

Trade, People and Ecosystems

Human economies, societies and ecosystems are now globally interconnected. In a world where international trade occurs at unprecedented scales, supply chain transparency and traceability lie at the heart of seafood governance, from both the private/public sector and consumer perspective.

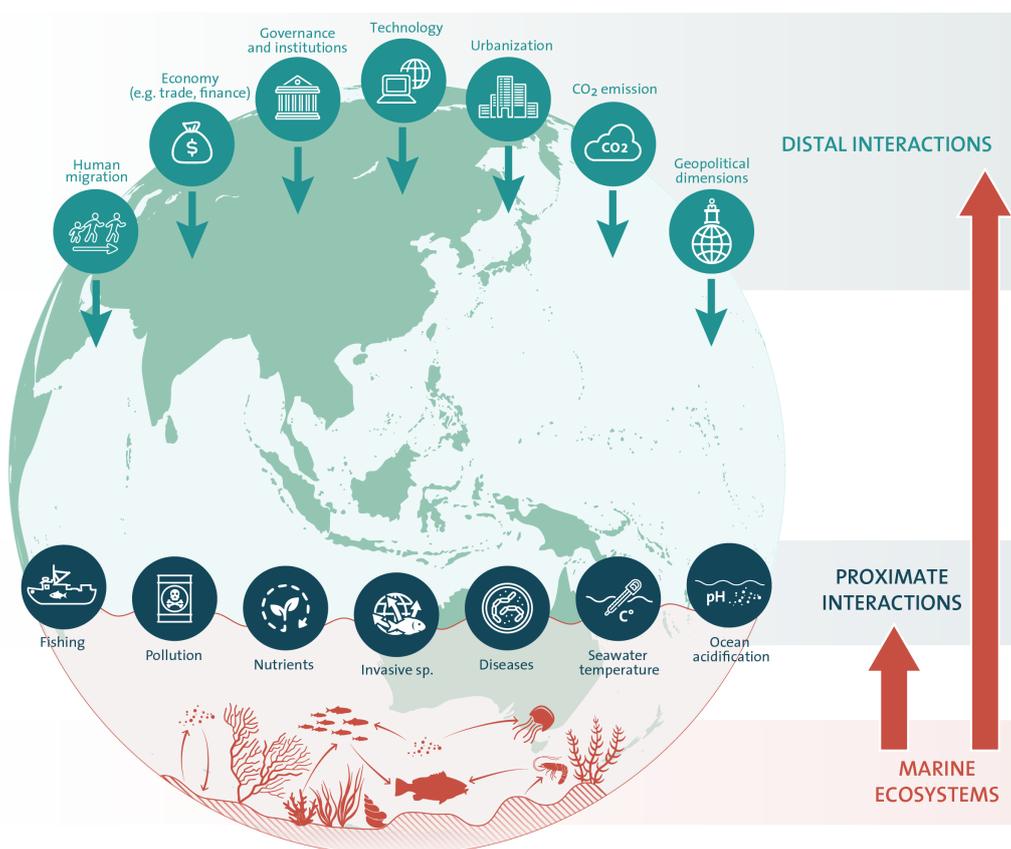
Overview

Globalisation has increased the volume and speed at which people, information, and commodities flow across space. As a result, marine fisheries, aquaculture products and aquafeeds are more and more connected to international markets¹. Ecosystems and fishing communities, historically driven by primarily local market forces, are now increasingly affected by demand and drivers at multiple (often global) scales². This changing context in which humans make use

of, and affect, oceans means that new activities and interlinkages have become central to our understanding and governance of oceans worldwide³.

Linking people and ecosystems

Trade is perhaps the most obvious way in which local ecosystems become connected to geographically distant societies and economies. Trade can improve food security, increase wealth, provide livelihood opportunities and buffer against local supply shocks.



On the other hand, if well-functioning institutions are not in place to protect worker's rights and govern resources extraction, trade risks degrading the environment and undermining livelihoods or food security. Trade can also leave countries heavily reliant on imports increasingly vulnerable to external supply shocks.

The growing recognition that trade is a major mechanism for governance in the world food system has led to increasing calls for both voluntary and mandatory disclosure of information to improve transparency, and subsequently sustainability, of product quality and production processes⁴.

