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National Report on Strengthening Sustainable Aquatic Food Value Chains for Enhanced Food Security and Nutrition in Vietnam

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Viet Nam

Bay of Bengal Programme Inter-Governmental Organisation

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1. Introduction and Context

1.1. Overview of the country's demographic and economic profile (fisheries)

Bordered by the South China Sea on the south and the Gulf of Thailand to the southwest, the Socialist Republic of Viet Nam is located on the eastern edge of the Indochinese Peninsula sharing land borders with China to the north, Lao PDR and Cambodia to the west, and maritime borders with Indonesia. The coastline is approximately 3,260 km long, excluding islands and the EEZ covers about 1 million km². With an approximate population of 101 million in 2023, nearly two thirds f the population resides in rural areas, and more than one-quarter of the workforce is engaged in agriculture, forestry, and fisheries [1].

The GDP per capita is USD 3 500 and the average GDP growth is 9.05%. The GDP from fisheries is 3.40% and agricultural GDP from fisheries is 21.96%. The export of fish and fish products in 2020 was USD 8 461 978 480[2]. Viet Nam's aquatic food production reached 9.5 million tonnes in 2024, with export earnings of approximately USD 10 billion, ranking among the top three global seafood exporters, and the sector creates employment for over 4.0 million people while contributing 4–5% to GDP[7].

Viet Nam's fisheries sector is one of the most important sources of the country's economic growth, rural employment, household nutrition, and foreign exchange earnings.

1.2. Key nutrition challenges (e.g., undernutrition, micronutrient deficiencies, and overweight/obesity).

Despite improvements over recent decades, Vietnam continues to contend with undernutrition, micronutrient deficiencies and the rising prevalence of overweight/obesity in some segments. The INDDEx / Vietnam Diagnostic Overview notes regional variability in nutrient availability and household consumption patterns, and underscores that while energy and macronutrient gaps have narrowed, micronutrient adequacy remains problematic in many groups[3]. In the literature, Nguyen et al. (2013) report that animal source foods (meat, fish, eggs, dairy) contribute about 12.7% of total energy intake in certain survey populations, reflecting that these foods are not uniformly accessible[4].

1.3. Summary of the importance of aquatic foods in national diets and livelihoods

The Vietnamese people predominantly consume fresh or minimally processed products, such as cleaned, cut, or filleted seafood, with popular choices including fish, shrimp, squid, and shellfish sold in traditional markets, supermarkets, and restaurants. Ready-to-eat processed products remain limited but are gradually gaining in popularity[5].

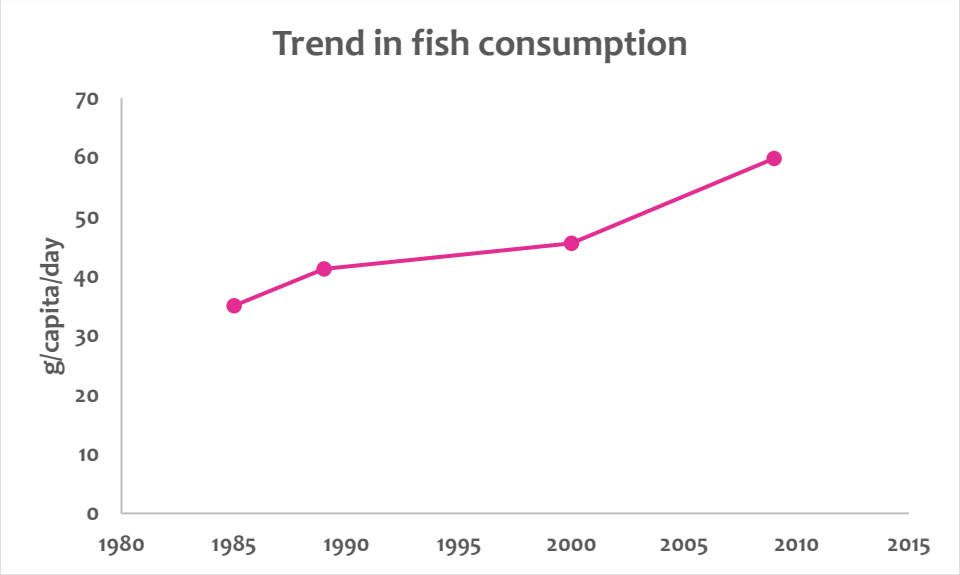

Figure 1.1: Trend in fish consumption in Vietnam[6]

2. Country Snapshot Table

Table 2.1: Country snapshot

Indicator	Year	Value	Source
Population (millions)	2023	99.2 million	GSO, Statistical Yearbook of Vietnam 2023
GDP per capita (USD)	2023	4,284 USD	World Bank, World Development Indicators 2024
Fish production – capture ('000 tonnes)	2022	3,857	FAO, Fishery and Aquaculture Statistics 2023; MARD/DFish
Fish production – aquaculture ('000 tonnes)	2022	5,753.7	FAO, Fishery and Aquaculture Statistics 2023; VASEP
Inland vs. marine share (% of capture)	2022	Marine: 85% ; Inland: 15%	FAO, Fishery and Aquaculture Statistics 2023
Top 3 capture species	2022	Anchovy (Stolephorus spp.); Tuna (Thunnus spp.); Mackerel (Scomberomorus spp.)	MARD/DFish; SEAFDEC Country Report 2023
Top 3 aquaculture species	2022	Pangasius (Pangasianodon hypophthalmus); Shrimp (Litopenaeus vannamei, Penaeus monodon); Tilapia (Oreochromis spp.)	VASEP; FAO 2023
Employment in fisheries & aquaculture ('000, men/women)	2021	3,500 total – Men: ~70%; Women: ~30%	GSO 2022; World Bank, Gender in Fisheries (2022)
Exports (value, USD billion)	2022	10	[7]
Imports (value, USD million)	2022	2,000	VASEP 2023
Per capita fish consumption (kg/year)	2021	37.6	FAO, Food Balance Sheets 2023
% of animal protein from fish	2021	~23%	FAO, Food Balance Sheets 2023

Indicator	Year	Value	Source
Estimated fish loss & waste (% of production)	2020	~20%	World Bank, Vietnam: Addressing Food Loss in Fisheries (2021)
Women's participation in post-harvest (%)	2021	~60%	GSO 2022; FAO, Gender in Aquaculture (2021)
Key compliance measures	2023	HACCP (mandatory for exports); Catch Documentation Scheme (EU); PSMA ratified 2019; electronic traceability pilots	MARD/DFish 2023; VASEP 2023
Major climate/environment risks	2023	Sea level rise; salinity intrusion (Mekong Delta); ocean warming; typhoons; coastal erosion	ADB 2023; FAO 2022; SEAFDEC 2023

3. Aquatic Food Production and Utilization

3.1. Trends in capture fisheries (inland and marine) and aquaculture

The total capture fisheries show an increasing trend, rising from 3.264 million tons in 2016 to over 3.8 million tons in 2023, marking a growth rate of 16.4%. The total number of offshore fishing vessels with a capacity of 90 hp and above was 34,825 units in 2023. The small-scale fleet is largely non-powered boats or motorized boats with engines of less than 90 HP; labor-intensive and focused on nearshore waters operating beach seines, gillnets, lift nets, push nets, trawls, cast nets, traps, hooks, lines, set nets, and trammel nets[8].

