and skills drawing on traditional and customary ways of knowing, and 6) working with nature.[10]

In this report, industrial aquaculture is defined as the intensive raising of aquatic animals in monoculture farms, pens, cages, and nets. These systems rely on artificially raising the carrying capacity of the farming environment to maximise productivity through 'scientific-technical' management methods. These include inputs of a host of pharmaceutical inputs, formulated feed and hatchery-produced seed. In most situations, the use of medications, including banned antibiotics, is common practice. Nutrient dense water resulting from fish faeces and uneaten feed and disease-laced waters used to flush farmed environments are directly discharged into the surrounding waters. This induces imbalances into the natural chemical composition of coastal waters affecting fish populations and greenhouse emissions. Production is largely export-oriented and controlled by a small number of corporations who own the farms and/or the input supplies.[11, 12]

Against this backdrop[i], the World Forum of Fisher Peoples (WFFP), La Via Campesina (LVC), the World March of Women (WMW), the World Forum of Fish Harvesters and Fish Workers (WFF), the International Indian Treaty Council (IITC), the People's Health Movement (PHM), and members of

[i] For further information about the global campaign, please visit: https://wffp-web.org/campaigns/global-fight-against-industrial- aquaculture/

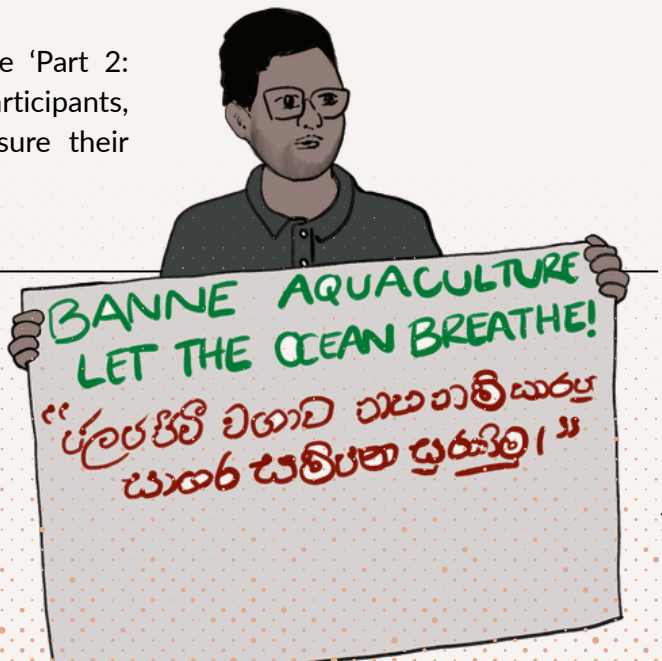
the International Planning Committee for Food Sovereignty (IPC) have joined forces to endorse a common political campaign — resisting the expansion of industrial aquaculture — which was launched at the Nyéléni Global Forum 2025 and set out in The Forum's Common Political Action Agenda (CPAA).[13] The campaign is part of the shared struggle for food sovereignty across water, rivers, oceans, and land.[i]

Industrial aquaculture: better production, better nutrition, better environment, and better life? has been developed in close collaboration with fisher peoples and coastal communities from ten countries across four regions: Latin America (Brazil, Chile, Colombia), North America (Canada, United States), Africa (The Gambia, Senegal), and Asia Pacific (Indonesia, Sri Lanka, Thailand). It draws upon participatory action research conducted with affected communities between 2025 and 2026, including interviews, community meetings, and exchanges with researchers and research institutions, in addition to past testimonies, reports, comments, and articles. It reflects a collective effort involving fisher peoples' organisations, social movements, Indigenous Peoples, researchers, and civil society organisations across the globe.[ii] This report grounds its analysis in the lived experiences of fishing communities, challenging the FAO's Blue Transformation agenda with evidence from those whose territories and livelihoods have been destroyed by the expansion of industrial aquaculture.

Industrial aquaculture: better production, better nutrition, better environment, and better life? serves as both testimony and advocacy tool, necessarily questioning and holding accountable the public and private actors driving the Blue Transformation agenda. It is timed to inform discussions at the FAO Committee on Fisheries (COFI), which issues recommendations and assesses the future trajectory of the *FAO's Strategic Framework 2022–2031*, as defined by the *Blue Transformation Roadmap (2022–2030)*.[14] This report is also intended to inform debates at the Small-Scale Fisheries Summit (SSF Summit) 2026, which brings together fisher peoples' organisations, research institutions, and governments to advance the implementation of the Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines).[15]

The report begins with the background, objectives, and financing behind the *Blue Transformation*, before turning to an analytical framework that examines how its actions and commitments are organised around the FAO's Four Betters: Better Production, Better Nutrition, Better Environment, and Better Life — leaving no one behind. Each of these Four Betters is then set against cases and testimonies collected from ten countries with a focus on brackish, coastal, and ocean-based aquaculture systems. The report ends by presenting the concrete demands and proposals put forward by the social movements and civil society organisations engaged in the Global Fight Against Industrial Aquaculture.

For details on the cases and testimonies, see 'Part 2: Evidence'.[iii] Unless explicitly demanded by participants, we have anonymised the testimonies to ensure their confidentiality and safety.



[ii] All the cases will be available on the World Forum of Fisher Peoples Website: https://wffp-web.org

[iii] You can find *Part II: 'Evidence* report' at: https://wffp-web.org/campaigns/global-fight-against-industrialaquaculture.

Blue Transformation

In 2021, the Declaration for Sustainable Fisheries and Aquaculture of the Committee on Fisheries (COFI)[16] celebrated the 25th anniversary of the Code of Conduct for Responsible Fisheries with the objectives of acknowledging achievements in fisheries and aquaculture, and gathering 'collective momentum in identifying and tackling the challenges and opportunities ahead of us to secure the long-term sustainability of the sector'.[17] The Declaration recognises the FAO's commitment to the 2030 Agenda for Sustainable Development to end poverty and hunger everywhere, noting the need to ensure that the sector develops in a sustainable manner and in ways that contribute to reducing poverty, securing livelihoods, and ensuring food security. The conclusion of the Declaration states that it:

> *supports an evolving and positive vision for fisheries and aquaculture in the twenty-first century, where the sector is fully recognised for its contribution to fighting poverty, hunger and malnutrition, its ability to prepare for and respond to changing climate and ocean conditions, and its commitment to sustainability. We recommend that the further development of this new vision … be placed under the stewardship of COFI, as the main global forum for discussions and decisions on fisheries and aquaculture-related issues, to further strengthen participatory and science-based solutions.*[18]

Following this mandate, the FAO has been realigning its fisheries and aquaculture agenda around the 'Blue Transformation Vision',[19] positioning aquatic foods as fundamental to global food security, nutrition, and economic growth, and connecting the aquatic food systems to the Sustainable Development Goals (SDGs).[20] This vision was developed by the FAO Fisheries and Aquaculture Division and operationalised through the Blue Transformation Roadmap 2022–2030.[21] The Roadmap holds that the problems faced by the global food system are driven by hunger and malnutrition, climate and environmental change, and rising demand from population growth. The Roadmap contends that these issues can be addressed by developing and expanding aquatic food systems.[22] This is pursued by establishing priority actions across three pillars: 1) sustainable expansion of aquaculture, 2) effective fisheries management, and 3) strengthening of aquatic food value chains.

For the purpose of this report, we focus on aquaculture, along with its management and value chains. The *Roadmap* targets at least a 35% increase in aquaculture production between 2022 and 2030[23], driven by public and private investment, technological innovation, production intensification, and national policy reforms. The FAO is not the only institution driving the promotion of aquaculture. The sector's rapid expansion is part of a broader political economy advanced by governments, multilateral financial institutions, private capital, industry, philanthropic organisations, and research networks.[24]

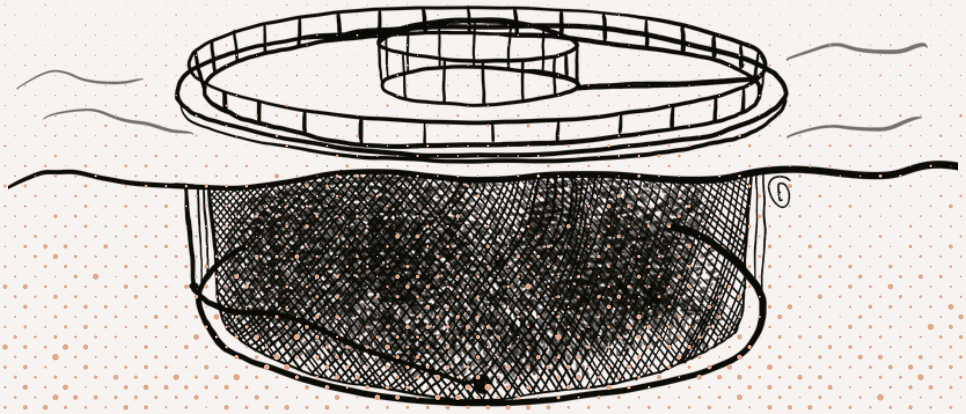
What is the Committee on Fisheries — COFI?

COFI is the FAO's main intergovernmental body for fisheries and aquaculture, which serves as the forum where policies are debated and adopted, while the COFI Sub-Committee on Aquaculture focuses on the technical and policy discussions specifically dedicated to the intensification and expansion of aquaculture. Together, they create an institutional framework that guides national governments, financial institutions, and international partners in implementing the Blue Transformation agenda.

Financing the Blue Transformation, the UN Small-Scale Fisheries Guidelines and the Sustainable Aquaculture Guidelines

The *Roadmap*[25] identifies the *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (SSF Guidelines)*[26] as one of the *Blue Transformation*'s guiding principles. However, the financial data presented in the SOFIA 2026 report suggest that the implementation receives only a limited share of financial support.[27] The FAO made twelve commitments at the UN Ocean Conference 2025, totalling USD 275 million, plus additional in-kind funding for the delivery of the *Blue Transformation*.[28] Among these is a commitment to strengthen the implementation of the SSF Guidelines through the National Plans of Action (NPOA), capacity development, and fisheries management to support fisher and fish worker organisations. However, only USD 9 million was allocated, with a deadline of 2027, to support this commitment, accounting for 3.27% of the total commitments. In contrast, aquaculture is explicitly mentioned in two commitments: USD 3 million for advancing the implementation of the Guidelines for Sustainable Aquaculture (GSA)[29] by 2026, and USD 50 million allocated to improving fisheries and aquaculture sustainability in the Mediterranean and Black Sea by 2030.[30] There is no transparency regarding the funding provided through voluntary contributions from states and private actors; however, the reported commitments illustrate the staggering disparities across sectors.[31] This raises important questions about the alignment between the FAO's stated policy commitments and the financial priorities underpinning the implementation of the *Blue Transformation* agenda.

