

The aquaculture blind spot: anticipating subsidy displacement after the WTO Agreement on Fisheries Subsidies

Pierre-Jean Clausse

`pierre-jean.clausse@etu.unige.ch`

University of Geneva

Article

Keywords:

Posted Date: October 19th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-11261092/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Additional Declarations: No competing interests reported.

Abstract

The WTO Agreement on Fisheries Subsidies, in force since September 2025, disciplines support to marine capture fishing and expressly excludes aquaculture, which now supplies most aquatic animal production. This Perspective argues that the exclusion invites subsidy displacement through budgets, feed and legal definitions, in a sector where support is barely reported. It proposes notification, a review clause, feed-sourcing conditions and clearer definitions, drawing on European Union State aid control.

Introduction

In 2024, fish farms produced 103 million tonnes of aquatic animals, 53 per cent of the world total, against 92 million tonnes for capture fisheries [1]. Farming now outproduces fishing. The law on subsidies has not followed. After two decades of negotiation, the Agreement on Fisheries Subsidies (AFS) adopted by the World Trade Organization (WTO) in June 2022 [2, 3] entered into force on 15 September 2025 [4]. It is the first WTO treaty to recognise that a trade policy instrument can harm the global commons [5], and it applies to one half of the sector only. A footnote to its first article states that 'aquaculture and inland fisheries are excluded from the scope of this Agreement' [2].

The exclusion had a rationale. The negotiating mandate, restated in Sustainable Development Goal target 14.6, concerned illegal fishing, overcapacity and overfishing [6]. These are problems of open or shared resources. A fish farm is private property, and its owner bears much of the cost of mismanaging it. Sumaila suggests that this is why aquaculture support has escaped the scrutiny applied to capture fisheries, to the point that there is 'not a single published global aquaculture subsidy database' [7]. Estimates exist for capture fisheries: USD 35.4 billion worldwide in 2018, of which USD 22.2 billion enhanced fishing capacity [8], and USD 10.7 billion a year in 2020–2022 across the 41 countries and territories followed by the Organisation for Economic Co-operation and Development (OECD), 65 per cent of which presented a moderate or high risk of encouraging unsustainable fishing in the absence of effective management [9]. There is no equivalent global figure for aquaculture.

This Perspective takes the exclusion as a legal fact and asks what it will do. My argument is that a discipline covering capture and leaving out culture creates an incentive to move public money, and some of the harm that money can cause, to the uncovered side. I call this subsidy displacement. It has not been measured, and with current reporting it cannot be. The right response is therefore anticipatory, in the sense that the literature on anticipatory governance gives the word: building the capacity to observe and steer a development before its effects are settled [10]. I first set out what the Agreement covers. I then describe three routes of displacement and the lack of data. I turn to the European Union (EU), a large jurisdiction where aquaculture support already passes through a legal filter, and end with four proposals.

What the Agreement covers and what it leaves out

Article 1 limits the AFS to subsidies, as defined in the Agreement on Subsidies and Countervailing Measures (SCM Agreement), that are specific and are granted 'to marine wild capture fishing and fishing related activities at sea' [2]. Three limits follow from these words. Farming is out, because it is not wild capture. Rivers, lakes and other internal waters are out, because they are not the sea [6]. And most of what happens on land is out: 'fishing related activities' cover the landing, packaging, processing, transshipping or transporting only of 'fish that have not been previously landed at a port', together with provisioning 'at sea' [2]. A subsidy to a factory vessel is covered. A subsidy to a fishmeal plant on shore is not.