Aquaculture production has also shown an increasing trend with the total aquaculture production from 2016 to 2023 reaching 36.8 million t, with 2023 peaking at over 5.5 million t, an increase of approximately 52 % compared to 2016. Despite only accounting for a small percentage of the total aquaculture production annually, marine aquaculture has been experiencing a growth trend in 2016–2023. The marine aquaculture production reached 0.4 million t in 2023, an increase of 11 % compared to the same period in 2022 and nearly 53 % compared to 2016. A national structural shift toward reducing capture fisheries and increasing aquaculture, with aquaculture steadily increasing its share of total production and export turnover between 2020 and 2024[7].

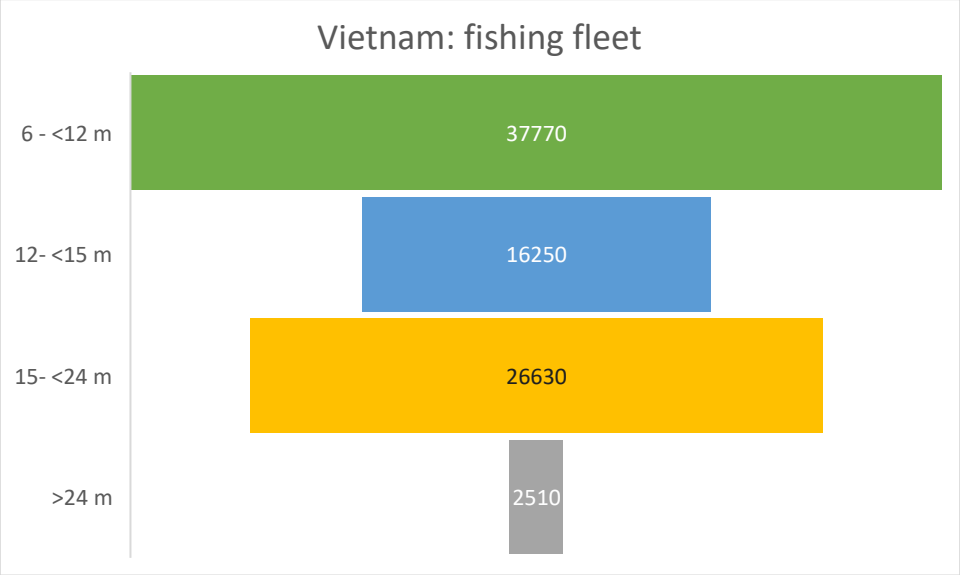

Figure 3.1: Vietnam – fishing fleet[9]

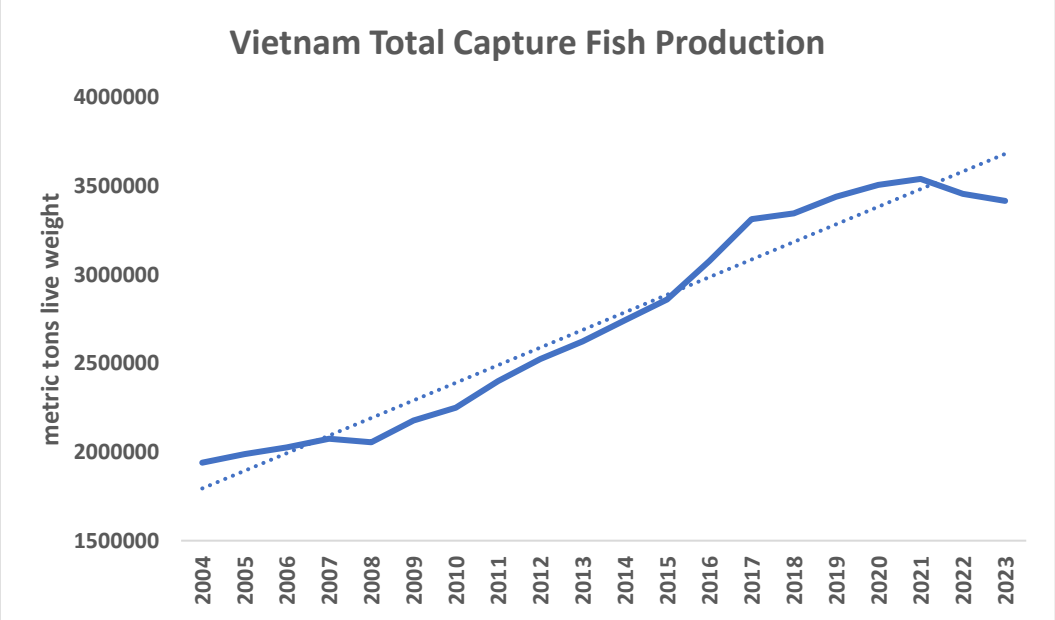

Figure 3.2: Trends in capture fish production

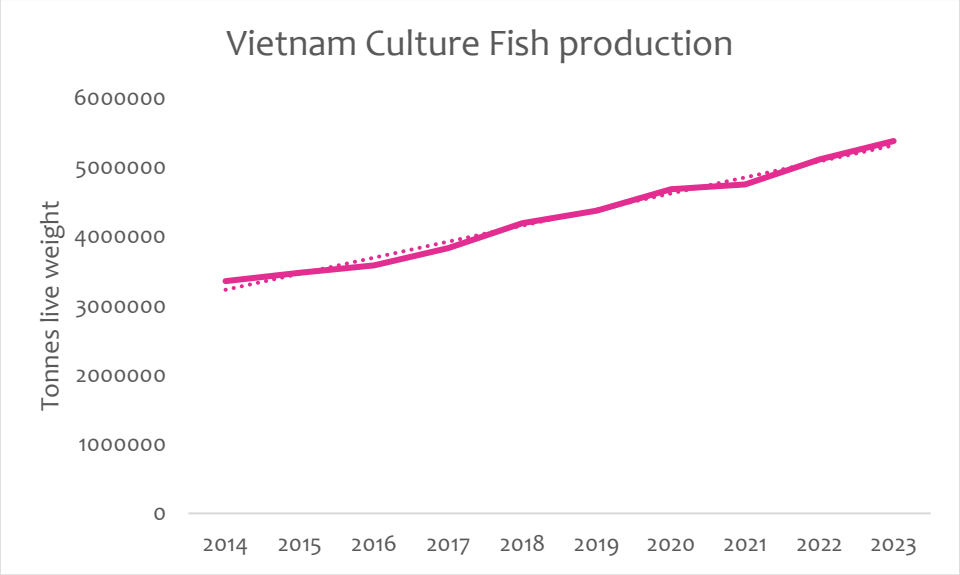

Figure 3.3: Trend in culture fish production

Data source: FishStatJ

3.2. Main species and product forms

Vietnam's key aquatic species for production and trade are: shrimp (whiteleg/vannamei and tiger), pangasius (striped catfish), tuna, cephalopods (squid, cuttlefish), and various molluscs and small pelagics. In inland aquaculture, pangasius dominates; in coastal and brackish systems, shrimp is a major contributor. The 2021 VASEP announcement states that Vietnam's aquaculture output reached 4.75 million tons in 2021, with shrimp and pangasius being the principal farmed species, often located in Mekong Delta coastal provinces (Tra Vinh, Bac Lieu, Soc Trang, Ca Mau, Kien Giang, Ben Tre) for shrimp and Mekong Delta provinces (Can Tho, Vinh Long, Tien Giang, An Giang, Dong Thap, Hau Giang) for pangasius . Product forms vary by species: shrimp are often IQF (individually quick frozen), chilled or frozen; pangasius are processed mostly as fillets or steaks (block frozen); tuna may be fresh, chilled, canned or frozen; cephalopods and molluscs may be fresh, frozen or value-added; small fishes (for local markets) are often sold fresh/chilled whole or dried/salted. The shift toward higher value processed forms for export is prominent in industry reports.