In line with this, there has been a push within the *Blue Transformation* agenda to move beyond the SSF Guidelines and focus instead on implementing the GSA, approved by FAO member states during the 36th Session of the Committee on Fisheries (COFI36) in 2024.[32] The GSA provides recommendations on planning, licensing, financing, monitoring, and governance for the sustainable growth of the aquaculture sector, as part of the FAO's Roadmap. The approach of the GSA is to turn issues related to industrial aquaculture into technical problems that can be 'solved' through the implementation of voluntary sustainability standards. Importantly, the process that led to the drafting of the GSA was member state–driven, with only limited consultation of civil society groups. The process followed the *Blue Transformation* vision of '*sustainable intensification and expansion of aquaculture*',[33] serving the economic interests of industry actors. This top-down approach contrasts with the bottom-up participatory approach that led to the elaboration and adoption of the SSF Guidelines.[34] As early as 2022, the International Planning Committee for Food Sovereignty (IPC) Working Group on Fisheries[35] released a statement at the 35th COFI (2022) denouncing industrial aquaculture as a false solution to the food crisis:



> *In the interest of aquaculture development, transnational corporations — supported by national level policy reforms and subsidies — continue to grab our land and water territories and fisheries resources. The volumes of wild capture fish and plant based products, such as soy, that is needed to feed the fast growing aquaculture industry is simply not sustainable. Further, the export-oriented value chain, feeding mainly middle income and rich consumers, does not provide food for our communities. Energy consumption for the production of feed and transport of commodities is also out of sync with the global climate goals. It is on these grounds that we disagree with the claim that industrial aquaculture is a sustainable solution to the food crisis. We therefore call upon COFI members to seriously reconsider plans to expand industrial aquaculture, and instead work with us, small-scale fishers and Indigenous Peoples, to support and advance localised SSF value chains, which can provide healthy and affordable food for communities. We also call upon our governments to roll back harmful aquaculture projects and restore our traditional and customary rights to territories and fish resources.*[36]

Rather than taking seriously the proposition from the IPC Working Group on Fisheries and the decades of resistance and mobilisation against industrial aquaculture, the drafting of the GSA continued, with the final text only acknowledging that '*some of these [aquaculture] developments have caused undesirable social and environmental impacts, leading to conflicts between users of land, water, and living aquatic resources, and negatively affecting the aquatic environment, its biodiversity and its valuable ecosystem services. In particular, concerns remain regarding habitat destruction and modification; the irresponsible and unregulated use of chemicals and veterinary medicines; the impact of escapees on wild fish stocks, and the use of feed ingredients that are not sustainably sourced*'.[37] The above also presents the idea that these 'undesirable' impacts come from nowhere and at worst that land, ocean and water peoples are themselves responsible, ignoring the political economies driving all this harm. The GSA draws on some of the language from the SSF Guidelines and the Tenure Guidelines,[38] but refers to human rights principles to protect private property and capital. Moreover, the GSA makes no explicit mention of the SSF Guidelines, framing rights in terms of enhancement, corporate social responsibility, and promotion of the rights of actors that engage in industrial aquaculture, while completely disregarding fisher peoples as rights holders.[39] Instead, it names the rights of '*access to land, water, and natural resources, whether statutory or customary, owned by individuals or communities*'[40] in the context of aquaculture funding and investment rules. This marginalisation extends to the instrument's own compatibility clause, which states that '*The GSA should be interpreted and applied in a responsible manner consistent with existing rights and obligations under national and international law with due regard to voluntary commitments under applicable regional and international instruments*'.[41]

The GSA fails to translate any of these rights into concrete commitments to fisher peoples, thereby also failing to meaningfully address and engage with the long history of human rights abuses, resistance to the privatisation and to the destruction of customary commons, and labour exploitation to workers within the industry. Additionally, the GSA calls for the integration of aquaculture with other sectors, in particular agriculture, energy, and tourism, as a 'solution' for 'local and small-scale farming systems' to contribute to food security, biodiversity protection, and climate adaptation without any consideration for historical power imbalances, market-based dynamics driving expansion, or the social and environmental risks at play.[42] At the national levels, the FAO is supporting countries to integrate the GSA into aquaculture development, investment strategies, and plans, embedding the GSA into their programmatic work. This is a very different story to the implementation of the SSF Guidelines. The GSA has real money behind it: a funding channel through the Global Environment Facility (GEF) and a technical partnership with universities.[43] This reveals that voluntary commitments are supported only when there is the financial and political will to do so.



Photo story

Daouda Ndiave: "*This once-busy place now seems deserted. Why is that, and what difficulties are you facing?*"

Maty Ndao: "*My name is Maty Ndao. I lead this seafood-processing site and belong to the Kayar Women Fish Processors network. Our main problem is the lack of fish. This site once supported about 325 women, but they have left because there is nothing to process. Much of our fish is taken to produce fishmeal for farmed fish, poultry, dogs, and other animals abroad*".

Empty seafood processing site, Cayar, Senegal, 2026.

Conceptual Framework

This report's conceptual framework draws on the FAO's organisational principle, the *Four Betters: Better Production, Better Nutrition, Better Environment, and Better Life — leaving no one behind*.[iv] These were set out in the *FAO's Strategic Framework 2022–2031*, and they connect directly to the UN Sustainable Development Goals (SDGs) — most notably, SDG 1 (No Poverty), SDG 2 (Zero Hunger), and SDG 10 (Reduced Inequalities) — as well as to the broader SDG agenda that underpins the FAO's overall vision.[44] The *Four Betters* translate this vision into a programme for sustainable food systems, described as the transformation towards more efficient, inclusive, resilient, and sustainable agri-food systems.[45] This is organised through Programme Priority Areas (PPAs), which cover different parts of the food, agriculture, and aquaculture sectors and serve as the building blocks connecting FAO's work to the SDG agenda. Blue Transformation sits under *Better Production* as one of these PPAs, with an outcome statement calling for more efficient, inclusive, resilient, and sustainable blue food systems, achieved through improved policies and programmes for science-based management, technological innovation, and private-sector engagement.[46]

For this report, the *Four Betters* function both as the overarching narrative and as the analytical lens through which the impacts of industrial aquaculture on fisher peoples, including Indigenous Peoples, are examined. The report applies this framework to set two things side by side: 1) what the *Blue Transformation* agenda claims industrial aquaculture should deliver under each 'Better', and 2) the lived experiences of communities living with industrial aquaculture. This dual-lens approach enables us to ask, for each 'Better': Where do FAO's policy claims and community accounts align, and where do they diverge — advancing a 'better' or making it 'worse'?

[iv] FAO's vision is 'a world free from hunger and malnutrition, where food and agriculture help raise living standards for everyone, particularly the poorest, in ways that are economically, socially and environmentally sustainable'. See Food and Agriculture Organization. Strategic Framework 2022-31, 2021, 14, https://openknowledge.fao.org/server/api/core/bitstreams/29404c26-c71d-4982-a899-77bdb2937eef/content.

Analysis

Better Production?

Better Production aims to '*ensure sustainable consumption and production patterns, through efficient and inclusive food and agriculture supply chains at local, regional, and global level, ensuring resilient and sustainable agri-food systems in a changing climate and environment*'.[47] Furthermore, it is intended to meet the objective of '*more efficient, inclusive, resilient and sustainable blue food systems*[48] *promoted through improved policies and programmes for integrated science-based management, technological innovation and private-sector engagement*'.[49] According to the FAO, 2022 marked the first time in history that aquaculture surpassed capture fisheries as the main supplier of aquatic animals. Further, they claim that people are consuming more aquatic food from farms than from fisheries.[50]

Evidence

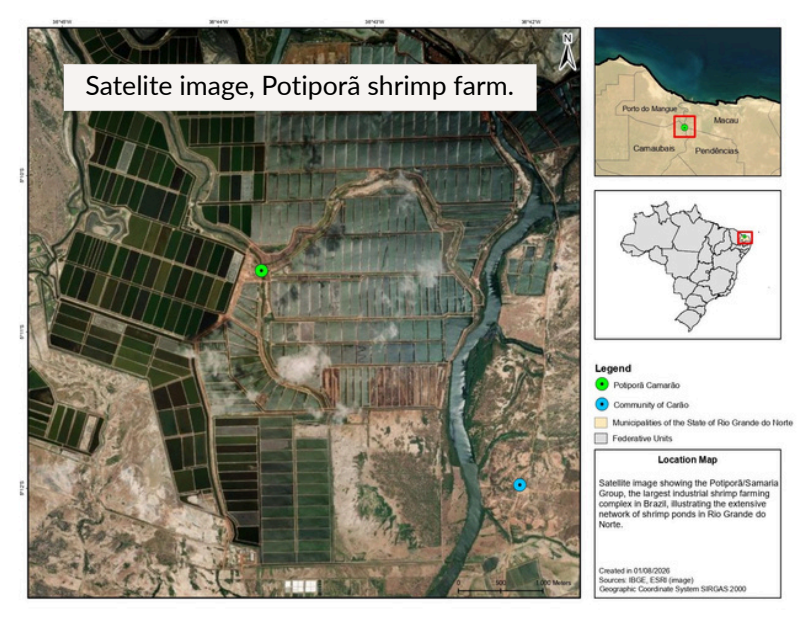
Unsustainable and unhealthy production

In Chile, during the Pinochet dictatorship (1973–1990), salmon aquaculture became a driver of national integration, development, and regional employability, which was fuelled by foreign investment, in particular from several Norwegian farming venues.[51, 52] Over subsequent decades, public investment, domestic capital, international investments, and acquisitions by multinational corporations transformed Chile into a global salmon empire, becoming the world's second-largest producer of farmed salmon since 1992[53] (Norway being the first). Today, the industry produces more than 1 million metric tonnes of salmon annually,[54] representing nearly 35% of global salmon production.

The *Blue Transformation* edict claims to expand aquaculture integrated in science-based management; however, in Chile, the industry is unbridled. An artisanal fisherwoman from the Reloncaví Estuary explains that salmon production now occupies virtually every aquatic environment in southern Chile, from freshwater hatcheries and smolt production facilities in rivers and lakes to marine net-pen farms, wellboats, feed barges, processing plants, ports, and logistics networks extending into Patagonia.[55] According to one fisherwoman, industrial aquaculture has become embedded '*everywhere there is water*'.[56]

The municipality of Pendências, in the state of Rio Grande do Norte, is one of Brazil's leading shrimp-producing regions and home to Potiporã, the country's largest shrimp grow-out farm in terms of both production and cultivated area.[57] The municipality also hosts numerous other shrimp farms located along the Piranhas-Açu River and its tributaries. During a visit in July 2026, the experiences of artisanal fishers living in the region were documented by members of the WFFP. The Inland Shrimp Farming Programme (*Programa de Interiorização da Carcinicultura*), coordinated by the Brazilian Micro and Small Business Support Service (SEBRAE) in partnership with the Ministry of Fisheries and Aquaculture, the Rio Grande do Norte Federation of Agriculture and Livestock, and other public institutions, seeks to expand shrimp farming into inland municipalities by simplifying environmental licensing procedures, reducing administrative barriers, and offering public incentives.[58] It aims to recruit 150 new producers, prioritising farms of up to 15 hectares. Measures announced include exemptions from state environmental licensing fees, facilitated access to rural credit through public banks, and the use of municipal machinery to excavate shrimp ponds. As one programme representative stated, '*we want to facilitate entry for small producers*', while another added that '*municipalities can provide the machinery needed to excavate the ponds*'.

However, according to Cláudio Negrão, a researcher supporting the Movement of People Affected by Renewable Energy Projects, the trajectory of enterprises in the region suggests a different dynamic. Easier access to environmental licensing, subsidised credit, and public incentives tend to encourage the establishment of small-scale enterprises that are later absorbed by larger corporate groups, accelerating the concentration of land and production (see 'Better Environment?' for a discussion on the inconsistencies surrounding sustainability certification schemes).



