Petition to the European Parliament
On Omega-3, Fishmeal and Fish Oil: Europe's Dependence on Distant Marine Extraction

Structural Nutrient Detours, Externalised Ecological Costs, Manufactured Demand and the Strategic Case for Marine-Safe Alternatives

Addressed to: European Parliament – Committee on Petitions (PETI)
With a request for formal response from: European Commission (DG MARE, DG AGRI, DG SANTE, DG TRADE)

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1. Purpose of the Petition

Across global fisheries, large volumes of wild-caught fish — amounting to tens of millions of tonnes annually — continue to be processed into fishmeal and fish oil, commodities that the EU both produces in limited quantities and imports at scale to supply aquaculture and feed systems.

As a consequence, the EU remains structurally dependent on distant wild-capture supply chains, with significant volumes of marine biomass routed through feed and aquaculture to deliver omega-3 and marine proteins to European markets — locking Europe into long, fragile nutrient detours and externalising ecological and social costs to coastal regions.

Meanwhile, more direct production pathways — including algae-based omega-3 and fermentation-derived alternatives — already exist but remain marginalised by slow and fragmented regulatory channels. Facilitating these pathways would allow EU companies and farmers to lead in marine-safe nutrient production while reducing ecological and geopolitical risk.

This petition uses two connected case studies — EU fishing activities off African coasts and EU dependence on fishmeal and fish oil imports from South America (notably Peru and Chile) — to demonstrate how structurally elongated "nutrient routes" ("detours") are embedded in the EU food and feed system. These detours displace ecological pressure and social costs to distant marine ecosystems while creating strategic vulnerabilities for EU food security, aquaculture, feed systems and nutrition policy.

As pressures on marine systems intensify and nutrient supply chains evolve, the strategic relevance of European fisheries governance lies not only in managing extraction, but also in shaping the transition towards marine-safe nutrient systems and resilient ocean stewardship. The role of DG MARE and national authorities is therefore central to safeguarding the long-term viability of marine ecosystems and coastal communities.

More direct "shortcut" pathways deserve strategic prioritisation as a means to strengthen European resilience and soft power while mitigating pressure on vulnerable marine and terrestrial ecosystems.

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2. The Structural Detour: From Algae to Fish to Feed to Humans

Omega-3 fatty acids (EPA and DHA) originate in marine microalgae. Fish do not synthesise omega-3 themselves; they accumulate it by consuming algae or organisms that feed on algae. Despite this scientific truth, the dominant EU supply pathway for omega-3 operates through a long

biological and geographical detour, in which omega-3 is extracted from wild pelagic fish and routed through feed and aquaculture systems before reaching the table:

> *marine microalgae (primary production) → wild pelagic fish → fishmeal/fish oil/omega-3 → farmed fish and livestock → EU consumers*

This routing multiplies extraction pressure and conversion losses, disconnects EU consumption from the ecological origins of key nutrients, and ties European food systems to distant extraction sites, where communities far from consumers bear ecological and social costs.

A more direct pathway exists when omega-3 is delivered via wild fish consumed directly:

> *marine microalgae (primary production) → wild fish → EU consumers*

However, the shortest and most direct route — which avoids intermediate biological detours altogether — remains underutilised:

> *marine microalgae (primary production) → omega-3 oils → humans and feed*

Shortening nutrient detours reduces ecological pressure, helps meet climate and biodiversity objectives, lowers systemic risk, and anchors strategic nutrient production within the EU.

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3. Case Study A: African Coasts and Externalised Costs

A significant share of fish reduced into fishmeal and fish oil originates from waters off African coasts and other regions of the Global South. European fleets, operating under legal agreements but in contexts of pronounced power asymmetry and limited local monitoring capacity, extract resources from ecosystems already under pressure. Well-documented consequences include:

- depletion of local fish stocks and pressure on foundational species;
- less food security for coastal populations dependent on fish as a primary protein source;
- social tensions and loss of livelihoods;
- cumulative ecological degradation intensified by climate variability.

From a geopolitical perspective, this clashes with the EU's stated dedication to sustainable development, food sovereignty and fair partnerships, leading to a disconnect between the EU's declared principles and its actions.

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4. Case Study B: Peru & Chile as Supply Nodes in EU Feed Chains

Peru and Chile are among the world's largest producers and exporters of fishmeal and fish oil, with industrial reduction fisheries targeting small pelagic species primarily for feed markets. These supply chains are deeply integrated into EU aquaculture and, indirectly, EU livestock production.

As a result, EU food systems depend materially on:

- distant marine ecosystems subject to climatic variability (e.g. El Niño events) and stock fluctuations;
- large-scale industrial reduction fisheries oriented toward feed not local food security;
- global price volatility and supply shocks translating into feed costs for EU producers.

This dependence embeds EU nutrient security in regions exposed to environmental stress, creating vulnerabilities not captured by conventional food-security metrics focused narrowly on domestic agricultural output.

5. Reframing Omega-3 Demand: Decoupling Nutrients from Wild Fish

Public health messaging, dietary guidelines and market narratives across Europe continue to equate omega-3 intake with fish consumption, despite the fact that omega-3 fatty acids (EPA and DHA) originate in marine microalgae and are only accumulated by fish through the food chain. This framing structurally links omega-3 demand to fisheries pressure and marine extraction.

Correcting this narrative — by recognising algae-based omega-3 and other direct sources as nutritionally equivalent nutrient inputs — would allow the EU to maintain public health objectives while reducing pressure on wild fisheries and fishmeal/fish oil supply chains. Reframing demand in this way is not a cultural or dietary intervention, but a systems-level correction, informed by science and health guidelines, that ensures more resilient and marine-safe nutrient supply.