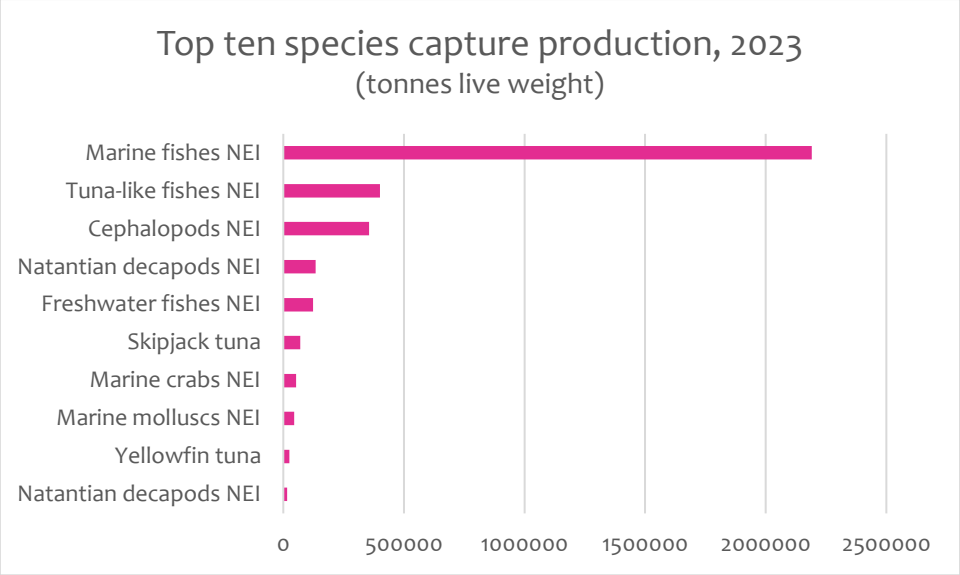

Figure 3.4: Top ten commodities production in 2023

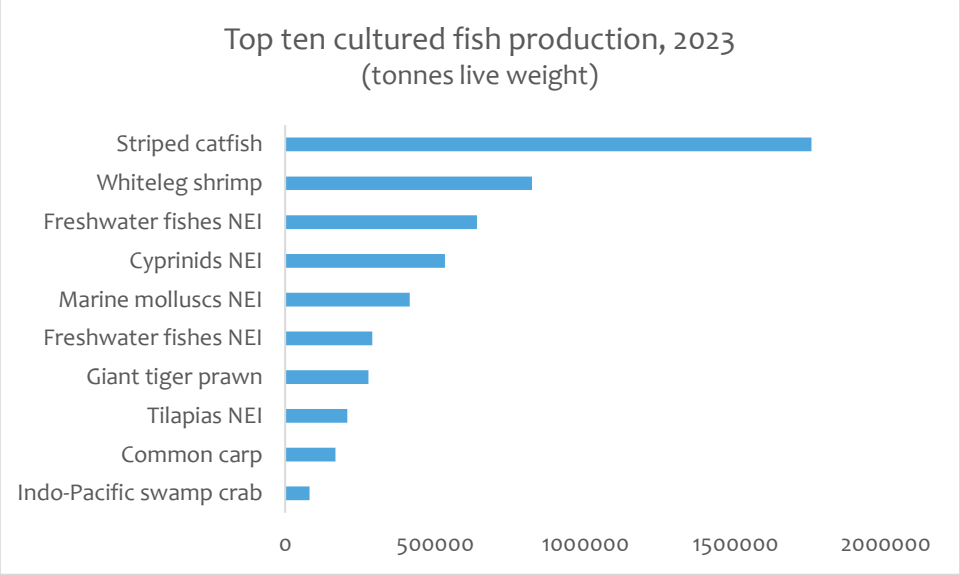

Figure 3.5: Top ten cultured fish in 2023

3.3. Major production zones and seasonal characteristics

There are four main fishing areas: Gulf of Tonkin, shared with China; Central Vietnam; South-eastern Vietnam; and South-western Vietnam (part of Gulf of Thailand), shared with Cambodia and Thailand[10]. In addition to its coastline, Vietnam has 2,372 rivers, 112 estuaries, 11 coastal lagoons, and nearly 3,000 large lakes. The Red River and Mekong River deltas create over two million hectares of brackish and freshwater areas. This diverse range of water bodies and abundant aquatic resources support widespread aquaculture and fisheries, providing livelihoods for millions across the country[11].

Marine catches are highest in Central and Southeast Vietnam. The Mekong river delta provides over 75% of the total marine landings and therefore most of the fishing industry is concentrated in the southern provinces, from Khanh Hoa to Ca Mau[12]. The government's

encouraging policies have resulted in an increase in effective fishing methods, such as purse seine nets, rod fishing, and offshore gillnets, while reducing methods that negatively impact resources, such as trawl nets, beach seine nets, lift nets, and cast nets. The number of high-capacity fishing vessels has also increased; localities have also issued mechanisms and policies to promote offshore fishing and assist fishers in building and upgrading their vessels according to regulations.

The extensive network of rivers, lakes, and dams, particularly in the Mekong River Delta and Red River Delta regions, plays a crucial role in providing a diverse range of seafood products for the domestic market. However, overall domestic seafood production in Viet Nam remains significantly lower than aquaculture and marine exploitation.

Viet Nam is among the world's leading aquaculture-producing countries, particularly notable for shrimp, tilapia, and shellfish. Key production regions include the Mekong River Delta, South Central Coast, and Red River Delta. Aquaculture has robustly developed nationwide, including in the Central Highlands and northern mountainous provinces, encompassing all three types of water environments. The Northern region is characterized by freshwater fishponds, rice-cum-fish, and marine cage aquaculture. The Central region focuses on the intensive culture of giant tiger prawn and marine cage aquaculture of finfish and lobster. The Southern part of the country exhibits the most diversity in aquaculture. Farming activities in this region encompass pond, fence, and cage aquaculture of pangasius (catfish), farming of several indigenous species such as snakehead fish, climbing perch, and giant river prawn, as well as various intensification levels of shrimp aquaculture and integrated aquaculture like rice-cum-fish, rice-cum-prawn, and mangrove-cum-fish. The Mekong Delta stands as the hub of aquaculture production in Viet Nam, contributing around 70 percent of the nation's total aquaculture output. Pangasius and shrimp are the primary species farmed in the area and represent major seafood export products for Viet Nam[13].