Indonesians have also witnessed this pattern of unsustainable development and lack of community engagement. Musfarayani (Fay) and Susan Herawatii, volunteers of The Sisterhood of Indonesian Fisherwomen (PPNI), provided evidence of intensive shrimp aquaculture, environmental destruction, and community resistance in Karimunjawa. Many areas that had been productive seaweed farms were completely damaged by waste generated by industrial aquaculture.[59] Processing plants would not accept ruined crops and, at one point, the market price of seaweed plummeted, leaving entire villages struggling. Economic hardship plunged many fishing households into poverty and forced some children out of school. This episode reflects government failures in implementing regulations governing industrial aquaculture. For instance, 238 aquaculture ponds[60] were built illegally without the required environmental impact assessment mandated by Law No. 32 of 2009 on Environmental Protection and Management.[61]

Community members allege that some operators exceeded or failed to observe applicable pollution-load limits.[62] In fact, all shrimp-farm operations violate the Jepara Regional Spatial Planning Regulation No. 4 of 2023,[63] which bans mariculture and brackish and freshwater aquaculture in Karimunjawa. Finally, due to pressure from the communities, the government acted by cancelling licences, banning shrimp farming, and punishing individual offenders. Following the closure of the farms, water quality has started to recover, and some seagrass beds and corals have slowly begun to regenerate, with ecosystem restoration work underway. This would not have happened if communities had not mobilised to denounce the unsustainable expansion of industrial aquaculture.

Unsafe production

Although one outcome of Better Production is that '*full and productive employment and decent work for men and women is achieved by 2030*', the exact opposite is happening. As Cooke Aquaculture continues to dominate in Maine, USA, they claim to provide jobs for economically depressed regions; however, as shared by Trey Angera, a seaweed farmer in Gouldsboro, Maine, '*300 jobs, some of them well-paid jobs, are nothing compared to the damage they cause in our waters. Besides, the best jobs are for the people sent by the corporations, not the local people*'.

In 2025,Cooke Aquaculture acquired AquaBounty[64] , the first corporation in the world to apply and receive government approval to produce and sell genetically modified salmon (according to Cooke, they do not intend to produce this new fish, but they maintain the patent, which they can leverage at an opportune time). Braydon Humphrey, a former employee of AquaBounty, witnessed what he describes as consistent worker safety, animal welfare, and environmental impact violations. His testimony is documented in the AquaBounty Exposed Report, along with 113 pictures and videos he took from inside the AquaBounty facility while working there.[65]

In Chile, the salmon industry is also frequently promoted as a major source of employment, however, the interviews reveal profound inequalities among executives, technical professionals, and workers. Women employed in processing plants describe long and irregular shifts, relentless production targets, and restrictions on bathroom breaks. According to testimonies and the Danish Institute for Human Rights report, *The Salmon Industry and Human Rights in Chile: Sector-Wide Impact Assessment*, women workers reported that some companies restrict the number and duration of bathroom breaks during working hours, raising concerns about adequate sanitation and the right to health.[66]

Large salmon companies typically outsource underwater maintenance, net cleaning, and infrastructure inspections to smaller subcontractors, creating complex chains of responsibility that distance the corporations operating the farms from legal accountability when accidents occur.[67] Marcela Ramos, from Slow Food Chile and the Assembly of Island Women for Water[v] , explains that divers are frequently pressured to work beyond safe operating depths and notes that Ecoceanos has documented fatal accidents for many years.[68, 69] In July 2026, a 27-year-old commercial diver died at a Mowi farm, bringing the total number of worker fatalities in Chile's salmon industry to ten since the beginning of the year.[70, 71] The diver was employed by the subcontractor Tridente. Only weeks earlier, another young diver employed by the same subcontractor died while working at farms linked to Mowi and AquaChile.[72] These fatalities reinforce the testimonies[73] documented, revealing that subcontracting is not a secondary feature of the industry but a structural component of its labour model, transferring some of the sector's most dangerous work to smaller contractors, while distancing the corporations that ultimately control production from responsibility for workplace deaths.



Corpse in a salmon farming center in southern Chile, 2021. Reported by Ecoceanos. Photo: Chilean Navy.

[v] The Assembly of Island Women for the Waters (*Asamblea de Mujeres Insulares por las Aguas, AMIPA*) is an organisation of women from the Chiloé Archipelago that works to defend water sovereignty.

In December 2025, Chile promulgated the Law 21.789, which created an employment contract for divers, established requirements for safety working protocols, and clarified the responsibilities across contracting and subcontracting arrangements.[74] However, labor and civil society organizations have warned that many of the most important protections and corporate obligations were left to implementing the regulations.[75] Before the ratification of this law, in 2022, the Supreme Court of Chile confirmed a ruling requiring that the salmon producer Ivermar S.A. and the subcontractor Servicios Marítimos Playarmar Ltda. to jointly pay approximately USD $ 45,000 in compensation to a diver who suffered an accident. This decision was relevant to the industry's subcontracting model because the company operating the salmon farm was held jointly liable for injuries suffered by the divers in the subcontracted company.[76]

Increasing production by losing livelihoods

In Colombia, aquaculture in the Betania Reservoir began as an alternative livelihood promoted by the subregional municipalities and the energy company (initially managed by Central Hidroeléctrica Betania S.A. and transferred to Enel Colombia S.A.) following its construction between 1981 and 1987. Floating net pens were installed to breed the exotic Asian species tilapia (Oreochromis niloticus).[77] The reservoir management allowed entrepreneurs to enclose the reservoir area with 'water parcel' leases for floating fish farm cages.[78] Small-scale fish farmers and artisanal fishers face curtailed access to their fishing areas, while their livelihoods and incomes are also threatened by lower water quality. In 2005, the reservoir management plan, led by the fishing authority formalised a zoning scheme in which the best, oxygen-rich areas were allocated for aquaculture, while artisanal fishers were assigned larger but more sediment-prone areas.[79] The zoning also included mobility rules, such as a 10-metre buffer between shores and aquaculture cages, restrictions on canoe circulation near cages, and the hiring of private security personnel to enforce those boundaries. Since the 2000s, aquaculture has been exponentially expanded in both production and exports in Betania[80], while artisanal catch declined dramatically.[81] Official records document 54 fish farming projects, 838 cages, and 22,000 tonnes per year of production from about 70,000 t in 1975 to about 11,000 t in 2015.[82]



Tilapia farming in the Betania Reservoir, along the Magdalena River in Colombia.

The State of Alaska banned fish farming in 1990 to protect the local economy, wild fish populations, and the marine environment. However, industrial fish farming corporations, such as Cooke Aquaculture, control the salmon market[83], undercutting the price of wild fish[84] and prompting young people in the area to abandon their traditional ways of life and cultures. Between 1990 and 2020, the population of Bristol Bay Borough in Alaska decreased by 40%.[85]

In West Africa, Fatou Pierre Choye, president of the National Association for Artisanal Fisheries Operators (NAFO), has witnessed how the growth of fishmeal processing in The Gambia and across West Africa is driven by global value chains involving foreign-owned fishmeal factories, leading to environmental degradation and food insecurity.[86, 87] Factories deplete local fish supplies, disproportionately affecting impoverished groups, particularly women, to serve the demands of wealthy consumers in foreign countries. According to the testimony from NAFO:

> *Fish meal processes are negatively impacting our women. We would have fish for a competitive price, but due to fish meal competition, we started facing difficulties. There are some fishers selling fish for the factories before selling to us, and they are selling to the factories for a more competitive price. We cannot compete against those factories. They have capital, we don't. If we receive any help, any financial help, we are ready to take it. Those factories may offer 10,000 to 20,000 while we can offer only 4,000 to 5,000 dalasi* (1USD = 73 dalasi). *Fishers will only target those who offer the highest price, but those factories sign contracts with them and give them capital to go harvest fish. So, when they harvest any fish, they sell to those factories on priority.*

According to The Collectif National des Pêcheurs Artisanaux du Sénégal (CNPS) factories provide financing for engines, nets, fuel, and cash directly to the fishers. Financing arrangements and exclusive purchasing agreements can make some fishers dependent on factories and reduce their bargaining power. Employment generated by fishmeal and fish oil factories is limited in Senegal. Community members state that the fishmeal factories employ only a few dozen workers, whereas a single artisanal purse seine targeting sardinella supports the livelihoods of more than 100 people across the value chain.[88] Similarly, in Brazil, despite the rhetoric of job creation used to legitimise the growth of the industry, the testimonies[89] reveal that the jobs created do not compensate for the loss of territory and food sovereignty. Instead, there is increased economic dependence on companies producing industrial aquaculture, rendering communities even more vulnerable by tying their survival to a single private actor.[90]

Consolidation of production

In Canada and the United States, communities have had to contend with one of the largest privately owned seafood companies in the world. Cooke Aquaculture (Cooke Inc.) has built a vertically integrated multinational corporate model with an estimated USD 4 to 5.5 billion[91] in annual revenue. In just the past decade, it has acquired Omega Protein[92] (2017, United States), Copeinca[93] (2024, Peru), Tassal[94] (2023, Australia), Mowi Canada's[95] Atlantic operations (2026), and Avramar Group[96] (2026, Greece). As Cooke Aquaculture continues to expand, so have the number of lawsuits and petitions[97] against them.

The Collectif National des Pêcheurs Artisanaux du Sénégal (CNPS) provided testimony on the impacts of industrial fishmeal and fish oil production for industrial aquaculture in Senegal. Fishmeal and fish oil produced by Omega Fishing SA, Afric Azote, Bel Meal, Saint-Louis Sea Production, and Touba Protéine Marine factories are primarily exported and sold abroad[98, 99], not to the local communities. The enormous demand for small pelagic fish for aquaculture fish feed has led to their overexploitation. *Sardinella aurita* is an important small pelagic species for Senegal, accounting for 22% of total fish landings in 2023.[100] It is considered overfished, and its catches decreased 50% from 2001 to 2019.[101] According to CNPS, a 50-kilogram box of sardines, which until 2008 cost 2,000 CFA francs, is now sold for 40,000 CFA francs (1 USD = 565.55). Local community members cannot afford it.

In the Betania Reservoir in Colombia, official records document 54 fish farming projects, 838 cages, and 22,000 tonnes per year of production.[102] Other official estimates suggest that more than 1,300 cages may be operating. Six projects account for 59% of total production output, belonging to the three largest permit holders, who are linked to powerful politically connected families in the Huila region.[103]

The story echoes in Sri Lanka, where the Vidataltivu community has experienced the complete destruction of its traditional livelihoods due to the expansion of Taprobane Seafood's industrial shrimp farming.[104, 105] Since 2019, residents have repeatedly petitioned authorities to stop the pollution, yet their complaints have been ignored. As one participant expressed it: '*Up to today, no solution. If we climb 2 steps up, they climb up 3 steps and give money [bribes]*'. Letters of complaint with requests to stop the farm's production are not taken seriously '*because the ministry is involved*', explains another participant.[106] Villagers interviewed describe intimidation, political influence, and corruption as major obstacles to accountability.

Worst Production: Industrial aquaculture has expanded through ecologically destructive practices that displace risk onto workers, communities, and ecologies in the many localities that make up its global supply chains. Driven primarily by foreign and national capital from public and private investments, production capitalises on the grabbing of customary commons, the exploitation of workers, and the destruction of nature, concentrating wealth in the hands of a few corporations and elites. There is nothing sustainable about its production.