Within this scope the Agreement prohibits three kinds of subsidy: to vessels or operators engaged in illegal, unreported and unregulated (IUU) fishing (Article 3), for fishing an overfished stock (Article 4), and for fishing on the high seas outside the competence of a regional fisheries management organisation (Article 5) [2,11]. Article 8 adds notification duties that go beyond ordinary WTO practice. Members must report the kind of fishing they subsidise and, 'to the extent possible', the status of the stocks, the management measures in place, fleet capacity and catch [11]. Broader disciplines on overcapacity and overfishing were left to a second round of talks. The 2023 draft text, as reported, frames its new prohibition around 'fishing or fishing related activities', terms whose existing definitions are confined to living marine resources [2,6]. That round is still open: in March 2026 ministers agreed only to keep negotiating [12]. Time matters. Under Article 12, if comprehensive disciplines are not adopted within four years of entry into force, the Agreement 'shall stand immediately terminated' unless the General Council decides otherwise [2]. The deadline falls on 15 September 2029.

Aquaculture is not in a legal void. The Agreement on Agriculture does not apply to farmed fish and shellfish, since its product coverage leaves out fish and fish products [13], so support to fish and shellfish farms receives none of the special treatment given to agricultural support. The SCM Agreement applies in full. Export subsidies are prohibited, other specific subsidies can be challenged if they cause adverse effects to another member, and importing countries may impose countervailing duties [14]. These tools are used. The EU imposed countervailing duties on farmed rainbow trout from Türkiye in 2015 [15], and in December 2024 the United States did the same for frozen warmwater shrimp, a largely farmed product, from Ecuador, India and Vietnam [16]. In each case the test is injury to a competing industry. No rule of WTO law asks whether a farm subsidy damages a fish stock, a mangrove or a coastal community's food supply. Table 1 sets out the position.

Table 1. Aquaculture support in existing subsidy regimes.

Regime	Covers aquaculture	What it tests	Transparency
WTO Agreement on Fisheries Subsidies [2]	No (Article 1, footnote 1)	Illegal fishing, overfished stocks, unregulated high seas	Notification with fishery data (Article 8)
WTO SCM Agreement [14]	Yes	Trade effects on other members	Subsidy notifications (Article 25), often incomplete [27]
WTO Agreement on Agriculture [13]	Not to farmed fish and shellfish; fish products are excluded	Trade distortion in agriculture	Domestic support notifications
EU fisheries fund (EMFAF) [28]	Yes	Eligibility under the fund's priorities; negative list centred on fleet measures	Lists of funded operations
EU State aid rules [28–31]	Yes	Competition in the internal market; consistency with the common fisheries policy	Publication of awards above EUR 10,000
OECD Fisheries Support Estimate [9]	No; covers capture fisheries, marine and inland; work on aquaculture monitoring has only begun [7,9]	None (statistical)	Public database

Three routes of displacement

Budget substitution

The first route is the simplest. A fisheries ministry that can no longer pay for fuel or vessels in an overfished fishery still has a budget, a constituency and a production target. Farming is the obvious destination, and governments say so. When India deposited its acceptance of the AFS on 20 July 2026, the 123rd member to do so, the official announcement stressed that 'aquaculture and inland fisheries remain outside the scope of this Agreement' and that farmed shrimp, which dominates the country's seafood exports, falls outside it [4]. China's current five-year plan for fisheries holds the coastal catch at 10 million tonnes while raising total output from 65.5 to 69 million tonnes, so growth has to come from farms [17]. In the EU, about EUR 1.0 billion of the 2021-2027 fisheries fund is allocated to aquaculture, after EUR 1.2 billion in 2014-2020 [18].

None of this is unlawful, and much of it may be good policy. Farmed bivalves need little or no feed [19], the quantity of wild fish used per unit of farmed fish has fallen [20], and the share of fishmeal and fish oil in compound feeds dropped from 23 to 8 per cent over two decades [21]. Majluf and colleagues add that the absolute quantity of fishmeal used has stayed roughly constant, because total feed production has

quadrupled [21]. The point is narrower. Public money is moving to the side of the sector where no sustainability discipline applies and little is reported.