3.4. Processing, preservation and domestic consumption practices

Vietnam's seafood processing sector includes both export-grade formal plants and informal/local processors. Export facilities are typically HACCP-certified, employing IQF, block-freezing lines, filleting, vacuum packing, and value-add processing (ready-to-cook, surimi, etc.). Domestic preservation practices for local markets often employ simpler methods — chilling on ice, land-based cold rooms where available, smoking, salting or drying for small fish, and refrigerated transport in urban centres. Cold-chain coverage outside major hubs remains uneven, limiting shelf life and quality for perishable fish in more remote districts. The contrast between robust export capability and weaker domestic chain resilience is a structural feature of the sector[14]. Key export markets like the United States (US), European Union (EU) member countries, Japan, and China impose stringent regulations regarding food hygiene, antibiotic residues, and sustainable sourcing[15].

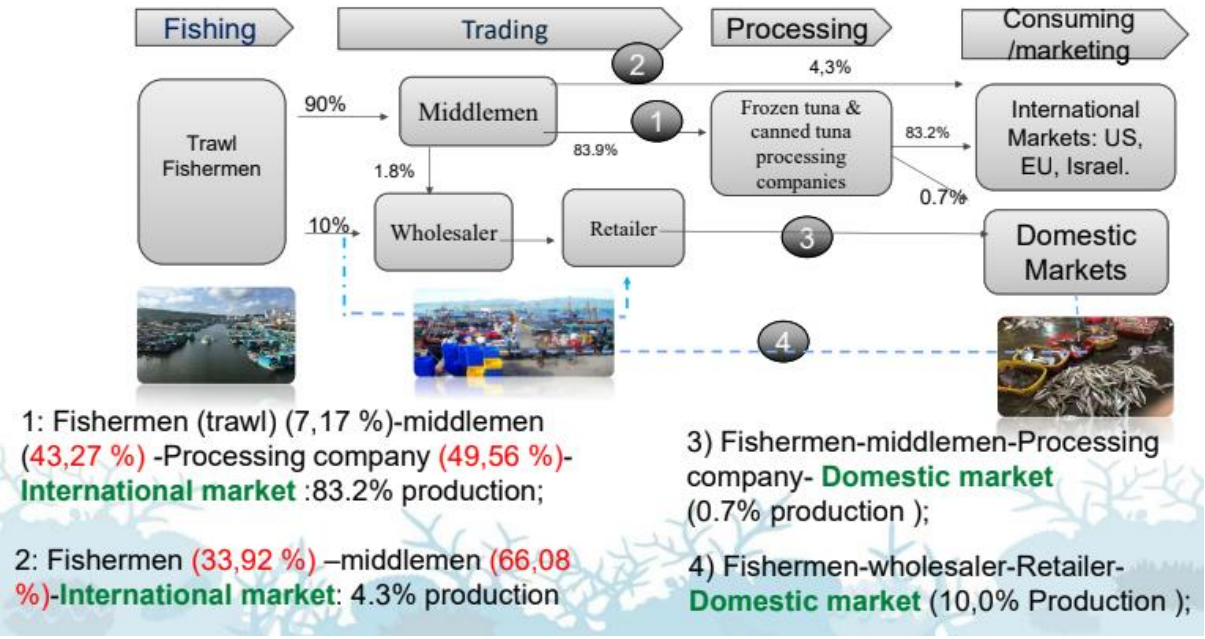

Figure 7. Mapping of major Aquatic Food value Chains[7]

4. Trade and Market Dynamics

4.1. Overview of fish exports (species, value, markets)

Vietnam is a global heavyweight in seafood exports. As of 2023, Vietnam's seafood export turnover is reported to exceed USD 9 billion (the Mekong Delta aquaculture landscape report mentions "Surpassing 9 BN USD exports in 2023")[16]. The major export commodities in terms of value are shrimp (typically capturing the largest share), pangasius fillets, tuna (fresh, frozen or canned) and cephalopods. Vietnam is among the top global exporters for shrimp and has gained a strong presence in fish fillet trade: in the aquaculture landscape report, Vietnam is ranked "3rd in fish fillets with 11.6% global share" and "4th in crustacean exports with 7.7% global share.[17]" Major export destinations include the U.S., EU, China/Hong Kong, Japan, South Korea and markets under FTAs (e.g. CPTPP, ASEAN). Export growth is constrained and shaped by sanitary and certification standards in importing markets. Viet Nam's leading aquatic exports include shrimp (USD 3.9 billion) to China/Hong Kong, USA, Japan, EU and Korea; catfish (USD 2.0 billion) to China/Hong Kong, USA, EU and CPTPP markets; tuna (USD 989 million) to the USA and EU; and **squid and octopus (USD 2.2 billion)** mainly to Korea, Japan and China[7] (Table 2).

Table 2. Aquatic Food export Products and Markets[7]

Species	**Export Value (million USD)**	**Market**
Shrimp	3,900	China, HK, USA, Japan, EU, Korea
Catfish	2,000	China & HK, USA, CPTPP, Brazil

Species	Export Value (million USD)	Market
Tuna	989	USA, EU, RUS, Canada, Thailand
Crabs, Crustaceans	324	China & HK, USA, Japan, Canada, Korea
Squid and Octopus	2,200	Korea, Japan, China &H HK, USA, Thailand

4.2. Key import flows and their drivers

Vietnam imports inputs such as fishmeal, fish oil and feed ingredients, which feed its intensive aquaculture sector. Edwards et al. (in a survey of marine trash fish and fishmeal) document that feed mills in Vietnam "typically use domestically produced fish meal … for freshwater grow-out feed" and depend on feed ingredient flows[18]. In addition, there are imports of live aquatic species (subject to risk assessment under MARD's live seafood regulation), high-value items to fill export re-processing demands, or occasional raw material shortages. The GAIN report notes that live seafood intended for import must pass MARD's risk assessment process[19]. The driving factors for imports include feed supply gaps, global price arbitrage, demand from processing factories for particular raw forms, and trade policy/FTA relationships.

Vietnam's total aquatic food supply is shown below.