Better Nutrition?

Better Nutrition aims to *'end hunger, achieve food security and improve nutrition in all its forms, including promoting nutritious food and increasing access to healthy diets'.* To achieve this goal, the FAO focuses on five key areas of action: 1) healthy diets for all, 2) nutrition for the most vulnerable, 3) safe food for everyone, 4) reducing food loss and waste, and 5) transparent markets and trade.[107]

Blue Transformation's Better Nutrition rationale begins from a diagnosis of failure: As SOFIA 2022 argues, 'current food systems often fail to deliver affordable, nutritious foods in an equitable manner.' It contends that food system debates have historically overlooked aquatic foods, despite their high nutritional value, biological diversity, production efficiency, affordability, and comparatively low environmental footprint. Against a backdrop of persistent hunger, unaffordable healthy diets, and mounting climate pressures, *Blue Transformation* positions aquatic food systems as a key pathway to improved food and nutrition security by promoting aquatic foods as part of healthy diets and integrating them into national food and nutrition policies. It is not only about increasing production but also about ensuring that nutritious aquatic foods are accessible, affordable, and consumed by those who need them most. Yet this rationale rests on a critical assumption: that more 'sustainable' production, improved value chains, and better market integration will translate into Better Nutrition.

Evidence

Violations of the Right to Food

The UN Special Rapporteur on the Right to Food, Michael Fakhri, criticised the *Blue Transformation* in his thematic report to the Human Rights Council in 2024.[108] While the *Blue Transformation*

responds to rising global consumption of aquatic food by promoting increased production, Fakhri emphasises that hunger and malnutrition are not caused by a lack of food and, therefore, are not a production problem. He warns that when aquaculture responds primarily to increased consumption, it can create risks for long-term food insecurity.[109] As the following cases demonstrate, the expansion of industrial aquaculture can divert nutritionally valuable fish away from fishing communities and compromise people's realisation of the right to food.

In The Gambia, bonga fish (small pelagic fish rich in protein and calcium), which traditionally supported local diets as a main source of protein, are increasingly diverted into fish oil and fish meal for sale to fishmeal factories owned or financed by foreign actors.[110] A similar pattern is observed in Senegal, where fish destined for local consumption are funnelled into fish oil and fishmeal production to feed corporate value chains.[111] A Foodrise study found that, in 2020, Norway's salmon farming industry extracted large amounts of fish from West Africa to make salmon feed.[112] This amount of fish could have provided up to 4 million people in West Africa with a year's supply of fish — more than the entire population of The Gambia.[113]

As more fish is diverted into fish oil and fish meal, fishing communities in Senegal have less fish available for direct consumption — per capita fish consumption fell from 18 kilograms in 2008 to 9 kilograms in 2018.[114] At the same time, because their livelihoods depend on local fisheries, declining catches and incomes leave these communities less able to afford other foods. This concern is highlighted by Elisa Morgera, the UN Special Rapporteur on Climate Change, who reported that '*the current reliance of industrial aquaculture on fishmeal and fish oil from nutritionally valuable fish raises serious human rights concerns in relation to declining access to food*'.[115] Astrid Puentes, the UN Special Rapporteur on the human right to a clean, healthy, and sustainable environment, argues that '*the production of fish oil, fishmeal, and farmed fish target vast amounts of fish critical to the food security and livelihoods of coastal communities, particularly in the Global South. Fishmeal to feed industrial aquaculture and fish oil used in the food supplement and cosmetics industries are largely consumed in industrialised countries, threatening the food security of people in developing countries*'.[116] This is a threat to food sovereignty, as fisher peoples can no longer decide what they eat, while their traditional food sources continue to decline drastically.[117] While fish meal can be sourced from other types of fish, fish oil from small pelagic fish is diverted from local diets to feed industrial farmed salmon and shrimp.

There is another layer of conflict: While the FAO reports efforts to reduce dependence on fish feed by relying more on cereal grains and soy to feed industrial aquaculture — which apparently remains a priority for the FAO ('*We can't produce more fishmeal, we want to produce proper feed*'[118]) — it is not possible to entirely eliminate wild fish from aquaculture feed because certain nutrients, such as amino acids, are obtained from wild fish. Yet rising demand for soy, driven by the expansion of industrial monoculture, has been associated with land conflict and violence against the Indigenous Peoples in the Amazon.[119, 120] Agrochemical application on local crops affects the environment and damages traditional organic crops. This shows how industrial aquaculture also affects farmers and inland communities, stripping them from their sources of traditional food and livelihoods.[121]

The examples above show how aquaculture, through its demand for feed, whether fish- or grain-based, can take local sources of protein out of communities and undermine their ability to attain a healthy diet. Indeed, the FAO acknowledges that small pelagic species provide substantially greater nutritional value (i.e., omega-3 fatty acids) than larger species, which is used to feed farmed fish and shrimp. For instance, 100 grams of small fish provides, on average, 26% of the recommended calcium intake and 72% of the recommended intake of omega-3 fatty acids for adult women, compared with just 12% and 51%, respectively, from larger fish.[122]

In Chile, farmed salmon is not part of the traditional diet and is too expensive for local communities to afford. As artisanal fishers have no other option but to work in processing plants, they are no longer able to produce culturally appropriate food for their own communities. This is contributing to the transformation of local diets, which depends more on ultra-processed commodities, fruits, and vegetables produced and distributed by industrial agribusiness.[123]

Thailand's Ban Pred Nai community clearly illustrates the impact of industrial aquaculture: Households that once enjoyed a diverse and nutritious diet have become dependent on purchased food following the loss of local food systems. The community's food bank and livelihoods were destroyed by the expansion of shrimp farms.[124] More recently, affected communities have begun efforts to recover their traditional food systems.[125, 126]

The cases expose a paradox at the centre of industrial aquaculture: While global industrial aquaculture production increases, access to nutritious and affordable food often declines among the very people who depend on local food systems — a sign of *worse nutrition*. The expansion of industrial aquaculture co-exists with the erosion of people's food sovereignty and food and nutrition security.

The case of Aquabounty from the United States (US) further demonstrates that the right to food and nutrition is threatened not only through declining access to fisheries but also through concerns over food quality and safety ('adequacy'), in contrast to what *Blue Transformation* envisions. The possible future commercialisation of genetically modified salmon could undermine the adequacy of the right to food if food safety and consumer health standards are not fully upheld. Similarly, Chile's salmon industry relies heavily on antibiotics, raising concerns about antimicrobial residues and their potential implications for food safety.[127, 128] The extensive use of antibiotics and chemicals in salmon farming can cause antibiotic resistance in people and may disrupt marine microfauna.

Despite Better Nutrition's call to uphold the right to food, and Blue Transformation's acknowledgement that food is a fundamental human right, reflected in its guiding principles, the cases reveal a clear retrogression in communities' right to food and nutrition. This right extends beyond calorie intake to encompass accessibility, adequacy, availability, and sustainability of food. Fisher peoples, Indigenous Peoples, and coastal and inland communities documented in the cases were able to realise their right to food and nutrition before the arrival of industrial aquaculture in their territories. Food was not only available but also adequate, and nature provided its sustainability for their future. Aquaculture operations have undermined access to customary commons, forcing fishers to travel further offshore and spend more on fuel. This places additional pressure on already limited household budgets and reduces the communities' ability to feed themselves.



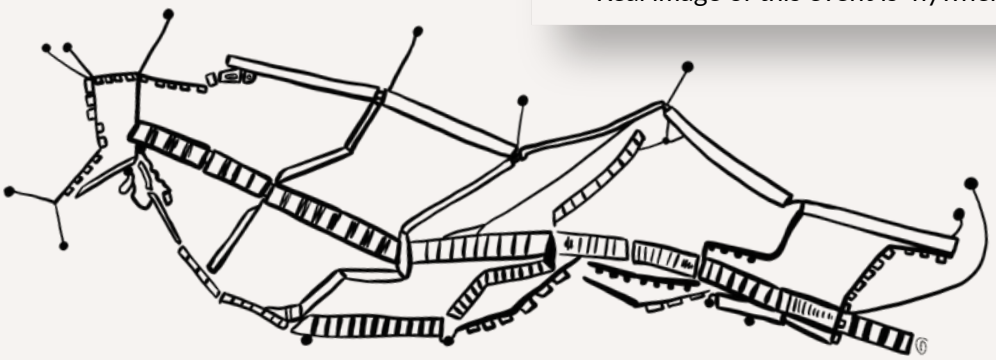
Improper hydrochloric acid (HCl) storage with puddle of acid leaking near the barrel opening at the AquaBounty fish farm in Indiana. Staff were not properly trained in safety procedures. Photo: Braydon Humphrey, April 2019.

Aquaculture is feeding the rich, NOT 'feeding the future'

The cases in this report reveal that increased production and market integration do not improve nutrition when aquatic foods are diverted to export markets and high-value consumers rather than reaching nutritionally vulnerable populations (see 'Part 2: Evidence'). Instead, we observe export orientation, declining local consumption of aquatic foods, and the erosion of the livelihoods of fishers and fisher women, exposing a profound gap between *Blue Transformation*'s promise of Better Nutrition and the lived realities of fisher peoples, Indigenous Peoples, and coastal communities. Rather than 'feeding the future', industrial aquaculture appropriates and destroys local food systems.

Cooke's Cypress Island's net pen collapsed in 2017,[129] releasing over 260,000 non-native Atlantic salmon into the Pacific Ocean, dramatically impacting the ecologies and fishing livelihoods of Indigenous Peoples from the Lummi Nation, Salmon People.[130] Jay Julius, Chairman of the Lummi Nation, testified before the US Senate Committee on Commerce, Science and Transportation on October 16, 2019, at a hearing entitled 'Feeding America: Making Sustainable Offshore Aquaculture a Reality', that offshore aquaculture is neither sustainable nor does it feed America. What industrial aquaculture did was exactly the opposite, because the Lummi Nation had to mobilise its fishing fleet to remove the escaped fish one by one and protect native Pacific salmon populations.[131]

2017 Cooke Aquaculture net pen collapse illustration. Real image of this event is nywhere on the internet.



Such fish escapes also happen in inland industrial aquaculture. Although not part of the ten case studies, Icelandic land-based salmon hatchery, Haafell, reported an escape incident in September 2024. A leak that occurred during a transfer resulted in the escape of hundreds of juvenile salmon,[132] threatening wild populations, as interbreeding can alter their genetic diversity and potentially undermine their fitness, while escaped farmed salmon can also introduce diseases and other ecological impacts.[133, 134] One study concludes that nearly one-third of the world's marine ecoregions are at risk, to varying degrees, from the ecological impacts of farmed fish escapes.[135] This area of study will likely grow as industrial aquaculture increases.