Seafood trade now and in the future

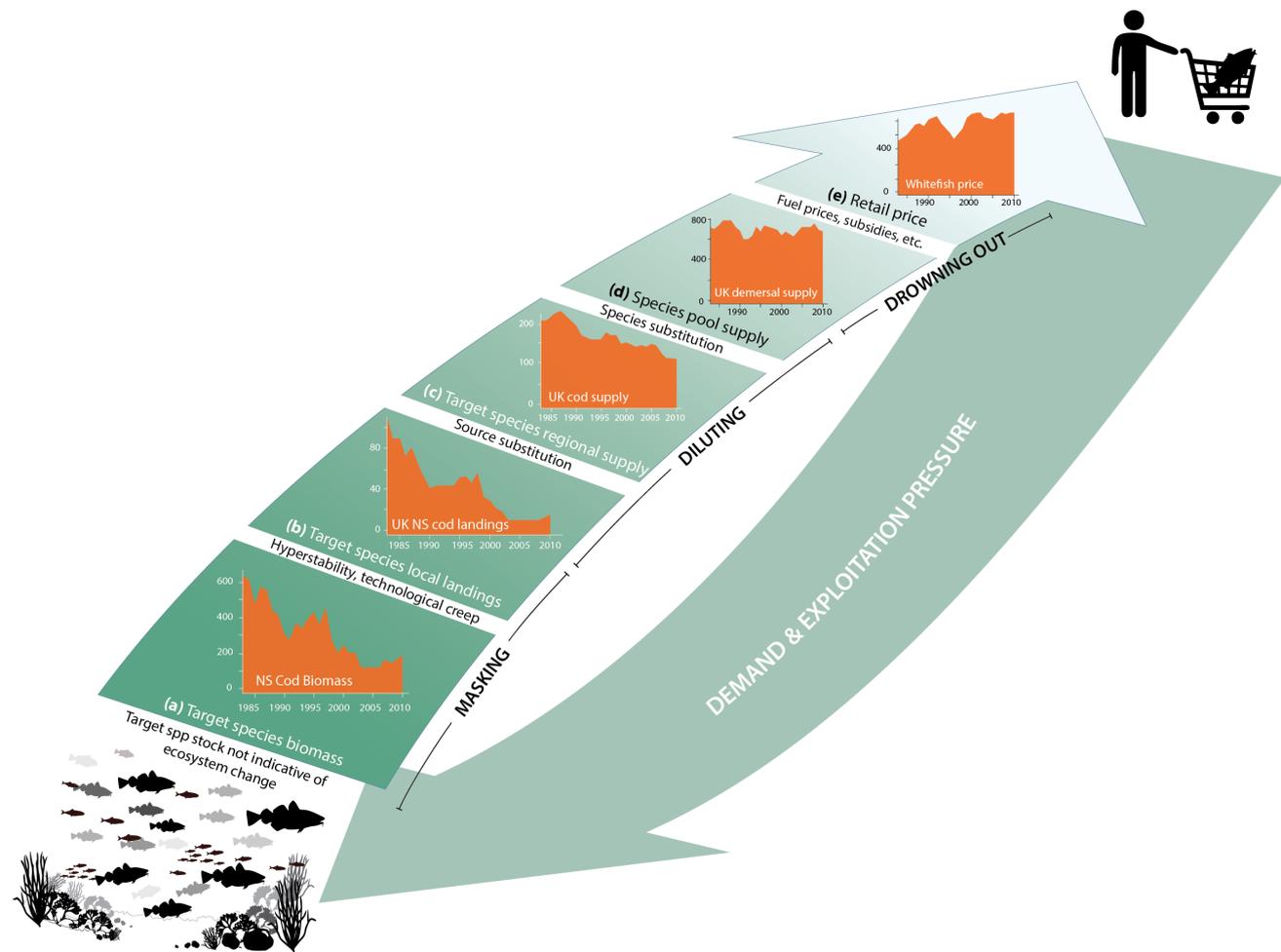
Seafood is among the most highly traded commodities in the world, representing ca 10% of all traded food (by value) and exceeding the value of international trade in all other animal derived foods combined. Almost 40% of landed seafood volumes are estimated to be internationally traded and seafood exports nearly doubled in value since 2004, reaching over US\$140 billion in 2014. Approximately half of these exports (by value) originate from low and middle income countries (and 60% by volume). As such, seafood trade

is important for economies and food security in many developing countries⁵.

China's role in the global transformation of seafood markets cannot be overstated⁶. China is the world's leading seafood exporter but also its largest fish consumer. Even though Chinese seafood exports have increased faster than seafood imports, China could become a net seafood importer in the 2020s.

Missing feedback signals

International trade embodies a key challenge for transparency and sustainability – namely that its very nature of supplying distant consumers with commodities, through a chain of intermediaries, risks weakening feedbacks between production (eco) systems and consumers⁷. At the production end, collateral ecological impacts of fishing are external to the operating cost and as such any negative effects of fishing on the ability of the ecosystem to produce seafood in the future are masked from the consumer. Changes in fishing practices (e.g. increased effort, technological advances and fishing deeper or further from shore) to compensate for declining catches is another way that declining ecosystem capacity to produce seafood can be masked.



Signals from marine ecosystems can be weakened by mechanisms that mask, dilute and drown out price signals. The large downward arrow illustrates how demand and subsequent exploitation exert pressure on stocks, while the upward arrow symbolizes the direction and potential flow of a price signal to consumers. Panels a–e illustrate the generic idea of signals moving from (a) target species biomass, (b) target species local landings, (c) target species regional/global supply, (d) (substitutable) species pool supply, (e) retail price reaching consumers. Modified from Crona et al. 2015 [7].

Further up in the supply chain, signals from production systems to consumers can also be diluted as international trade allows market actors to substitute declining commodities (species) with products from different stocks, species or ecosystems. This means that supply to consumers remains unaffected by changes in any one ecosystem. Aquaculture increasingly contributes to this dilution by providing products that substitute for capture fishery catches. However, the capacity for substitution is ultimately constrained as global production limits will eventually be reached.