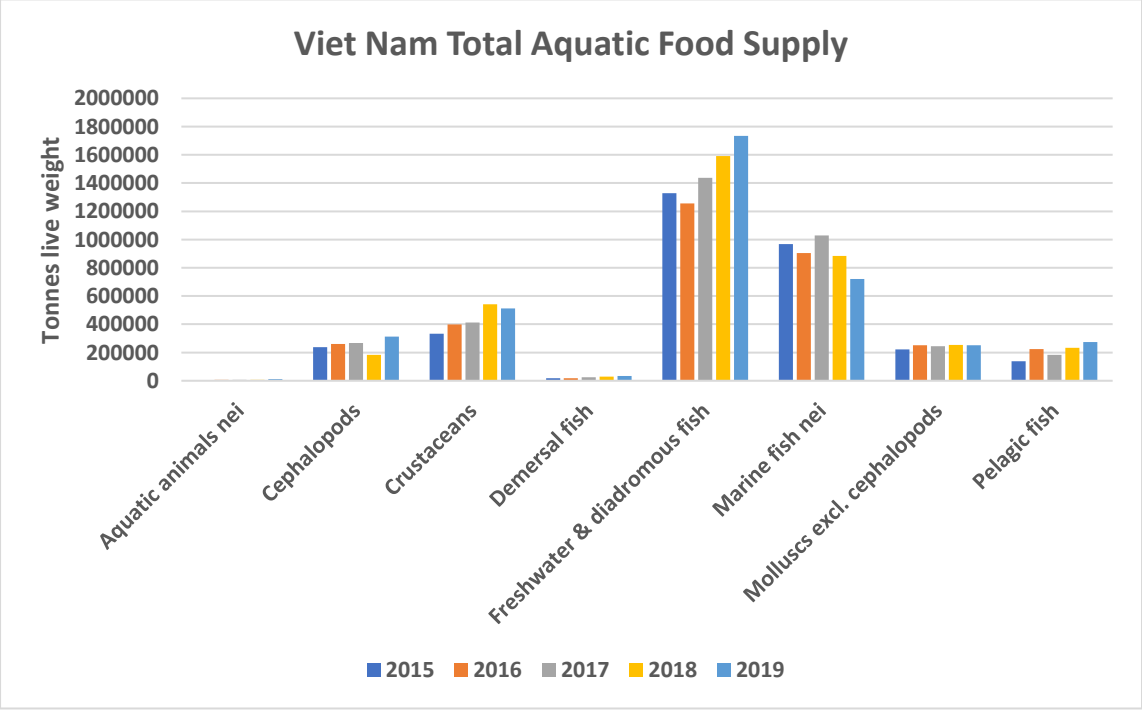

Figure 4.1: Viet Nam – Total aquatic food supply

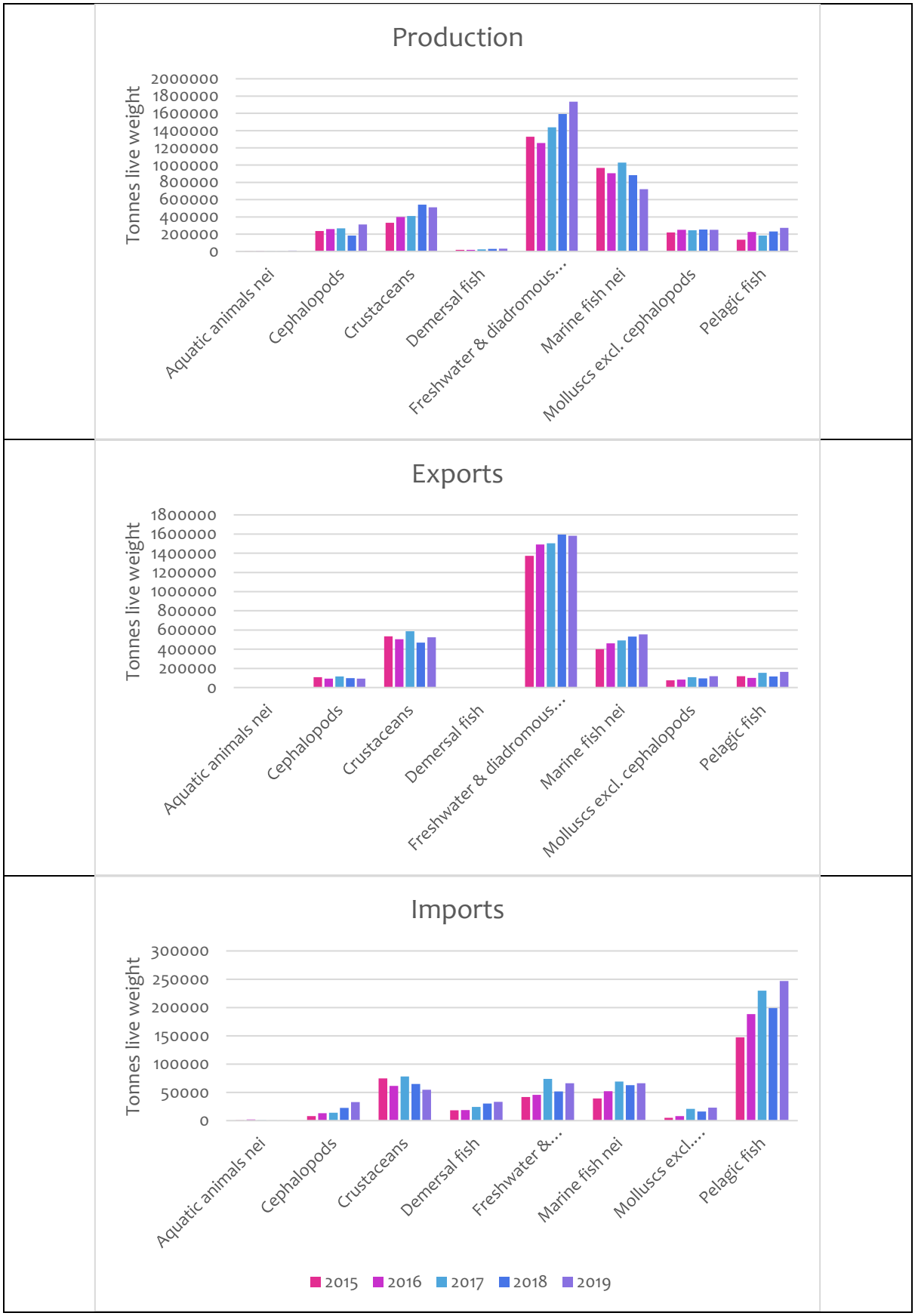

Figure 4.2: Vietnam – Aquatic food balance

Data from FishStatJ

4.3. The role of domestic markets in providing affordable fish to households

Domestic wet markets, small retailers and local traders are critical in delivering fish (especially small, whole species) to rural and urban households at lower cost. Because these markets often bypass higher export margins and heavy processing, they can supply fish at more affordable prices, contributing to food security for lower-income households. The seafood supply mapping literature underscores that much fish from small-scale fisheries is directed to local markets.[20]The Vietnam Diagnostic Overview (Kim et al. 2021) uses household consumption survey data to detail how household access to aquatic foods contributes to nutrient availability and diet diversity[21]. While precise percentages vary by commodity and year, the domestic share of output (especially in non-exported species) is substantial.

4.4. Barriers and opportunities (tariffs, non-tariff measures, certification, and traceability).

One major barrier for Vietnam's aquatic sector is the non-tariff and sanitary/phyto (SPS) requirements of import markets (e.g. EU, U.S., Japan), including catch certification, restricted chemicals, residue limits, and traceability demands. The sector has also faced trade warnings: for example, the EU "yellow card" period heightened compliance pressure. On the opportunity side, Vietnam has preferential tariff access via FTAs (e.g. EVFTA, CPTPP) which can give competitiveness in export markets, provided certification and quality standards are met. Private voluntary standards (e.g., ASC, GlobalGAP) and digital traceability tools offer ways to access premium markets. However, small producers often struggle to meet the certification costs or documentation burden. A relevant study, *Is certification a viable option for small producer fish farmers in Vietnam?*, assesses how small shrimp farmers experience the challenges and costs of certification (e.g. audits, infrastructural investment) and suggests that group models or cost-sharing may improve feasibility. [22]The literature on eco-labelled aquaculture in Vietnam also reports consumer willingness but logistical and compliance constraints at producer level. [23] VietGAP is recognised as equivalent to ASEAN GAP, and that shrimp and catfish farmers must be registered and licensed by local authorities with a unique identification code to comply with food safety and traceability requirements[7].