6. Manufactured Demand and Policy Lock-In

Policy frameworks, production methods, and the prevailing narratives around nutrition, which codify fish as the primary source of nutrients such as omega-3, all contribute to the demand for fish, fishmeal, and fish oil, making it more than just a neutral market phenomenon. This has created structural lock-in across multiple parts of the system:

- aquaculture systems designed around marine-derived inputs;
- feed formulations optimised for fishmeal and fish oil;
- public health narratives that essentially equate omega-3 with fish consumption.

Together, these factors reinforce elongated nutrient detours and marginalise more direct production pathways (such as algae-based omega-3, precision/industrial fermentation inputs, and microbial protein or “microbial meal”), even where such technologies exist and pathways could reduce ecological pressure, supply-chain fragility and geopolitical exposure.

7. What is the Cost

Although some of these technologies currently involve higher costs and investment in new infrastructure, this is characteristic of early-stage strategic industries. These costs should be viewed in the broader context of:

- substantial unaccounted external costs of current supply chains (environmental degradation, depletion of marine resources, geopolitical exposure),
- the long-term economic value of domestic industrial capacity,
- and the role of policy in accelerating learning curves, scaling production and driving cost reductions through innovation and deployment.

Every major industrial sector Europe now considers strategic — from batteries to renewables — was once “too expensive” until policy, scale and learning curves made it competitive. Strategic investment today is precisely what makes these industries competitive tomorrow.

Say something about the current players – this is not about an abrupt change -- the need to slowly diversify for the long term. It also allows new players to enter the

8. Strategic Risk of Inaction for the European Union

Food systems are infrastructure. Delayed deployment of shortcut technologies perpetuates:

- dependence on extractive supply chains beyond EU regulatory reach (e.g. marine resources, imported feed inputs);
- vulnerability to supply shocks, climate variability and geopolitical disruptions;
- reputational risks to the EU's sustainability and biodiversity leadership claims;
- path dependency in legacy systems that lock in higher ecological and economic costs;
- missed opportunities for European firms to establish early leadership positions in emerging nutrient infrastructure.

The strategic risk is not merely environmental, but industrial and geopolitical: Europe risks becoming structurally dependent on technologies, inputs and standards developed elsewhere in domains that are becoming core to future food security and nutrition systems.

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9. Strategic Opportunity: European Leadership in Next-Generation Omega-3 and Nutrient Infrastructure

These are not speculative technologies. Algae-based omega-3 production and fermentation-based nutrient inputs are already scaling globally and becoming competitive industrial domains in the United States and parts of Asia.

The strategic question is therefore not whether these technologies will be used, but whether Europe will lead in shaping and hosting these industries — or import technologies, standards and strategic inputs developed elsewhere.

Proactive EU engagement can:

- anchor high-value manufacturing and biotechnological capacity within the EU;
- create new industrial ecosystems at the intersection of food, biotech, energy and circular economy;
- strengthen strategic autonomy in critical nutrition inputs;
- position Europe as a global standard-setter for sustainable nutrient production;
- enable just and gradual transitions for existing sectors through diversification rather than abrupt displacement.

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10. Requests to the European Parliament and European Commission

The petitioner respectfully calls on the European Parliament to request that the European Commission:

1. **Conduct an EU-wide assessment of omega-3, fishmeal and fish oil supply chains**, including sources of supply, ecological and social externalities in third countries, and vulnerability to climatic variability, ecological disruption and market shocks.
2. **Develop a strategic roadmap to reduce structural dependence on marine detours**, including pathways to scale direct, non-fish sources of omega-3 and to substitute wild-sourced fishmeal and fish oil in aquaculture and feed systems where nutritionally and technically feasible.

3. **Align dietary guidance, public communication and institutional messaging** so that omega-3 is not framed as synonymous with fish consumption, and nutritionally equivalent alternative sources are not marginalised.
4. **Integrate nutrient routing considerations into the EU's strategic autonomy and resilience agenda**, recognising fisheries, aquaculture and feed systems as components of critical infrastructure that shape the EU's external dependencies, ecological footprint and international partnerships.

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11. Conclusion: From Managing Extraction to Guardianship of Marine Systems and Nutrient Flows

Sustainability in the marine domain cannot be achieved solely through incremental improvements in quotas, stock assessments or certification schemes. While necessary, these instruments operate within a broader structural model that continues to route key nutrients through extractive pathways, placing persistent pressure on marine ecosystems.

A credible long-term vision for European fisheries governance requires an evolution of mandate: from primarily managing extraction to shaping the conditions under which marine ecosystems can recover and fulfil their ecological functions without being structurally overburdened by downstream nutrient demand. In this reframed role, DG MARE and associated authorities act not only as managers of fish stocks, but as guardians of marine systems that underpin Europe's nutrient security and coastal resilience — supporting marine-safe nutrient production pathways (such as algae-based omega-3) and enabling a just transition for fishing communities within the Blue Economy.

The EU's dependence on distant marine extraction for omega-3 and feed inputs is not accidental; it is the outcome of a structurally elongated nutrient-routing model that embeds ecological pressure, social impacts and geopolitical risk into everyday European food consumption. Addressing overfishing through labelling, certification and stock management alone will not resolve this underlying architecture.

Shortening nutrient routes is therefore resilience policy. Every tonne shifted from wild-caught marine detours to direct nutrient pathways reduces ecological pressure, import dependency and strategic risk for the European Union — while opening space for European industrial leadership in marine-safe nutrient infrastructure.

Submitted by:
Joanna Słodownik
(initiator, in the process of establishing Green Reset Foundation)
ul. Dobra 54/95, 00-312 Warsaw, Poland

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(Indicative evidence sources supporting the factual basis of this petition are provided in Annex available upon request.)