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Lost water, lost culture: the dark side of Chilean salmon

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Credit: Roberto Jequier

The project

Companies in the seafood industry face increasing regulatory, financial, litigation, and reputational risks connected to the human rights and environmental impacts of their global value chains. Without actionable policies and clear due diligence mechanisms in place, companies cannot identify, assess, and act on those risks.

Financial institutions providing capital to these companies may also face material risks as a consequence. In this series, we examine the stories behind seafood species frequently seen on supermarket shelves in Europe. Our aim is to learn what the impact of their trade is on the environment and on the lives of coastal communities. EU law is increasingly requiring seafood companies and investors to conduct due diligence across their value chains and portfolios, to identify and address environmental and human rights impacts.

Salmon aquaculture: the fastest growing food production system in the world

Salmon farming has rapidly expanded, now accounting for 70% (2.5 million metric tonnes) of the market, according to WWF. With the world's population projected to reach 9.8 billion by 2050, this industry is expected to keep growing. The FAO forecasts that global salmon production will rise by around 4% in 2023 and again in 2024.

Norway has historically been the primary global producer of farmed salmon, and Chile has now become the second largest. Chilean salmon, valued at $6.5 billion in 2023, ranks as the country's second-largest export, with the USA, Japan, and Brazil being main markets. Exports to several EU member states have also been significant from 2021 to 2024, and the modernisation of the EU-Chile Trade Agreement could increase exports further.

Tonnes of farmed salmon (Atlantic/Pacific) exported to EU countries (2021-2024)
Volume (tonnes)

	Spain	France	Germany	Poland	Belgium
2021	2,274	5,813	3,285	1,168	1,330
2022	3,622	5,489	3,553	2,122	1,797
2023	5,248	3,778	5,205	1,957	2,024
2024 (January/August)	4,645	2,162	2,490	2,523	1,315
Total	**15,789**	**17,242**	**14,533**	**7,770**	**6,466**

Source: Chilean custom's authorities: Microsoft Power BI.

An alien species in pristine waters

The country's salmon industry began in 1969 with the "Programme for the Introduction of Pacific Salmon in Chile", a collaboration with Japan. By 1985, 36 salmon farms were operational, mainly in Los Lagos. However, outbreaks of Infectious Salmon Anaemia, a viral disease, in 2007 and 2008, pushed industry expansion to colder regions in Southern Chile. Today, 99% of Chile's salmon industry is located in the pristine waters and fjords of Patagonia, including regions such as La Araucania, Los Rios, Los Lagos, Aysen, and Magallanes. As of November 2024, there were around 1,343 active salmon farms in Patagonia, with 133 in Magallanes and Antártica Chilena. Funding comes from Chilean investors and foreign sources, particularly in Japan, Norway, China, Canada, and the USA.

Key Facts

Chile produces three types of salmon:

Atlantic Salmon **Coho Salmon** **Chinook Salmon**

(the most common)

In 2022, salmon production in Chile exceeded

1 million
metric tonnes

a 6.6% increase

from the previous year's

938,479 tonnes

This is roughly equivalent to the capacity of four large cruise ships

Most production

70-80%

is exported. Farming mainly occurs in open-net cages along the fjords of the southern coast. The process begins in freshwater hatcheries and transitions to seawater pens for the fattening phase.

Environmental impacts and overproduction

Salmon farming in Chile has lasting impacts on marine ecosystems. Salmon, a carnivorous species, threatens native species, with frequent mass escapes due to poor cage conditions or extreme weather. Farms generate significant waste and organic pollutants, including food, faeces, and dead salmon, which pollute the sea, deplete oxygen, and may contribute to harmful algal blooms, or "red tides". Excessive antibiotic use impacts water quality, microbial communities, and sediment biodiversity, and contributes to antimicrobial resistance. Boat routes for farm operations disturb marine ecosystems, while sea lions are killed to protect cages. Kelp forests, crucial for climate resilience, are also damaged, particularly in the Kawésqar National Reserve, home to Chile's richest kelp ecosystems. In May 2024, Chile's Superintendency of the Environment accused a salmon farm with exceeding production limits by 11% between 2019 and 2021.

Even the salmon feed supply chain is not without environmental impacts. Being a carnivorous species, salmon depends on protein-rich fish feed, such as small pelagic fish. Catching them depletes stocks, particularly in West Africa, where these fish are processed into fish oil and fishmeal. While alternatives such as soy-based feeds are available, these too have environmental costs, often linked to risks of deforestation.