Traceability / Certification

Vietnam has made concerted moves to strengthen traceability and certification in the aquatic sector. Export processors routinely comply with HACCP, and many adopt or seek ASC or GlobalGAP certification. Government regulations require catch documentation and vessel reporting under fisheries licensing systems. However, uptake among small-scale producers is uneven due to cost and capacity constraints, making group certification and shared audit models critical. The Marschke study on small producers highlights that "the cost of audits, lack of institutional support and regulatory complexity are key obstacles for small shrimp farmers to become certified."[24] Furthermore, consumer research shows some domestic interest in eco-labels, which could push internal demand for traceability. [25]

IUU / Food safety

Vietnam has committed to addressing Illegal, Unreported and Unregulated (IUU) fishing through institutional measures. It acceded to the FAO Port State Measures Agreement (PSMA) in 2019, and the Fisheries Law (2017, effective 2019) mandates vessel monitoring, licensing, inspections, and catch reporting. Export-oriented value chains tend to meet stringent food safety and sanitary requirements (HACCP, residue testing) driven by buyer standards. However, domestic chains, especially at small-scale and informal levels, still suffer from gaps in cold-chain, hygiene, and inspection enforcement. The FAO country profile acknowledges these challenges and notes ongoing efforts to strengthen enforcement systems. [26]

5. Nutritional Contribution of Fish

5.1. Fish's share in total protein intake

Vietnam has a relatively high reliance on fish for animal protein. In the *Fisheries Sector in Vietnam* strategic report, Table 2.3 shows that in 2007 fish accounted for ~30.1% of animal protein intake in Vietnam — nearly double the global average rate (~15.8%). [27] Moreover, the same source offers per capita fish consumption and protein contribution data: e.g., in 2007, per capita consumption was ~26.1 kg/year, with fish protein representing 7.2 g/person/day or ~23.9% of total animal protein intake.[28] The *Vietnam Diagnostic Overview* (Kim et al. 2021) also uses household expenditure and consumption surveys to model nutrient availability — although they caution that those figures reflect availability rather than actual intake. [29]

5.2. Key micronutrients supplied (Ca, Fe, Zn, I, Se, Vitamin A, Vitamin B12, DHA/EPA)

Fish, especially small species consumed whole (with bones and organs), provide multiple bioavailable micronutrients that are difficult to achieve in plant-based diets. Calcium is supplied from fish bones, iron and zinc from fish muscle and organs, vitamin B12 from animal tissue, and iodine/selenium from marine species or diets with marine influence. Additionally, oily fish and marine species supply long-chain omega-3 fatty acids (DHA/EPA). The global/nutritional literature underscores this synergy: fish are "essential micronutrients that can combat undernourishment" in Bennett et al. (2018).[30] In Vietnam's context, although direct measured intake studies are fewer, the role of small fish for micronutrients is recognized in national nutrition and research dialogues. Clean mapping of species-specific nutrient composition remains a priority.

5.3. Role of small fish species consumed whole

Small indigenous species (small pelagics, gobies, anchovies, etc.) that are consumed whole confer high nutritional value relative to size and cost, delivering bone-derived calcium, vitamin A precursors, iron and zinc, especially to infants, children and women. Research in SE Asia demonstrates that small-fish consumption is one of the most cost-effective interventions to reduce micronutrient deficiency. The *Seafood supply mapping* work highlights that fish and seafood contributions to protein and energy are high in Vietnam, and implicitly, small fish

play a vital role. Reconstruction of catches suggests that small-scale fisheries (often capturing small fish) contribute disproportionately to food fish for human consumption[31,32]. The implication: small fish are critical for micronutrient security beyond mere protein.

5.4. Evidence from national nutrition surveys or literature

Vietnam's national and regional nutrition surveys show a mixed but improving picture. The Vietnam Diagnostic Overview (Kim et al. 2021) combines household consumption and nutrient availability modeling to identify vulnerable populations and micronutrient gaps.[33] Peer-reviewed studies (e.g. Nguyen et al. 2013) show that animal-source foods (including fish) form a modest share of total energy intake (~12.7%) in some surveyed populations, reflecting access constraints. [34]The seafood supply mapping article emphasizes the high weight of fish in dietary protein and energy in fish-dependent settings.[35] Though anthropometric rates (stunting, anemia) are not always broken out in these sources, the broader literature repeatedly points to persistent micronutrient deficiencies (iron, zinc, vitamin A) even in households with moderate fish availability — underscoring the importance of intra-household access, food processing and food safety in converting availability into intake.

6. Fish Loss and Waste (FLW)

6.1. The main points along the chain where losses occur (landing, transport, processing, retail)

Significant losses and quality degradation occur at multiple points: (a) **landing and immediate post-landing handling** — fish are often landed without sufficient icing or chilling, leading to temperature abuse; (b) **transport** — outside major hubs, refrigerated trucks or insulated boxes are limited; (c) **small-scale processing units** — lacking modern hygiene, ice, and cold storage, handling damage is common; (d) **retail/wet markets** — limited cold storage, prolonged exposure, and inadequate sanitation accelerate spoilage. The public sector and consulting diagnostics identify these as the "choke points" in perishable aquatic value chains. *Seafood supply mapping* literature similarly emphasizes that post-harvest losses in fish value chains are substantial in tropical systems.[36]

6.2. Available estimates of quantity and value lost

While comprehensive, species-specific national loss data are scarce, project-based studies and system diagnostics suggest **loss rates of 15–30%** or more in some aquatic value chains. For example, broader food systems loss estimates in some national diagnostics (covering all agricultural and aquatic foods) place total losses in millions of tonnes or billions of USD. The *Vietnam Diagnostic Overview* discusses the gap between available and consumed nutrients partly attributable to losses.[37] The Mekong Delta aquaculture report also cites that losses are a major concern and that reduction targets are built into national strategies.[38] For example, if 20% of shrimp or fish are lost before reaching market or consumption, the value foregone is substantial given that shrimp exports alone are often valued in the billions of USD. But precise nationwide aggregated loss value remains a data gap. The post-harvest losses of

aquatic products in Viet Nam reach 15–20%, significantly higher than the Asian average of 10%, with losses equivalent to 20–25% of agri-aquaculture output and an economic impact of approximately USD 3.9–4.1 billion[7].

6.3. Causes (infrastructure, handling, storage)

The root causes of losses include deficient cold-chain and storage infrastructure (especially outside major port or export zones), suboptimal handling and packaging practices at landing sites, lack of continuous ice supply or insulation in transport, power instability in rural areas, fragmented smallholder chains preventing scale investments, and limited access to finance for upgrading equipment. Reports of cold-storage market challenges, sector diagnostics, and infrastructure surveys all point to these factors as primary constraints. For instance, the Mekong Delta aquaculture landscape report notes infrastructural and logistic gaps as key bottlenecks in value chain efficiency.[39] The primary drivers of loss include inadequate cold-chain infrastructure, fragmented capture fisheries with long transport times, and consumer-level waste from traditional small-scale processing, while reducing current losses could increase seafood export value by 10–15%[7].