The feed link

The second route runs through feed. About 21 million tonnes of wild fish a year, close to a quarter of capture landings, are reduced to fishmeal and fish oil, and FAO figures cited by Majluf and colleagues show that aquaculture uses 87 per cent of the fishmeal and 74 per cent of the fish oil [21]. Most of the fish reduced are of food grade [22]. Demand from fed aquaculture is therefore demand for capture fishing, and a subsidy that lowers the cost of feed, or of the farms that buy it, passes part of its benefit upstream to reduction fleets. Support for feed costs is among the production incentives that governments give to farms [7].

The link is sharpest in West Africa, where factories process sardinella traditionally eaten in the region [21]. A recent survey located 506 fishmeal and fish oil factories in 63 countries, 42 of them in Mauritania [23]. Under the AFS, the vessels that supply these factories are covered, but a subsidy to them is prohibited only if the stock is overfished or the fishing illegal. The factories are on land and are not covered. Nor are the farms that buy the product. A member could comply with every prohibition in the Agreement while financing the demand that keeps a poorly assessed forage fishery running.

Definitions

The third route is legal. Some farming begins with wild capture. Bluefin tuna, eels, groupers and yellowtails are caught young or lean and fattened in pens, a practice the Food and Agriculture Organization (FAO) calls capture-based aquaculture [24]. The catching is 'fishing' within the meaning of Article 2 of the AFS. The cages, the feed and the fattening are arguably not. The Agreement does not say where one ends and the other begins, and a subsidy scheme can be drafted to sit on the uncovered side of the line. Processing raises the same difficulty: a grant for processing at sea is within the Agreement, and a grant for the same activity in port is outside it. Wherever a treaty draws a line through a production chain, support will tend to be designed to fall on the cheaper side of it.

A data vacuum

Displacement is a hypothesis. It cannot be tested today because the data do not exist. There is no global estimate of aquaculture subsidies [7]. The only regional study identified by Sumaila [7] covers the EU, where structural funds put EUR 1.17 billion into the sector between 2000 and 2014 and a further EUR 1.72 billion was planned for 2014–2020, while production in 2016 was 8 per cent below its 2000 level [25]. The first article in this Collection found that Mexican aquaculture subsidies fell from about MXN 3.8 billion to about MXN 2 billion between 2010 and 2021 while production rose by 127 per cent, and that a diesel subsidy kept until 2019 may have encouraged energy-intensive practices [26]. A University of

British Columbia master's thesis classified aquaculture subsidies and estimated those paid to mariculture in 2020 by China, Indonesia, Norway and Chile, which together account for over 70 per cent of world mariculture production, at about USD 5.24 billion [19]. The OECD has only begun exploring how support to aquaculture might be monitored [7, 9]. That is close to the whole public record.

WTO notifications do not fill the gap. Members must notify all specific subsidies under Article 25 of the SCM Agreement, aquaculture included, but compliance is poor. A study of the notifications made by China and the United States between 1995 and 2016 identified 61 fisheries and aquaculture programmes and concluded that features of the notification framework itself hinder sound reporting [27]. The AFS inherited the WTO's 1995 definition of a subsidy and its approach to transparency, both already contested [5]. Article 8 improves on this for capture fishing. Nothing comparable applies to farming.

The sequence matters. The capture negotiations opened in 2001 and produced a partial agreement in 2022 [3]. If aquaculture follows the same path, with evidence first and rules two decades later, discipline will arrive in the 2040s for a sector that already supplies close to 60 per cent of the aquatic animal food people eat [1].