Another stark example that challenges the claim that aquaculture is 'feeding the future' comes from Chile, where the government dumped approximately 9,000 tonnes of decomposed farmed salmon into the Pacific Ocean following a massive algal bloom. The salmon had been treated with formic acid to accelerate decomposition and reduce contamination, but the dumping ultimately exacerbated the environmental impacts of the bloom (for more detail, see 'Better Environment').[136] Also, in Colombia, mass fish kills have been reported in association with increasing levels of eutrophication.[137, 138]

These cases demonstrate not only the prevalence of disease but also the constant need for waste from monoculture production to be absorbed by surrounding biodiverse ecosystems. Periodic disease outbreaks thus indicate the environmental limits of sustaining monoculture production, with disproportionate impacts on local food systems. For instance, Thailand became one of the world's largest shrimp exporters, generating substantial foreign exchange and communities lost access to their ecosystems that had supported their food systems for generations. Yet in Ban Pred Nai, rice farming disappeared as rice fields and mangroves were converted into shrimp ponds, depriving communities of important sources of food. Communities thus bore the ecological costs of shrimp production, while the economic gains flowed to the state, investors, and shrimp pond owners.[139]



The Ban Pred Nai mangrove conservation group has put up signs campaigning to stop catching crabs during their spawning season.

In Chile, domestic and transnational corporations, such as Aquachile, Cooke Aquaculture, Mowi, Cermaq, Multi X, Australis Mar, control hundreds of aquaculture concessions within protected areas[140], while artisanal fishing communities have lost access to their customary commons, limiting their intake of fish protein and threatening the continuation of their fishing livelihoods, with profound social and environmental impacts.[141, 142]

Taken together, the cases clearly show that industrial aquaculture does not 'feed the future'. Its costs extend far beyond fish farms and shrimp ponds, accumulating through the enclosure of commons and the loss of essential food-producing resources, while exposing the environmental and ecological limits of intensive monoculture through fish escapes, disease outbreaks, and mass mortality. These impacts disproportionately impact local food systems. At the same time, each major outbreak requires substantial financial investment, revised production methods, new technologies, and regulatory interventions, creating tensions between industry stabilisation and efforts to reduce external harms.[143] This creates a treadmill of investment in which each cycle of disease, mortality, and adaptation makes maintaining monoculture production increasingly costly.

Both Better Nutrition and *Blue Transformation* emphasise the importance of supporting the most vulnerable groups. The testimonies show that the burden of aquaculture expansion falls disproportionately on the very groups these policies are intended to support. In Sri Lanka, most of the women who traditionally harvested wild shrimp have lost their livelihoods; those who continue to work in polluted waters to secure access to food, face skin irritation and infections due to their exposure to chlorine and other chemicals used by the industry.[144] Similarly, women in Senegal explain how fish processing, once sufficient to feed and support their families, is no longer economically viable because fishmeal factories purchase much of the available fish.[145] Similar testimonies were shared by Quilombola Peoples. For example, in Brazil, Cleomar Ribeiro, president of the Quilombola Association of Cumbe in Aracati, regularly harvested fish and shellfish from mangroves and tidal channels to feed their families. In the US, ecological degradation caused by industrial aquaculture has *'dismantled the entire food system that sustained Passamaquoddy people for millennia, as fish species which once supported local livelihood and entire food systems disappeared'.* According to Eric Altvater, a Passamaquoddy tribe member, and Hugh Akagi, Chief of the Peskotomuhkati Nation, '*the seven-generations principle*[vi] *which is connected to the long lifespans sustained by the traditional diet can no longer be practiced due to the gutted ecosystems*'.

Worst Nutrition: Industrial aquaculture is not solving hunger or contributing to the healthy diets of those it claims to serve. Instead, it is diverting small pelagic fish, a primary source of protein for coastal and fisher peoples, into fishmeal and oil for farmed species raised for export markets. This is nutritional dispossession: the removal of accessible protein from the communities that depend on it and its transfer through feed supply chains to consumers elsewhere. Industrial aquaculture is also contaminating and destroying local food systems and food sovereignty. The result is a violation of the right to food and nutrition, compounding the pressures on fisher peoples already struggling to sustain their fishing ways of life.

Better Environment?

Better Environment aims to '*protect, restore and promote sustainable use of terrestrial and marine ecosystems and combat climate change through more efficient, inclusive, resilient and sustainable agri-food systems*'.[146] Through the Blue Transformation agenda, this pillar contains several action areas that intersect with climate change, bioeconomies, and biodiversity. Specifically, Better Environment includes the following objectives: 1) climate change mitigation and adaptation in agri-food systems; 2) a bioeconomy for sustainable food and agriculture; and 3) biodiversity and ecosystem services for food and agriculture.

Evidence

Fuelling Climate Change

Intensive aquaculture contributes to climate change. In Chile, salmon eggs are incubated in freshwater hatcheries before juvenile fish are transported by wellboats over thousands of kilometres to marine farms in Patagonia.[147] Once they reach market size, the fish are transported back to processing plants concentrated in Chiloé before being exported to international markets.[148]

[vi] The seventh-generation principle is a Haudenosaunee (an alliance of six Indigenous American nations) concept and way of life. It states that actions and decisions must be made with concern for the well-being of those seven generations into the future. See https://toolshed.org/resource/seventh-generation-principle/

As argued by Marcela Ramos from Slow Food Chile, this constant movement of fish, workers, feed, fuel, and equipment creates '*an enormous carbon footprint*'[149] that is largely omitted from industry sustainability narratives.[150] A 2026 assessment estimated that Chilean farmed salmon has a carbon footprint of 7.2 kilograms CO2e per kilogram.[151] By comparison, a study of the artisanal common hake fishery in Caleta Portales, Chile, estimated emissions of only 0.47 to 0.58 kilograms CO2e per kilograms of fish landed.[152]

An important aspect is the use of pelagic fish for fishmeal and fish oil (FMFO) production. These fish play an important role in the capture and storage of carbon in the oceans, and their removal for FMFO production affects this process and contributes to climate change.[153] In Senegal and The Gambia, community members explain '*Those fishing vessels are harvesting our fish to take fish oil to their countries while they are selling to us farmed fish*'.

Fish faeces, uneaten feed, and dead salmon accumulate beneath the cages, increasing organic loading and reducing oxygen levels on the seabed.[154] High stocking densities facilitate disease outbreaks, resulting in the routine use of antibiotics, fungicides, and hydrogen peroxide treatments, which are released directly into surrounding waters.[155] Marcela explains: '*The seabed becomes covered by everything that remains beneath the cages, the fish become sick, and enormous quantities of chemicals go straight into the environment*'.[156]

In Colombia, industrial aquaculture has increased eutrophication levels in the Betania Reservoir and worsened mass fish kills.[157, 158] This is linked to high concentrations of aquaculture inputs in a context where water levels drop rapidly due to electricity generation, creating temporary anaerobic conditions that cause phosphorus to be released back into the water column. The sudden nutrient pulse further depletes oxygen levels and accelerates eutrophication[159], which significantly increases greenhouse gas emissions.[160]

In the Indonesian archipelago, shrimp aquaculture operators in Karimunjawa discharged enormous quantities of nutrient-rich wastewater into shallow, enclosed coastal waters with limited capacity for dilution, causing severe environmental impacts.[161] Nitrogen, phosphorus, unused feed, and shrimp waste, along with other chemicals, stimulated algal blooms and oxygen depletion in what has been referred to as one of Indonesia's most 'suffocated' environments.[162, 163] At the same time, waste disposal pipelines were built without permission through the coral reefs, causing direct physical damage and water pollution, killing and bleaching extensive areas of coral, and destroying key spawning grounds for fish such as groupers and snappers.[164, 165]

Destruction of nature and local economies

The economies and ways of life of artisanal fishing communities are built around the dynamics of water, fish, and nutrients, which are central to their territories, livelihoods, and food systems. Industrial aquaculture can erode these economies, shifting control from local communities to export-oriented production and global markets.[166] In the United States, seaweed harvester Severine von Tscharner in Maine has witnessed the impacts of Cooke Aquaculture's salmon farms on her harvest sites: 'I*'ve seen lost* [fish farming] *gear, sulphate sediments after storms, foam coming out of the pens when the tides change.*' Journalist Paul Molyneaux adds: '*The amount of fish farmed here only brings diseases.*[167] *They have a lot of faith in new technologies, and they may make some improvements, but they cannot control all the environmental impacts they cause over time*'.[168]

In 2025,[169] Cooke Aquaculture acquired AquaBounty. Braydon Humphrey, former AquaBounty, employee whose daily responsibilities included water-quality laboratory work, documented serious concerns about conditions inside the company's fish-rearing tanks and about the facility's effluent. Humphrey reported his test results in the company's work-group chat, including instances in which certain water-quality parameters exceeded the measuring range of the spectrometer, far beyond levels he considered healthy for fish. His evidence also includes a manager's own account of facility systems becoming clogged by an excessive accumulation of dead-fish sludge. These findings should be considered alongside violations concerning the property's effluent documented by the Indiana Department of Environmental Management (IDEM).

Although AquaBounty did employ some waste-management measures, including capturing solid waste, arranging for a local farmer to collect dried fish feces and uneaten feed, and using a constructed wetland designed to limit the release of solids, these measures do not negate the documented concerns about water quality inside the tanks, the accumulation of dead-fish sludge, or the facility's effluent violations. Humphrey also documented an incident involving hydrochloric acid fumes leaking from a barrel, adding to broader concerns about worker safety and operational practices at the facility (see video evidence).

In Canada, Geoff LeBoutillier, one of the founders of the Healthy Bays Network, an incorporated non-profit coalition of communities, NGOs, and individuals fighting against open-net pen aquaculture, has been involved in the issue since 2008. He provided a panoramic Following Cooke Aquaculture's disregard for biodiversity and marine ecosystems, the Network claims that 'Bayswater Beach now smells like sewage at certain times of year.[170]



Touba Proteine Marine SA factory, Senegal.

Environmental impacts of industrial aquaculture are driven by the conversion of biodiverse and productive territories (mangroves, wetlands, inland and ocean), feed production, especially fishmeal and fish oil from forage fish and terrestrial crops such as soybeans, and pollution from industrial production.[171] The National Collective of Artisanal Fishers of Senegal (CNPS) reports that the Touba Protein Marine fishmeal and fish oil factory in Cayar discharges polluted effluents into Lake Mbawane, the municipality's main lake, contaminating groundwater with toxic substances[172], while smoke emissions and persistent nauseating odours degrade air quality and affect residents' daily lives. Fishmeal production generates strong odours because large quantities of fish are cooked, pressed, dried, and ground, releasing volatile compounds such as trimethylamine (TMA) and ethyl mercaptan (Ethanethiol), as well as toxic compounds, such as hydrogen sulphide. Poor storage of raw fish and inadequate treatment of wastewater and fish residues can further intensify these emissions. Together with increasing pressure on customary commons, these impacts have become a major source of conflict between the factory and surrounding communities.

In addition to feed pollution, plastics are widely used throughout aquaculture, and their increasing accumulation in terrestrial and aquatic environments threatens the right to a healthy environment.[173] In Chile, storms frequently destroy floating infrastructure, scattering ropes, nets, buoys, and expanded polystyrene across the archipelago's coastline, as noted by Marcela Ramos from Slow Food Chile: '*You only need to walk a few metres to find kilos and kilos of waste from the salmon industry*'.

In Indonesia, industrial farming of Litopenaeus vannamei (whiteleg shrimp) has been rapidly expanding in the Karimunjawa Islands, a marine national park and UNESCO Biosphere Reserve, since 2016.[174] This expansion occurred illegally, involving extensive coastal dredging and mangrove clearance for pond construction. These activities destroyed coastal habitats and vital fish nursery grounds, and removed natural protective barriers, contributing to the decimation of local fish populations.[175] As coastal water pollution expanded, it also damaged coral reefs.[176] Moreover, areas that had been productive seaweed farms were contaminated, and community-run fish cages suffered sudden mass die- offs, destroying the economies emerging from customary commons and their ecologies.