6.4. Mitigation practices or innovations

Vietnam is implementing several mitigation and innovation pathways: construction of regional cold storage hubs, subsidized or shared refrigerated logistics, improved on-board and landing-site chilling, adoption of IQF and modern freezing in processing units, digital traceability and supply-chain monitoring pilots, training in good handling practices, and donor-supported upgrades of small processing centers. The 2025 Mekong Delta aquaculture landscape report emphasizes these initiatives, citing that modernization of processing, improved logistics and chain linkages are key to future growth.[40]. These combined interventions aim to reduce post-harvest loss, improve product quality, extend shelf life, and expand market reach. The shrimp and pangasius processing already achieves near-complete by-product utilisation (≈98%), with discards converted into chitosan, collagen, gelatin, fish oil and specialised feed ingredients, demonstrating strong potential for circular economy expansion[7].

7. Socio-economic and Gender Dimensions

7.1. Employment generated by the sector (fisheries, aquaculture, post-harvest)

Employment in Vietnam's fisheries and aquaculture sectors is substantial and multi-tiered. According to the SEAFDEC Fisheries Country Profile, the country's aquaculture sector generated an estimated USD 3.0 billion per year and more than 1.6 million people had been employed full time[41]. In addition, the broader sector (capture, processing, marketing) supports many more in informal and part-time roles. The Fisheries Sector in Vietnam report also notes that while large-scale farms and processors capture public attention, the "vast majority of farms remain small" and depend on family labour, implying that small-scale production is widely diffused and labour-intensive.[42] Processing and export plants also

directly employ substantial workforces, with many ancillary services (transport, input supply, trade) reliant on the aquatic sector.

7.2. The role of women in processing, trading, and marketing

Women are heavily involved in post-harvest, processing, trade and retail in Vietnam's aquatic sector. In many coastal and riverine communities, women run small processing units (smoking, drying, sorting), vending at local markets, and local transport or trading roles. However, much of this work is informal, low-value, and lacking capital or technology to scale. Gender-differentiated studies and national extension reports highlight constraints faced by women—such as limited access to credit, training, equipment, and formal markets—which limit their ability to scale operations or upgrade product quality. No recent peer-reviewed quantitative estimate of women's share was available; multiple sector analyses treat this as a known structural issue.

7.3. Constraints faced by small-scale actors (e.g. access to finance, technology)

Small-scale fishers, pond farmers and processors face many constraints that limit productivity, resilience and market positioning. Key constraints include poor access to affordable credit and capital, limited access to modern cold-chain or processing technologies, inability to amortize high upfront costs, weak market information and negotiation power, difficulty meeting certification and traceability requirements, regulatory burdens and compliance costs, and fragmented supply chains that prevent aggregation of production and cost-sharing. The strategic fisheries sector report remarks that while aquaculture is increasingly commercial, "the vast majority of farms remain small" and are disadvantaged in accessing scaled infrastructure and capital.[43] The study by Marschke and Wilkins specifically emphasizes that audit costs and regulatory complexity are significant hurdles for small shrimp farmers in certification uptake.[44]

8. Sustainability and Resilience

8.1. Summary of stock status where available (overfishing, recovery, habitat pressures)

Marine capture fisheries in Vietnam, particularly in coastal zones, face pressure from overfishing, habitat degradation (mangrove loss, coastal development), pollution and unregulated fishing. Some small pelagic and demersal stocks show declines or unstable trends, though robust national stock assessment capacity is still developing. The FAO country profile and SEAFDEC profile both flag the need for improved stock assessment and enforcement.[45] In contrast, aquaculture is managed via production systems, but environmental sustainability must be safeguarded to prevent ecosystem degradation. The strategic sector reports note habitat pressures, especially in critical nursery habitats, as a long-term concern.[46]

8.2. Environmental risks (pollution, waste, carbon intensity)

Vietnam's aquatic sector contends with several environmental risks: effluent loads and nutrient pollution from intensive aquaculture ponds (shrimp, high-density fish farming), habitat degradation (mangrove clearance, sedimentation), processing and aquatic waste (organic waste, plastics), and greenhouse gas emissions associated with feed production, energy use and transport. While aquaculture tends to have lower emissions per kg compared to livestock, the embedded emissions in feed and energy use are nontrivial. Sector and environmental reports stress the importance of waste management, effluent treatment, environmental safeguards, and circular approaches (e.g. integrated systems) to mitigate risks. The significant environmental pressures from aquaculture waste streams, including 5 tonnes of dry sludge per 1.6 tonnes of catfish, large volumes of wastewater, and by-products representing 35–70% of raw material weight, underscoring the need for waste recovery and treatment[7].

8.3. Climate risks and adaptation measures

Vietnam's fisheries and aquaculture sectors are vulnerable to climate change: sea-level rise and saltwater intrusion threaten the Mekong Delta and coastal farms; increased frequency of storms, floods and extreme weather can damage infrastructure, cage farms and vessels; changes in temperature and salinity may increase disease challenges in aquaculture and shift fish distributions; freshwater flow variations affect inland fisheries and connectivity. Adaptation efforts include mangrove restoration (buffering storms and coastal erosion), integrated mangrove–shrimp systems, salinity-tolerant or stress-resilient stock development, crop/fish diversification, insurance schemes for smallholders, and improved early-warning systems. The Mekong Delta landscape report emphasizes climate adaptation as integral to future strategy.[47]

8.4. Resilience factors (diversification, community practices, and early warning systems).

Resilience in Vietnamese aquatic communities is underpinned by livelihood diversification (rice–fish, polyculture, multiple income streams), community/neighborhood management (co-management, local institutions), seed/feed networks and local expertise, and adoption of early-warning and meteorological services. Traditional practices such as rotational fallowing, mixed-species culture, and seasonal scheduling help buffer shock. The sector's policy and extension frameworks are increasingly promoting these resilience factors, recognizing that technical investment must be paired with social systems.

9. Governance and Policy Framework

9.1. Overview of national fisheries and aquaculture policies

Vietnam's primary legal framework is the **Law on Fisheries (No. 18/2017)**, effective since 2019, which governs licensing, vessel regulation, catch monitoring, aquaculture practices and enforcement. Supporting instruments include Government Decrees implementing fisheries

rules, and the Vietnam Fisheries Development Strategy to 2030, vision to 2045 (Decision 339/QD-TTg, 2021) which sets targets: e.g. a 3–4% annual growth, production of ~9.8 million mt by 2030 (with ~7 million mt from aquaculture), seafood export value of USD 14–16 billion, and direct jobs for 3.5 million workers.[48] The policy emphasis includes sustainable intensification, value chain modernization, certification/traceability, post-harvest loss reduction, export growth, and climate adaptation. Implementation depends on coordination across MARD (Directorate of Fisheries), provincial agencies, trade ministries, research institutions (e.g. RIA1) and private sector bodies (e.g. VASEP).