The European Union as a test case

The EU is the clearest case of a large jurisdiction in which aquaculture subsidies must pass a legal test before they are paid. There are two channels. The first is the European Maritime, Fisheries and Aquaculture Fund (EMFAF), which lists sustainable aquaculture among its priorities [28]. The second is national money. Under Article 10 of the EMFAF Regulation, the State aid rules of the Treaty on the Functioning of the European Union (TFEU), Articles 107 to 109, apply to aid granted by Member States to undertakings in the fishery and aquaculture sector, except for payments made by Member States pursuant to that Regulation that fall within the scope of Article 42 TFEU [28]. National aid must be notified to the European Commission and is assessed under sector guidelines that have applied since 2023 [29], unless it fits a block exemption [30] or stays under the de minimis ceiling of EUR 30,000 per undertaking over three fiscal years, which Member States that keep a central register may raise to EUR 40,000 since 2023 [31]. Individual aid awards above EUR 10,000 are published [29, 30]. Whatever its faults, this is a working system of prior control and public record for farm subsidies. It shows that such a system can be administered.

It also shows where the blind spot sits inside a mature regime. The EU's idea of a harmful subsidy is built around the fishing vessel. Article 13 of the EMFAF Regulation lists what the Fund may not finance: increases in fishing capacity, the construction or import of vessels, engine replacement outside strict conditions, exploratory fishing, and other items [28]. Nine of its thirteen entries concern vessels or fishing activity, and none addresses a risk specific to farming, such as feed sourcing, effluent or escapes. Aquaculture support is framed as something to expand, in line with the Commission's strategic guidelines for 2021–2030 [32]. The European Court of Auditors examined the results in 2023. It found that production had stagnated despite the funding, that Member States had financed almost all eligible

projects, and that no indicators existed to monitor the environmental sustainability of EU aquaculture [18].

Two lessons follow. Transparency and prior control of aquaculture subsidies are feasible at scale, which answers the objection that farm support is too diffuse to notify. And control without sustainability criteria specific to farming achieves little. The EU can say how much it spends on aquaculture. It cannot say whether the spending makes the sector more or less dependent on wild fish.

An anticipatory agenda

Anticipation here does not mean prohibiting aquaculture subsidies. Too little is known to say which of them are harmful, and many are not. It means four modest steps, each of which can be taken inside existing institutions.

First, notify. The Committee on Fisheries Subsidies created by the AFS could invite members to report aquaculture support on a voluntary basis. The six categories proposed by Sumaila (research and development, infrastructure, management programmes and services, marketing, production incentives, and others) offer a ready template [7]. For fed species, the report should add the main feed inputs and their origin. Voluntary reporting to a WTO committee needs no treaty amendment. The thirteen countries that each produce at least 1 per cent of world aquaculture output account together for about 92 per cent of it by weight [7]. They would be enough to start.

Second, write a review clause into the second-round text. The disciplines on overcapacity and overfishing must be agreed before September 2029 if the Agreement is to survive. A single paragraph instructing the Committee to examine, within a fixed period, the effects of aquaculture and onshore processing subsidies on marine capture fisheries would cost negotiators little and would give the question an institutional home. Article 9.4 already requires a review of the Agreement's operation five years after entry into force and every three years after that [2]. The first review should include scope.

Third, close the feed route from the demand side. A member that prohibits subsidies for fishing an overfished stock, as Article 4 requires, can apply the same logic downstream. It can make its own aid to fed aquaculture and to fishmeal plants conditional on feed that does not come from overfished stocks or from IUU fishing. This is a domestic choice. The EU could make it by amending its State aid guidelines and the conditions attached to EMFAF support, and other members could do so through their budget laws. The condition extends an accepted prohibition along the supply chain and requires no new international agreement.

Fourth, settle the definitions. The Committee could adopt an understanding that capture-based aquaculture is fishing up to the point of transfer into a farm, and that support tied to the quantity of wild fish caught or bought falls within the AFS whatever the scheme is called.

None of these steps presumes that displacement is already happening on a large scale. Each would produce the information needed to find out.

Outlook

The AFS was negotiated for the fisheries of 2001. It entered into force in a world where farms supply more than half of aquatic animal production [1], and it may lapse in 2029 unless members finish the work. The second round is the moment to look at what the first left out. A treaty that disciplines the catching of wild fish and ignores the sector that turns a large part of that catch into feed is open to circumvention that no one will be able to measure. Bringing aquaculture into view through reporting and review is cheaper now than it will be once the subsidies are built into farm balance sheets and the constituencies that defend them have formed.