Following Sri Lanka's post-war push to expand industrial shrimp aquaculture, the government designated the area surrounding Vidataltivu for industrial aquaculture development despite the community's own vision for reconstruction, which prioritised fisheries, environmental restoration, women's rights, education, and youth opportunities.[177] None of the community development plans proposed shrimp farming.[178] Yet, after the nearby mangrove ecosystem was declared the Wedithalathivu Nature Reserve in 2016, the National Aquaculture Development Authority (NAQDA) simultaneously advanced plans to establish an industrial aquaculture park.[179] In 2019, Taprobane Seafood, Sri Lanka's leading seafood company founded in 2011, launched whiteleg shrimp farms in the Mannar district, marking the beginning of profound social and ecological change.[180]

A fisherwoman from the Carapitanga community in Brazil, which today is surrounded by shrimp farming ponds, speaks about the changes to the São Francisco River. In her testimony, she states that the construction of canals to supply the shrimp farms has destroyed the mangrove forests, reducing the abundance of fish, aratus,[181] crabs, and shellfish. In 2008, Brazil's Federal Supreme Court ruled to ban the establishment of shrimp farming operations in mangrove areas.[182] However, further south, along the coast of the state of Sergipe, residents of the communities of Pontal (Indiaroba) and Porto do Mato (Estância) have reported that mangrove forests continue to be cleared and converted into shrimp farms. They also claim that after harvest, producers dump water contaminated with chemicals directly into the mangrove ecosystem. Community members testify that '*when they open the tanks, all the poisoned water flows back into the river*'.



Arlene Costa, Fisherworman from Sergipe.

In Ban Pred Nai, Thailand, the mangrove forests had historically protected the coastline from erosion, served as a nursery for marine species, stored carbon, and preserved local ecological knowledge.[183] For the community, the mangrove was their food bank and the ecological foundation of their livelihoods. In the late 1970s, commercial investors first established shrimp ponds, clearing mangroves in the process.[184] Intensive shrimp farming relied on hatchery-produced shrimp seed, chemical water treatments, manufactured feed, veterinary chemicals, mechanical veterinary chemicals, mechanical aerators, and the discharge of untreated wastewater.[185] Earthen dikes, canals, and pumping systems disrupted natural tidal flows, creating stagnant water, acid sulphate soils, and changes in salinity and water quality, and destroying the nursery grounds that supported artisanal fisheries, including shellfish gatherers. Local populations of wild fish, shrimp, mud crabs, mangrove crabs, and shellfish declined sharply.[186] Mr. Amphorn, a community leader, recalled that '*the first shrimp crops were successful. But by the third or fourth cycle, disease outbreaks began to occur and the shrimp started dying. Because we had no wastewater treatment system, diseases spread throughout the entire area. By 1987, the whole production system had collapsed. Rice farming had already disappeared, shrimp farming failed, and virtually every household accumulated debts of three to four million baht*' (~USD 91,000-121,000).

An estimated 70 to 80 households (300 to 400 people) had practised a diversified livelihood system combining rice farming, fruit orchards, rubber plantations, artisanal fishing, and shellfish collection in mangrove forests.[187] However, while Thailand became one of the world's largest shrimp exporters and earned substantial foreign exchange, communities lost access to their customary commons and territories, which were central to their local food systems. In 1987, the environmental destruction led to disease spread and the collapse of shrimp farms. Fishing communities organised and resisted, working to restore mangroves and rebuild their livelihoods.[188] They established a Mangrove Conservation Group, agreed to stop shrimp farming in mangrove areas, prevented further forest encroachment, negotiated with government agencies to reopen blocked tidal channels, replanted mangroves, and developed community rules for the sustainable use of coastal resources. Today, Ban Pred Nai is recognised nationally and internationally as



Pred Nai women with stop Carbon credit campaign.

a leading example of Community-Based Coastal Resource Management and is progressing towards becoming a Locally Managed Marine Area.[189] This demonstrates that fishing communities know what is best for nature and food sovereignty. However, the Better Environment pillar largely ignores traditional ecological knowledge and prioritises unsustainable, industrial, export-oriented aquaculture.

The lack of social and environmental safeguards

In Chile, a member of the *Asociación Nacional de Mujeres Rurales e Indígenas* (ANAMURI), and of the National Union of Women Workers of the Land and Sea, describes the impacts of salmon aquaculture expansion and the mobilisations to resist the resulting ecosystem destruction. In 2016, thousands of island residents of Mayo Chilote blockaded roads amid an unprecedented red tide crisis. The protests were fuelled by widespread criticism of the government's handling of the disaster and by the authorisation to dump approximately 9,000 tonnes of dead farmed salmon into the Pacific Ocean following a massive algal bloom.[190] However, according to Francisco Vera Milliquien, *Werkén* (traditional sociopolitical messenger) of a Mapuche-Huilliche community in Pargua, the so-called 'red tide crisis' cannot be understood separately from this decision. He argues that the salmon dumped at sea were not only dead but already decomposing, and that formic acid had been applied in an attempt to accelerate their decomposition and reduce contamination, ultimately worsening it. He further notes that although the Chilean Navy authorised the disposal beyond the 12-nautical-mile limit, artisanal fishers who witnessed the operation reported that the salmon were actually dumped only about 5 nautical miles offshore, much closer to the coast than officially permitted.

Aquaculture expansion into Patagonia has responded to decades of environmental degradation. A representative of the Assembly of Island Women for Water stated that '*Chiloé is no longer suitable for salmon farming because the water is rotten*'. This shift has progressively moved salmon production into the relatively pristine fjords of Aysén and Magallanes, including areas surrounding nationally protected areas[191] and UNESCO Biosphere Reserves. Scientists, environmental organisations, and UN Special Rapporteur David Boyd have warned that this expansion risks transferring the environmental impacts of industrial salmon farming to some of the world's most ecologically intact marine ecosystems.



Red Tied in Chile after the dump of 9,000 tonnes of dead and rotten salmon.

According to Boyd's 2024 report, salmon farming is one of the main threats to Patagonia.[192, 193] He recommends 'establishing a moratorium on further expansion of salmon aquaculture pending an independent scientific review of the adverse environmental impacts'.[194]

In Canada and the United States, Cooke's operations span coast to coast. In Nova Scotia, the Healthy Bays Network explains that the industrial farm in Bayswater Beach in Saddle Island was relocated illegally in 2018 without the required Aquaculture Review Board hearing.[195] Indeed, in 2025, 131 community letters were submitted to oppose the licence renewal;[196] however, the Nova Scotia Department of Fisheries and Aquaculture approved the renewal of the licence for another 10 years (September 2025 to 2035).[197]

As noted earlier, in Senegal, the Touba Protéine Marine fishmeal and fish oil plant, installed in 2018 in Cayar, is considered by the CNPS to be responsible for numerous violations of environmental regulations and to have significant impacts on local communities.[198] The artisanal fishing sector and local associations joined together to form the Taxawu Cayar Collective to mobilise and make their voices heard. In 2018, the public hearings on the Environmental Impact Assessment were met with opposition from community members. In 2019, the collective launched its campaign by sending letters to authorities and potential allies. On October 6, 2022, the communities presented compelling evidence before the Thiès Court of First Instance of the environmental harm and the unsustainable practices perpetuated by the factory.[199] Although the case was adjourned for deliberation until November 3, 2022, community members considered the hearing a historic breakthrough. As Mor Mbengue, a fisher and coordinator of the Local Artisanal Fisheries Committee (CLPA) and the collective in Cayar, stated: '*This is an important moment for the communities, and we cannot help but rejoice at this historic breakthrough in Cayar. Local communities have the right to a healthy environment.*' In 2023, the collective held meetings to explain the precautionary order and filed a complaint about pollution of Lake Mbawane caused by wastewater discharged by the factory.

In 2024, appeals were submitted to the Minister of Fisheries and the Minister of Environment on World Oceans Day, calling for the factory's closure. In July 2026, the Mbour-Sandiara community protested against BELMEAL, another factory in the Thiès region. The foul odours released by BELMEAL are polluting the local environment and profoundly affecting the local community. Again, we see how fisher peoples are mobilising to demand compliance with environmental laws in contexts of weak regulatory oversight and high impunity.



Senegalese student is covering her face due to the foul smell from the fishmeal factories.

Wastewater discharges from shrimp farms in Sri Lanka have polluted surrounding waters, causing repeated fish kills, degrading mangroves, and threatening one of the Northern Province's most important marine breeding grounds.[200] Community members report the regular use of chlorine and other unidentified chemicals in the ponds. One fisher explained: *'Because of the wastewater and chlorine, white layers have formed in the sea. The mangroves are dying, and small fish and crabs can be seen dead.'*

Importantly, industrial aquaculture certification schemes are also characterised by inconsistencies. For instance, in India, the Corporate Accountability Lab found that certification schemes rely on auditors paid by the industry, which creates conflicts of interest and limits the integrity of certification standards.[203] For the people of Vidataltivu village in Sri Lanka, there is a contradiction between corporate sustainability claims and their lived experiences.[204, 205, 206] Taprobane has received certifications from the Aquaculture Stewardship Council (ASC) and GLOBALG.A.P., and was the first Sri Lankan company to receive a three-star Best Aquaculture Practices (BAP) certificate for shrimp farming.[207] This is particularly important given the ways in which the GSA has emerged within the Blue Transformation Roadmap as a false solution to the environmental and social problems produced by the aquaculture industry.

Worst Environment: The expansion of industrial aquaculture is founded on the destruction of customary commons and territories across mangroves, inland waters, and coastal seas. These ecologies sustain diverse food systems and underpin biodiversity. Customary commons are enclosed and converted into private production sites. Contaminated effluent with chemicals, pesticides, pharmaceuticals from these sites salinises soils, eutrophies waters, and threatens the health of oceans, waters, and fisher peoples. What is destroyed and threatened is not only ecosystems and biodiversity, but also the reproduction of fishing ways of life and traditions.

Better Life?

The FAO's Strategic Framework 2022–2031 operationalises the strategic principle of Better Life, which seeks to reduce inequalities between and within rural and urban areas, rich and poor, and men and women through six Programme Priority Areas: 1) gender equality and rural women's empowerment, including women's '*access to, and control over resources and decision-making*' as a specific commitment; 2) inclusive rural transformation, which promises that the resulting growth will be shared with vulnerable and marginalised groups; 3) agricultural and food emergency response; 4) resilient agri-food systems; 5) Hand-in-Hand Initiatives, committing to giving populations facing acute food insecurity with '*urgent livelihood and nutrition assistance*' through a humanitarian–development nexus and building capacity to withstand future shocks; and 6) scaling up investments, which promises that capital investments will reduce poverty.[208]

Evidence

Grabbing: Turning customary commons into State and Private capital

The expansion of industrial aquaculture is facilitated by states through the granting of concessions, leases, licences/permits, and the creation of programmes with economic incentives and funding for technology innovation to intensify and expand production. Indeed, the starting point in nearly every case is a project that encroaches on customary commons across the mangroves, coasts, rivers, and sea.