Farming in the Kawésqar National Reserve

Salmon farming has significant cultural and environmental impacts on Indigenous Peoples and local communities, especially the Kawésqar, Mapuche-Huilliche, Mapuche-Lafkenche, and Yagan communities. In the Kawésqar National Reserve, a protected area established in 2019, there are currently 67 salmon farms, with 66 additional concessions under review. This reserve is a crucial cultural and natural heritage site for the Kawésqar People, who have inhabited these lands and waters for around 6,000 years. But consultation processes with Indigenous communities have often been inadequate, leaving them without a voice in decisions affecting their ancestral lands and waters. When the reserve was established, Kawésqar representatives opposed industrial aquaculture within its boundaries.

Communities have reported environmental impacts such as industrial waste on beaches, chemical contamination, changes to the seabed, and salmon escapes. Salmon farming has also led to cultural changes, disrupting traditional practices and community bonds, restricting access to ancestral sites and resources. This has further undermined Indigenous Peoples' rights to their territories, natural resources, and lands. The traditional maritime lifestyle of the Kawésqar, which relies on navigation routes and access to customary fishing resources, has been severely impacted, resulting in longer navigation times and increasing risks.

The alteration of navigation routes and restricted access to ancestral sites and resources directly impact the ability of the Kawésqar to engage in customary activities, such as hunting, fishing, and gathering.

Salmon farming also restricts access to significant archaeological and sacred sites, including "conchales" (seashell mounds) and ritual locations, undermining the Kawésqar's cultural identity and spiritual connection to the land and sea. These are integral aspects of their traditional way of life. Environmental degradation, such as pollution and habitat destruction, further erodes their ability to practice cultural traditions reliant on healthy ecosystems.

Human rights violations

The Kawésqar face potential violations of cultural and participation rights recognised under international law. These include the rights of Indigenous Peoples to their lands and territories as outlined in the Indigenous and Tribal Peoples Convention, 1989 (No. 169) and the United Nations Declaration on the Rights of Indigenous Peoples. Participation in cultural life, guaranteed under Article 15 of the International Covenant on Economic, Social and Cultural Rights (ICESCR) and Article 27 of the International Covenant on Civil and Political Rights, is essential for preserving cultural identity and Indigenous Peoples' connection to nature. The Committee on Economic, Social, and Cultural Rights explicitly recognises the link between culture and the natural environment, stating that: "to take part" in cultural life includes the right "to follow a way of life associated with the use of cultural goods and resources such as land, water, biodiversity, language or specific institutions, and to benefit from the cultural heritage".

The UN Human Rights Committee has recognised that "in the case of Indigenous Peoples, the enjoyment of culture may relate to a way of life which is closely associated with territory and the use of its resources, including such traditional activities as fishing or hunting. Thus, the protection of this right is directed towards ensuring the survival and continued development of the cultural identity. Article 27 of the Covenant, interpreted in the light of the United Nations Declaration on the Rights of Indigenous Peoples, enshrines the inalienable right of Indigenous Peoples to enjoy the territories and natural resources that they have traditionally used for their subsistence and cultural identity. Although the rights protected under article 27 are individual rights, they depend in turn on the ability of the minority group to maintain its culture, language or religion".

Safeguarding these rights requires effective participation, consultation, and transparency in decision-making processes so that individuals are free to express their humanity and identity.

Financial and regulatory risks for the sector

The Chilean salmon industry faces increasing financial risks due to its dependence on biodiversity and vulnerability to climate change. Issues such as algae blooms, overproduction, and sea lice outbreaks contribute to a projected 7% decrease in salmon supply from Chile.

Legal and regulatory risks are also increasing. International standards such as the UN Guiding Principles on Business and Human Rights (UNGPs) and the OECD Guidelines for Multinational Enterprises require companies to respect human rights, including by addressing the protection of the environment across their own operations and all of their business relationships throughout their value chains. These standards set a risk management approach focused on impacts on people and the planet, not just risks to the business.

In addition, several legal frameworks are relevant to the salmon industry and its human rights and environmental impacts. For example, the new Norwegian Transparency in Supply Chains Act requires large Norwegian-based companies to conduct due diligence on fundamental rights across their own operations, the operations of their subsidiaries, and their supply chain, in line with the OECD Guidelines.

Companies are expected to conduct due diligence in accordance with these international standards to prevent and address negative impacts on human rights and the environment within their operations and value chains. Companies that fail to assess, mitigate, and address these impacts, or fail to engage meaningfully with relevant stakeholders, including local communities, expose themselves to increased financial and legal risks.

Banks and financial institutions should require high standards of human rights compliance from companies in the salmon business seeking financing for their operations through a due diligence process, including carrying out human rights risk and impact assessments.

Credit: Daniel Casado