Declarations

Data Availability

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Acknowledgements

A large language model (Claude, Anthropic) was used to prepare a first draft of this manuscript. The author reviewed, verified and revised the text and its sources and takes full responsibility for the content. This study received no funding.

Author contributions

P.-J.C. conceived the argument, conducted the research and wrote the manuscript.

Competing interests

The author declares no financial or non-financial competing interests.

References

1. FAO. The State of World Fisheries and Aquaculture 2026 (FAO, Rome, 2026).
2. World Trade Organization. Agreement on Fisheries Subsidies. Ministerial Decision of 17 June 2022, WT/MIN(22)/33, WT/L/1144 (2022).

3. Lee, Y. S. & Reinert, K. A. The WTO Agreement on Fisheries Subsidies: an assessment and prospects. *J. World Trade* 60, 115–134 (2026). <https://doi.org/10.54648/TRAD2026005>
4. Press Information Bureau, Government of India. India becomes a party to the WTO Agreement on Fisheries Subsidies by depositing its instrument of acceptance. PIB <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2286763> (2026).
5. Hoekman, B. M., Mavroidis, P. C. & Sasmal, S. Managing externalities in the WTO: the Agreement on Fisheries Subsidies. *J. Int. Econ. Law* 26, 266–284 (2023). <https://doi.org/10.1093/jiel/jgad008>
6. Vidal-León, C. The second wave of the fisheries subsidies negotiations: overcapacity, overfishing, and other disciplines. *Glob. Trade Cust. J.* 19, 66–73 (2024). <https://doi.org/10.54648/GTCJ2023064>
7. Sumaila, U. R. Transparency in aquaculture subsidy reporting urgently needed. *Sci. Adv.* 10, eadt5484 (2024). <https://doi.org/10.1126/sciadv.adt5484>
8. Sumaila, U. R. et al. Updated estimates and analysis of global fisheries subsidies. *Mar. Policy* 109, 103695 (2019). <https://doi.org/10.1016/j.marpol.2019.103695>
9. OECD. OECD Review of Fisheries 2025 (OECD Publishing, Paris, 2025). <https://doi.org/10.1787/560cd8fc-en>
10. Guston, D. H. Understanding 'anticipatory governance'. *Soc. Stud. Sci.* 44, 218–242 (2014). <https://doi.org/10.1177/0306312713508669>
11. Lennan, M. & Switzer, S. Agreement on Fisheries Subsidies. *Int. J. Mar. Coast. Law* 38, 161–177 (2023). <https://doi.org/10.1163/15718085-bja10116>
12. Tipping, A., Irschlinger, T., Jose, R. & Bernasconi-Osterwalder, N. World Trade Organization 14th Ministerial Conference outcomes: small wins, progress on reform, and digital trade as deal-breaker. International Institute for Sustainable Development <https://> (2026).
13. Agreement on Agriculture, Annex 1. Marrakesh Agreement Establishing the World Trade Organization, Annex 1A (15 April 1994).
14. Agreement on Subsidies and Countervailing Measures. Marrakesh Agreement Establishing the World Trade Organization, Annex 1A (15 April 1994).
15. Commission Implementing Regulation (EU) 2015/309 of 26 February 2015 imposing a definitive countervailing duty and collecting definitively the provisional duty imposed on imports of certain rainbow trout originating in Turkey. *Off. J. Eur. Union* L 56, 12 (2015).
16. US Department of Commerce. Frozen warmwater shrimp from Indonesia: antidumping duty order; frozen warmwater shrimp from Ecuador, India, and the Socialist Republic of Vietnam: countervailing duty orders. *Fed. Regist.* 89, 104982 (2024).
17. Zhang, C. China's five-year plan for fishing focuses on aquaculture. *Dialogue Earth* <https://dialogue.earth/en/ocean/chinas-five-year-plan-for-fishing-focuses-on-aquaculture/> (24 March 2022).
18. European Court of Auditors. Special Report 25/2023. EU Aquaculture Policy: Stagnating Production and Unclear Results Despite Increased EU Funding (Publications Office of the European Union,

Luxembourg, 2023).