In Chile, Pinochet's dictatorship promoted the expansion of industrial aquaculture in Chiloé and Los Lagos, treating the ancestral customary commons of the Mapuche-Huilliche Indigenous community as 'empty spaces', which facilitated the expansion of the industry and positioned Chile as the world's second-largest salmon producer. In 2011, Chiloé was recognised as a Globally Important Agricultural Heritage System (GIAHS) by the FAO,[209] reflecting centuries of cooperative food systems, traditional knowledge, and customary stewardship of *maritorios*[vii, 210, 211] by communities that have lived there for thousands of years. Marcela Ramos, from Slow Food Chile and the Assembly of Island Women for Water, highlights the contradiction of the Chilean salmon industry: '*We are a GIAHS site, yet they still continue to expand the salmon industry in this territory*'.

In Brazil, Cleomar explains that since the 1990s, industrial shrimp farming has progressively enclosed these commons, privatising maretórios, the mangroves and tidal zones (*camboas*), salinising freshwater sources, degrading fisheries, and undermining the community's way of life. She strongly affirms: '*There are no free people in an imprisoned territory*', describing how shrimp farms have surrounded the community and harmed their relationships with the mangroves, tides, and traditional fishing grounds. Similarly, in the Carapitanga Quilombo, a fisherwoman argues: *'Before, we used to fish freely throughout all these areas. Now, in addition to building the fish ponds and dumping chemicals, they also prevent fishers from accessing the territory'.* Meanwhile, in a completely different state, a member from the Porto do Carão community shares a similar experience: '*When the river was free, we had access*.' A key component of a Better Life is *freedom*: freedom of movement, a free river and territory, and free people. This is clearly the opposite of the testimonies above.[212]

The recognition of Indigenous Coastal Marine Spaces since 2016 has begun to challenge the salmon industry's historical dominance over the coastal territories of Chile. *Espacios Costeros Marinos de Pueblos Originarios* (Coastal Marine Areas of Indigenous Peoples — ECMPOs) recognise that coastal waters are not empty spaces available for industrial concessions but territories historically governed and used by Indigenous Peoples for fishing, shellfish gathering, navigation, cultural practices, and spiritual relationships. While requests for ECMPOs are under consideration, new industrial concessions may be restricted, creating direct tensions with the expansion of industrial salmon farming. Rather than treating the coast solely as an economic asset, this framework introduces a different model of marine governance based on collective rights, customary use, and territorial stewardship. In this sense, Francisco Vera Milliquien argues that the conflicts surrounding the Lafkenche Law[viii, 213] reflect a broader struggle over who has the authority to govern Chile's coastal territories and determine their future.

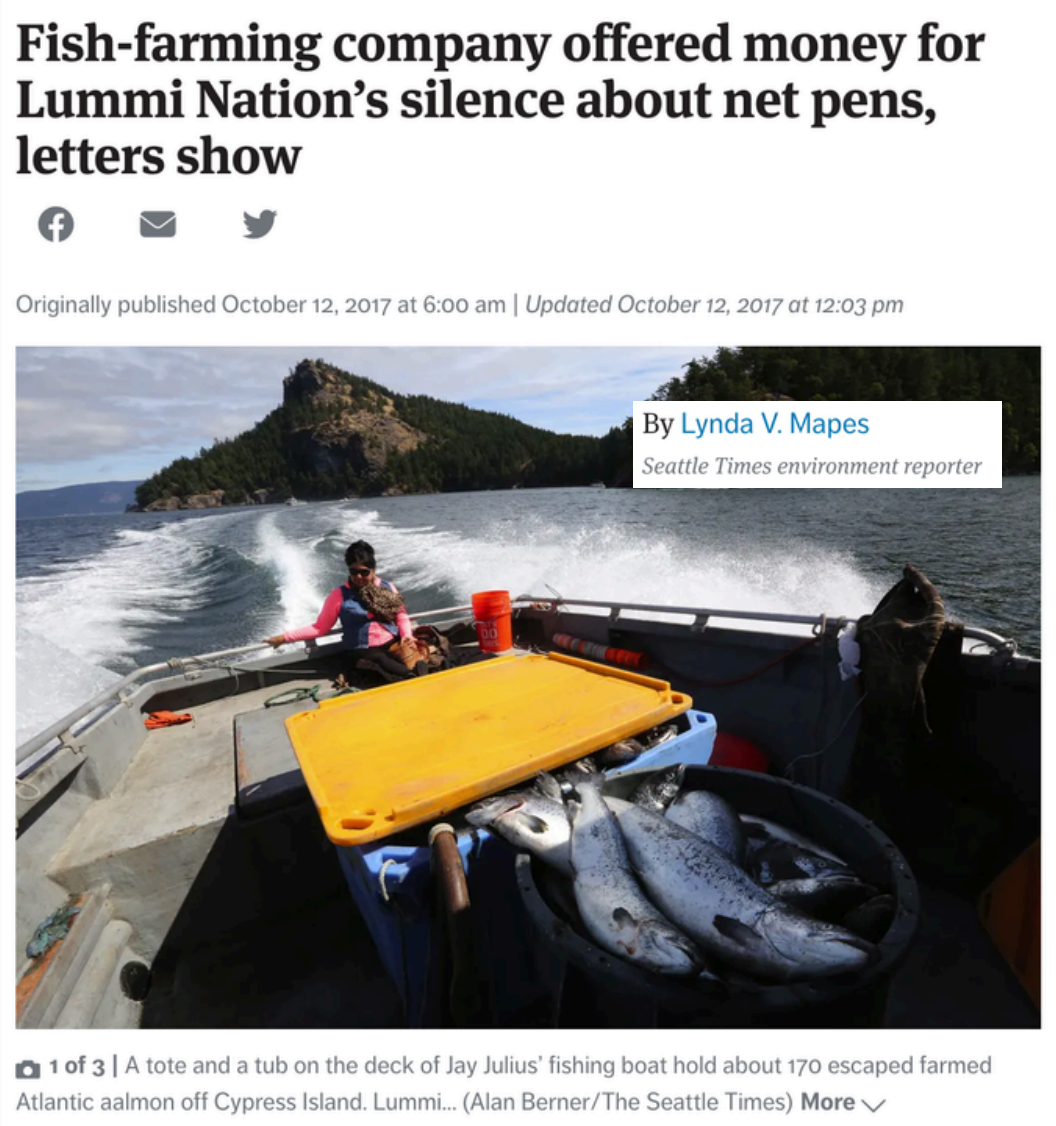
[vii] Maritorio refers to the fundamental relationship that island and coastal peoples have with the sea, land, and coasts. Rooted in a specific place, it recognizes the sea as a space through which communities relate, share culture and language, build their identities, and sustain their ways of life.

[viii] The Lafkenche Law (Chilean Law No. 20.249), enacted in 2008, recognizes and protects the ancestral and customary use of coastal marine spaces by Indigenous communities in Chile. It created the Espacios Costeros Marinos de Pueblos Originarios (ECMPO), a legal mechanism through which Indigenous communities can seek the administration of specific coastal areas to safeguard their historical, socio-cultural, and ecological relationships with the sea, maintain customary practices and traditions, and protect their use of natural resources.

This shift is also reflected in recent scholarship,[214] which identifies the emergence of Indigenous coastal governance as one of the first significant challenges to the territorial hegemony of industrial salmon aquaculture in southern Chile. According to a report released by the Salvemos La Patagonia campaign in 2024,[215] there are 532 concessions of industrial salmon farms in the Los Lagos region, excluding processing plants and other facilities.

Companies such as AquaChile, Mowi, Australis, Mar, Multi X, Nova Austral, Los Fiordos, and Cooke Aquaculture collectively control hundreds of concessions within protected areas, many of which belong to multinational corporations headquartered in Canada, China, and Norway.[216]

In the US, Cooke Aquaculture has attempted to cover up the disaster caused by the collapse of a massive salmon net pen in 2018, offering payments for recovered fish if the Lummi Nation would withdraw its opposition to industrial open-net salmon farming.[217] The proposal was rejected. As then-Chairman Timothy Ballew responded in an interview with The Seattle Times: 'To be perfectly clear, the Lummi Nation is not willing to be muzzled for an additional $12 per fish'.[218] He responded to Cooke Aquaculture by saying, '*Your demand to keep quiet for a few extra dollars is insulting*.'[219] More recently, Lummi fisherwoman Ellie Kinley summarised what is at stake in even simpler terms: 'Salmon is culture, and our culture is salmon'.



Fish-farming company offered money for Lummi Nation's silence about net pens, letters show

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By Lynda V. Mapes
Seattle Times environment reporter

1 of 3 | A tote and a tub on the deck of Jay Julius' fishing boat hold about 170 escaped farmed Atlantic aalmon off Cypress Island. Lummi... (Alan Berner/The Seattle Times) More

Escalating gendered inequalities

The evidence documented shows that women's labour is undervalued through multiple mechanisms. In Sri Lanka's Vidataltivu, women who once harvested wild shrimp in the backwaters report that wild shrimp have nearly disappeared and that polluted water causes severe skin irritation, yet some continue harvesting anyway, '*because their families face increasing hunger*'.[220] As reported by the Corporate Accountability Lab in 2024, migrant Dalit, Adivasi, and fishing communities in India's shrimp value chain,[221] particularly women, are subjected to debt bondage, forced and child labour, exposure to toxic chemicals without protective gear, frostbite from prolonged handling of frozen shrimp, overcrowded and unsanitary facilities, sexual harassment, and surveillance by security guards.

Scaling up investment as concentration of capital and power transform rural communities

The cases in Brazil, Canada, Chile, and the US illustrate that as capital scales up, it narrows rather than distributes participation, accumulating benefits in fewer hands.

Since 2016, in Brazil, the Potiporã industrial shrimp farms[222, 223] invested more than R$300 million (~ USD 57 million) to expand production.[224] A further R$50 million (~USD 9 million) was invested to double feed production by 2026, resulting in a workforce of 1,400. This has involved both the migration of workers from other municipalities within the region and the labour transition of local artisanal fishers, many of whom end up migrating or entering the industry's cheap workforce.[225]



Protest and media briefing held on 30 July near the Rekawa Lagoon in Hambantota District, on Sri Lanka's southern coast against Taprobane S.A.

In just the past decade, Cooke Aquaculture has increased their investments under one corporate supply chain across four continents.[226, 227, 228, 229, 230] Chile's 532 concessions, held predominantly by Canadian, Chinese, and Norwegian multinationals, demonstrate the geographic logic of this consolidation.[231]

Industrial aquaculture as the disaster: Hand-in-hand responses to food emergencies

In Senegal, the CNPS reports that many fishing families now live in extreme poverty as the fisheries that once anchored local diets are now depleted to feed fishmeal factories. In Karimunjawa, the collapse of seaweed income left collectors such as Paimah trapped in bank debt exceeding Rp103 million (~USD 5,760),[232] with no institutional recovery mechanism; relief came only after sustained community pressure forced the government to ban the industry, not from a targeted humanitarian-development response.[233] In Sri Lanka's Vidataltivu, of the roughly 600 fishers who once went to sea, only half continue today, as rising fuel costs and declining catches, both linked by residents to shrimp-farm pollution, have made fishing economically unviable.[234] Residents have petitioned authorities since 2019 with no acknowledged response. Thailand's Ban Pred Nai shows the same pattern in an earlier period, when shrimp farming collapsed in 1987 and '*virtually every household accumulated debt of three to four million baht*' (~USD 91,000-121,000). Recovery came from villagers organising, not from the government.[235]

Testimonies reveal that debt is a common factor across impacted communities, binding households to the cash economy introduced by the industry even after that economy fails and, for many, threatening the continuation of artisanal fishing ways of life. As illustrated in previous sections of this report, abundant ecosystems, local economies, and rural cultures have been decimated by the onslaught of industrial aquaculture. When and if the industry leaves, little is left behind for those bearing the costs and impacts.