Finally, price signals indicating declining supply can naturally also be "drowned out" by a range of other market factors influencing the price of fish, such as changes in consumer spending patterns and the price of alternative food proteins. Subsidies and regulations also affect supply dynamics by altering cost structures, while mislabeling of seafood can confound the species–price relationship completely.

Therefore, while price signals could indicate changes in underlying marine ecosystems they are often either masked, diluted or drowned out by the time they reach consumers. Without knowledge about ecosystem status and performance, consumers are unable to make informed choices. Similarly, without signals of declining supply, they are unlikely to perceive a problem nor the need for responsible purchasing behaviour. Addressing this missing feedback is therefore a key step in increasing the sustainability of the global seafood industry.

Closing the feedback loop

One way to enhance feedback signals within the market system is through catch-traceability schemes that link end consumers directly with information about specific source fisheries. The volume of seafood produced under a voluntary sustainability standard has increased substantially during the last decades and presently 14% of global seafood production is eco-certified by any of the larger schemes (e.g. MSC, GlobalG.A.P., ChinaG.A.P., ASC, FOS and GAA BAP)⁸. However, certification currently suffers from subjective and underspecified scoring systems and lack of data for some environmental criteria. In addition, many schemes are not well suited for small-scale seafood producers⁹.

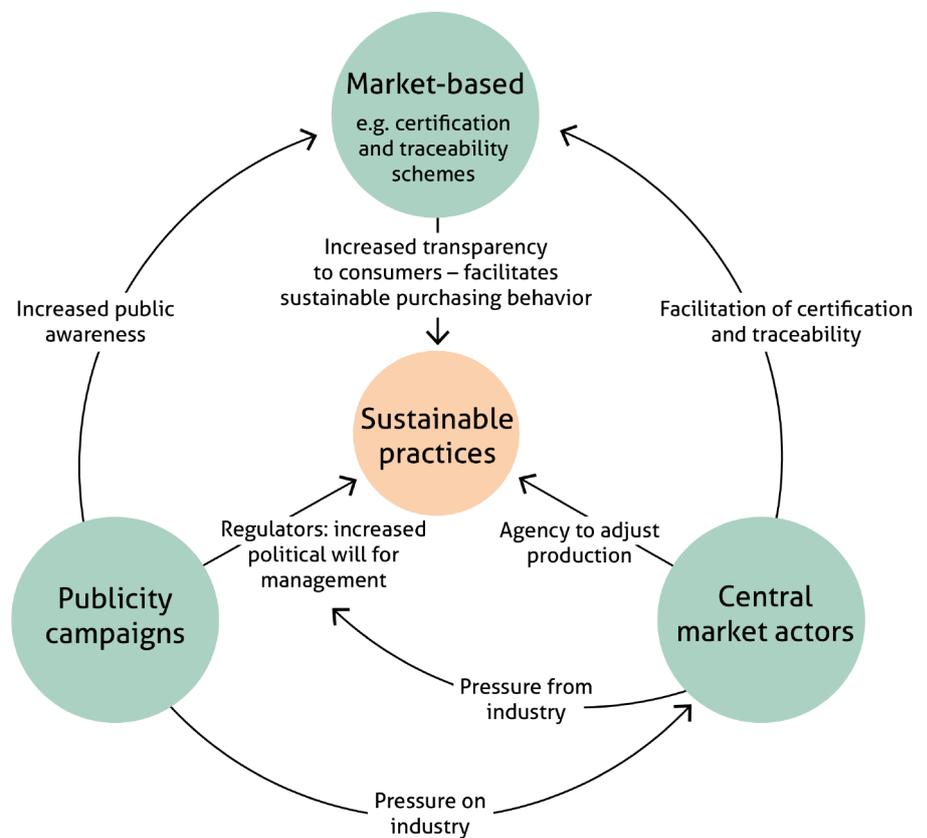


Illustration of how publicity campaigns, market-based approaches and central market actors provide three complementary ways of addressing the goal of sustainable seafood. Adapted from Crona et al. 2015 [7].

Another pathway is to exploit existing market structures for the benefit of sustainability. Horizontal consolidation can increase the capacity to observe aggregate patterns of decline in supply and respond accordingly. Vertical integration offers opportunities to support and define sustainable practices within both the capture sector and processing.

Finally, targeting public and political actors directly with environmental concerns for seafood production can complement market-based approaches and promote awareness that can stimulate changed purchasing behaviour and regulatory responses. However, targeted campaigns can be undermined by the fact that markets, like species, can be substituted. Thus, nationally targeted consumer campaigns may have limited impact in the context of globalised trade. Declining demand for seafood in one area may be easily substituted by developing markets in another, with less stringent sourcing criteria.

Strategies for promoting ocean stewardship will need to recognize both the limitations and opportunities of the new order in global sustainable seafood production. Actors in structurally powerful positions in seafood value chains have the opportunity to rise to the stewardship challenge and develop approaches that transition sourcing, production and consumer behaviour towards sustainable trajectories by reaching beyond the market system and drawing on the complementary strengths of regulatory and public actors.

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