19. Mejaes, B. A. Classifying and Estimating Aquaculture Subsidies and Their Risks to the Marine Environment. MSc thesis, Univ. British Columbia (2021). <https://doi.org/10.14288/1.0398098>
20. Naylor, R. L. et al. A 20-year retrospective review of global aquaculture. *Nature* 591, 551–563 (2021). <https://doi.org/10.1038/s41586-021-03308-6>
21. Majluf, P., Matthews, K., Pauly, D., Skerritt, D. J. & Palomares, M. L. D. A review of the global use of fishmeal and fish oil and the Fish In:Fish Out metric. *Sci. Adv.* 10, eadn5650 (2024). <https://doi.org/10.1126/sciadv.adn5650>
22. Cashion, T., Le Manach, F., Zeller, D. & Pauly, D. Most fish destined for fishmeal production are food-grade fish. *Fish Fish.* 18, 837–844 (2017). <https://doi.org/10.1111/faf.12209>
23. Shea, L. A., Wabnitz, C. C. C., Cheung, W. W. L., Pauly, D. & Sumaila, U. R. Spatial distribution of fishmeal and fish oil factories around the globe. *Sci. Adv.* 11, eadr6921 (2025). <https://doi.org/10.1126/sciadv.adr6921>
24. Ottolenghi, F., Silvestri, C., Giordano, P., Lovatelli, A. & New, M. B. Capture-Based Aquaculture: The Fattening of Eels, Groupers, Tunas and Yellowtails (FAO, Rome, 2004).
25. Guillen, J. et al. Aquaculture subsidies in the European Union: evolution, impact and future potential for growth. *Mar. Policy* 104, 19–28 (2019). <https://doi.org/10.1016/j.marpol.2019.02.045>
26. Peñalosa-Martinell, D., Vergara-Solana, F. J. & Villarreal Colmenares, H. Analysis of the impact of aquaculture subsidies on production, the case of Mexico. *npj Ocean Sustain.* 4, 20 (2025). <https://doi.org/10.1038/s44183-025-00123-8>
27. Formenti, L. Assessing transparency in fisheries subsidies: a notification-driven analysis. *Mar. Policy* 136, 104152 (2022). <https://doi.org/10.1016/j.marpol.2020.104152>
28. Regulation (EU) 2021/1139 of the European Parliament and of the Council of 7 July 2021 establishing the European Maritime, Fisheries and Aquaculture Fund. Off. J. Eur. Union L 247, 1 (2021).
29. European Commission. Guidelines for State aid in the fishery and aquaculture sector (2023/C 107/01). Off. J. Eur. Union C 107, 1 (2023).
30. Commission Regulation (EU) 2022/2473 of 14 December 2022 declaring certain categories of aid to undertakings active in the production, processing and marketing of fishery and aquaculture products compatible with the internal market. Off. J. Eur. Union L 327, 82 (2022).
31. Commission Regulation (EU) 2023/2391 of 4 October 2023 amending Regulations (EU) No 717/2014, (EU) No 1407/2013, (EU) No 1408/2013 and (EU) No 360/2012 as regards de minimis aid for the processing and marketing of fishery and aquaculture products, and Regulation (EU) No 717/2014 as regards the total amount of de minimis aid granted to a single undertaking, its period of application and other matters. Off. J. Eur. Union L, 2023/2391 (5 October 2023).
32. European Commission. Strategic guidelines for a more sustainable and competitive EU aquaculture for the period 2021 to 2030. COM(2021) 236 final (2021).