A Better Life is incompatible with violence

Early on, in Honduras, the Committee for the Defense and Development of Flora and Fauna of the Gulf of Fonseca (CODDEFFAGOLF),[236] founded in 1988, played a key role in representing fishing peoples and their communities in Central America, successfully mobilising for a moratorium on the construction of shrimp farms in Honduras in 1996 and documenting 60 instances in which the industry violated the moratorium.[237] Two members of CODDEFFAGOLF were killed, and leaders, such as Jorge Varela (Goldman Prize Winner in 1999), were under threat.[238]

The Environmental Justice Foundation's report, *Smash and Grab: Conflict, Corruption and Human Rights Abuses in the Shrimp Farming Industry*, found that the use of violence is integral to the expansion of industrial aquaculture. The industry and their supporters use violence to deter resistance while relying on state-led and private security forces to harass, intimidate, and murder activists, community members, and journalists.[239] Their report documented killings, sexual violence, false arrests, and intimidation in the Bangladesh, Brazil, Ecuador, India, Indonesia, Guatemala, Honduras, Mexico, Philippines, Thailand, and Vietnam.[240] As their report notes, '*In at least eleven countries, people protesting the expansion of shrimp aquaculture have been murdered. In Bangladesh alone, over 150 lives are thought to have been lost. Perpetrators of acts of intimidation or violence have rarely been brought to justice*'.[241] There is also documentation of human rights abuses connected to salmon farming in southern Chile, including more than 50 accidental deaths by 2008, alongside labour exploitation and sexual harassment.[242]

As highlighted by the SOFIA 2026 report, the industry is also seeking to expand its relationships with other sectors. This is not new. For instance, the Betania Reservoir, built in Colombia for hydropower and agricultural irrigation in the 1980s, is now Colombia's largest inland aquaculture zone. Fishers have been displaced from their traditional fishing sites and are now labelled by industrial operators as thieves for catching fish in areas where industrial aquaculture cages are located. This stigmatisation of fishers has been used by armed groups to legitimise repression and restrict access to fishing areas.[243] This highlights how the expansion of industrial aquaculture operates within older trajectories of violence, where armed groups also control access to fishing areas.[244] In 2023 alone, eleven fishers were assassinated in the surrounding area of the reservoir.[245]

In Karimunjawa National Park, Central Java, Indonesia,[246] Daniel Frits Maurits Tangkilisan, an environmental human rights defender from the Karimunjawa Struggle Movement, was charged under Indonesia's Electronic Information and Transactions (ITE) Law after posting criticism of the resulting pollution on social media in June 2023. He was arrested the following December.[247] The court found him guilty, while three other activists were also reported to the local police in November 2023 over a video they posted on social media in 2019.[248] Daniel was acquitted on appeal in 2024.[249]

The grabbing from the aquaculture industry is resisted and confronted with the brutality of state-led, private and illegal armed forces.[250, 251, 252] This also reveals the lack of institutional mechanisms to protect customary and tenure rights for ocean, waters, and fisher peoples, including Indigenous Peoples across land, water and sea. In Pendências, Brazil, fishers avoid fishing near industrial shrimp farms at night because of private security patrols and restrictions imposed by the company. Similarly, in the Porto do Mato community in Sergipe, when a large mangrove area that was a main fishing ground was cleared in 2020 to install shrimp ponds, fishers were violently prevented from accessing the area by private actors.[253] As one fisher explained, '*Many of them were forbidden to go there. They were threatened, had guns pointed at their heads so they would never pass through there again*'.

Worst Life: The grabbing and conversion of customary commons into state and private capital are facilitated through the use of concessions, licences, incentives, and reforms. The impacts are dramatic and unevenly distributed, disproportionately affecting Indigenous Peoples and racialised communities and fuelling gendered inequalities, as women fish processors and traders are outbid, displaced, and devalued. The push to scale up investments is driving the concentration of capital and power in the hands of domestic and foreign elites, transforming rural economies by increasing local inequalities and threatening food sovereignty. Here, the arrival of industrial aquaculture is itself a disaster, exposing communities to violence from public, private, and illegal armed forces. As communities organise to resist and take a stand to defend their territories/*maritorios* and customary rights, they are met with harassment, intimidation, criminalisation, and killings.

Conclusion

The *Blue Transformation* feeds into **five decades of harm** from the expansion of industrial aquaculture, which predates the 2022 framework by generations (see 'Part 2: Evidence, Long History of Violence and Resistance Against Industrial Aquaculture'). It thus, extends institutional legitimacy and continuity to an extractive model that failed to deliver on any of the Four Betters it claims to serve, as demonstrated above. As the World Forum of Fisher Peoples put it at its 2024 General Assembly (GA8), the rebranding of industrial aquaculture as 'blue' functions as cover for corporate profit, not as evidence of transformation.

The GSA proceeds instead on the premise that the harms of industrial aquaculture are technical problems awaiting technical solutions. It offers no mechanism to assess whether the industry is sustainable and no means of halting its expansion where it is not.

States have already committed, through the SSF Guidelines and United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP) and United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), to securing the tenure rights and territories of ocean, water, and fisher peoples. The cases documented here, along with decades of evidence on the violence and destruction driven by the industry, show that these obligations remain unenforced.

The expansion and intensification of industrial aquaculture is part of a capitalist economic system rooted in colonialism, patriarchy, and racism. As shown by the cases in this report, the industry feeds and grows from the reproduction of forms of oppression that threaten customary commons across land, water, and sea and undermine food sovereignty to serve capital accumulation. The outcome of the expansion and intensification of industrial aquaculture is devastating. This is not limited to production sites but manifests across its global value chains, sustained by exploitative labour regimes and the destruction of nature, with different manifestations across space.

What is shared across these experiences is what makes solidarity possible: Ocean, water, and fisher peoples, workers, women, Indigenous peoples, and traditional food producers confront the same industry and institutions that legitimise its expansion and violence.

Demands and alternatives

Agroecology or *aquaecology* (as used by some fisher movement leaders) denotes food sovereignty in action, encompassing not only the techniques, knowledges, practices, and relationships that enable food production, but also those that strengthen social organisations, keep traditional knowledge alive, build local knowledge, and strengthen the customary rights and sovereignty of fisher peoples. The demands from the global fisher movement are clear and have persisted for decades, which are founded on the six food sovereignty pillars: food for people, localised food systems, putting control locally, valuing food providers, building knowledge, and working with nature. This agenda is also founded on a *5Rs framework of Recognition*, *Restitution*, *Redistribution*, *Resistance*, and *Regeneration*,[254, 255] which, in terms of fisher peoples' territorial justice, requires:

- **Recognition**: Recognising, restoring, and protecting the customary and tenure rights of ocean, waters, and fisher peoples. Acknowledging customary, collective, fluid tenure across land, water, and ocean, including fishing grounds as *territories* (and other grassroots territorial configurations such as *maritorios*).
- **Restitution**: Returning coastal, riverine, and marine spaces seized for industrial aquaculture, as well as the upstream and downstream industries that feed into production and circulation.
- **Redistribution**: Redistributing tenure rights — expropriating the expropriators. Breaking up the concentration of benefits across its many classes and forms, from local actors to global corporations, by reallocating access to fishers, peasants, and working peoples.
- **Resistance**: Stopping the expansion of industrial aquaculture. Mobilising against the violence, killings, and criminalisation of ocean, waters, and fisher peoples, as well as workers within the industry. Resisting the grabbing and destruction of customary commons, gendered violence in production and processing, violence against Indigenous Peoples, and the exploitation of workers within globalised food systems.
- **Regeneration**: Working to regenerate what has been destroyed. Collective, embodied, and politically situated healing of territories and communities, in which ocean, waters, and fisher peoples hold decision-making authority over what is repaired, how, and to what end.

Food sovereignty and social justice movements through the *Nyéléni Common Political Action Agenda (CPAA)*[256] commit to an internationalist agenda of solidarity, connecting the struggle against industrial aquaculture to other forms of capitalist violence and working collectively to dismantle the political structures that maintain and reproduce existing forms of oppression.

What is at stake at COFI 37 and at the SSF Summit is not better guidance for a sector whose expansion depends on violence, but whether governments will listen to global fisher and food sovereignty movements and enforce the human rights they have already recognised, under the Universal Declaration of Human Rights, international human rights law, UNDROP and UNDRIP, the SSF Guidelines and core labour standards — including the right to food and nutrition — and hold those responsible for violations accountable, or continue to benefit from and remain complicit in these violations.



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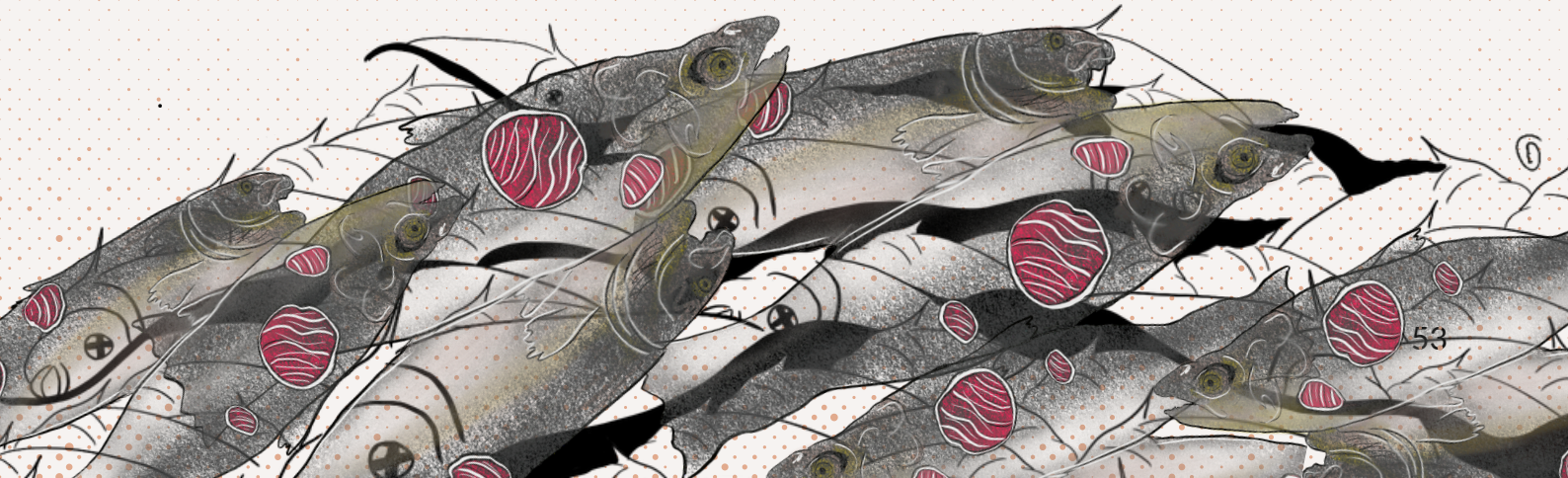


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