9.2. Food safety and quality assurance systems

Export-oriented processors in Vietnam routinely adhere to HACCP, residue testing, sanitary inspection, and buyer-driven quality assurance systems. Domestic food safety regulation is administered through MOH, MARD, and provincial authorities, but varying capacity across regions leads to heterogeneity in enforcement. The GAIN report on live seafood risk assessment shows regulatory oversight extending to import controls and risk assessment for live aquatic species.[49] The coexistence of robust export systems and thinner domestic oversight is a known challenge in many tropical fish-exporting countries.

9.3. Participation in international agreements

Vietnam is a member of the WTO and thus subject to its rules on fisheries subsidies and trade. Vietnam acceded to the FAO **Port State Measures Agreement (PSMA)** in 2019, which aims to prevent IUU fishing through port controls and vessel monitoring. Vietnam also participates in regional fisheries bodies and relevant RFMOs, and must comply with CITES for any listed species. Its export markets (EU, U.S., Japan, etc.) increasingly require adherence to international norms in traceability, subsidy discipline, anti-dumping and environmental compliance, so such international engagement is critical for maintaining and expanding market access.

9.4. Institutional arrangements for managing value chains

Institutional oversight is spread across multiple ministries and agencies: MARD (Directorate of Fisheries) leads regulatory and developmental oversight; MOIT and Ministry of Trade handle export policies; MOH and provincial authorities oversee food safety; Ministry of Finance deals with tariffs and trade facilitation; provincial and local government agencies implement licensing, inspection, land use and extension; research institutes (e.g. Research Institute for Aquaculture No. 1, RIA1) provide technical support. The Vietnam aquaculture development literature notes that RIA1 plays a critical advisory and research role across freshwater, coastal and marine systems. The industry association (VASEP) acts as a conduit between government and private sector, coordinating export, certification and policy advocacy.

In 2025, a significant streamlining was witnessed in the administrative organization of Viet Nam. At the central level, the government issued Decree No. 35/2025/ND-CP on 25 February

2025 to regulate the functions, responsibilities, authorities, and organizational structure of the Ministry of Agriculture and Environment. This ministry was formed by merging the former Ministry of Agriculture and Rural Development and the Ministry of Natural Resources and Environment. Key areas within the fisheries sector are now managed by the Department of Fisheries and Surveillance. At the local level, the Fisheries Sub-department, under the Department of Agriculture and Environment, assists the Director in advising the Provincial People's Committee on fisheries and aquaculture management and law enforcement[50].

10. Key Challenges and Opportunities

10.1. Most pressing constraints (production, markets, nutrition, gender, governance)

Synthesizing the above, the sector's most pressing constraints are: (i) post-harvest losses and inadequate cold-chain infrastructure, which reduce food and income potential; (ii) market access and compliance burdens, especially certification and traceability costs for small actors; (iii) persistent nutritional deficiencies despite fish availability, owing to gaps in access, intra-household distribution, and food safety; (iv) gender constraints, where women processors and traders lack access to finance, technology and formal markets; and (v) weak enforcement, data and stock assessment capacity, limiting management and sustainability. These constraints are frequently highlighted in national diagnostics and sectoral reviews (e.g. *Fisheries Sector in Vietnam*, *Vietnam Diagnostic Overview*, aquaculture development analyses).[51] The major constraints including strict non-tariff barriers (e.g. MRL requirements in EU and Japan), reciprocal and anti-dumping tariffs in key markets, rising production costs linked to climate change, and the challenge of transitioning small-scale production toward high-technology and digital systems[7].

10.2. Promising opportunities or best practices that could be scaled up

Promising pathways include: (a) cold-chain expansion and pooled logistics to reduce losses and improve fish reach; (b) promotion of small-fish-based nutrition products (powders, pastes) via local micro-processing to boost micronutrient access; (c) group or cooperative certification schemes to reduce per-producer cost of audits and compliance; (d) climate-smart aquaculture systems (mangrove–shrimp integration, salinity-tolerant lines, polyculture) especially in vulnerable delta zones; (e) digital traceability platforms linking producers to markets, improving transparency and quality; (f) public–private innovation partnerships and extension in handling practices, seed quality, disease control, and feed efficiency. The Mekong aquaculture landscape report underscores modernization, quality enhancement and chain linkages as central to scaling the sector.[52] The four priority action pillars: policy reform to strengthen IUU control and certification; technical support for climate-resilient systems (IMTA, early warning, low-carbon practices); investment in cold-chain and processing infrastructure; and social programmes to empower women's cooperatives in value-added processing[7].

11.Priority Policy Recommendations

11.1. Key actionable policy recommendations linking aquatic foods, value chains and Food Security and Nutrition (FSN - six dimensions)

Table 11.1: Key actionable recommendations

	Dimension	Policy recommendation	Actions	Rationale
1	**Fish Loss & Waste (FLW)**	Establish a national cold-chain & pooled logistics programme targeting landing sites, rural aggregation hubs and domestic market corridors.	1. Map high-loss corridors and priority hubs 2. Invest in shared chillers, insulated transport, and community/PPP cold hubs 3. Train landing-site handlers + roll out simple handling/hygiene SOPs.	large post-harvest losses from landing to retail due to "deficient cold-chain and storage infrastructure… suboptimal handling… fragmented smallholder chains.
2	**Gender Inclusion**	Launch a Women in Aquatic Value Chains (WAVC) programme: access to microcredit, equipment grants, training and group certification for women processors and traders.	1. Create gender-targeted credit lines and capital grants 2. Provide technical training (processing, food safety, business skills) 3. Support women's producer groups for shared certification	women are heavily involved in post-harvest, processing, trade but are constrained by "limited access to credit, training, equipment, and formal markets.
3	**Compliance & Trade Readiness**	Scale group/ cooperative HACCP/ traceability certification & inexpensive digital traceability for smallholders to meet export and FTA SPS requirements.	1. Subsidize cooperative/group audits and train auditors 2. Deploy a low-cost digital traceability pilot (mobile-based) linking producers with processors 3. Align support with FTAs (EVFTA/	Export compliance (HACCP mandatory) is uneven among small producers because of high audit costs; suggests "group certification and shared audit models.

	Dimension	Policy recommendation	Actions	Rationale
			CPTPP) market requirements	
4	**Environmental Sustainability**	Incentivize sustainable feed, effluent regulation, mangrove–shrimp integration & IMTA demonstrations.	1. Introduce feed-efficiency targets and subsidies for low-impact feed 2. Enforce effluent discharge limits + build demo Integrated Multi-Trophic Aquaculture (IMTA) sites 3. Payment/credit for mangrove restoration tied to shrimp farms	effluent loads… habitat degradation… mangrove loss are problems for which integrated mangrove–shrimp systems and circular approaches may be priority mitigation options
5	**Nutrition Contribution**	Promote small-fish micro-processing (nutrient-dense pastes/powders), school-feeding aquatic products and social-marketing to increase intra-household intake of micronutrient-rich specie	1. Support local micro-processors to make shelf-stable nutrient pastes/ powders 2. Ensure that procurement rules for school feeding and health programmes include small-fish products 3. Conduct behaviour change campaigns promoting small fish for infants/ women	small fish consumed whole… provide multiple bioavailable micronutrients
6	**Climate Resilience & Readiness**	Integrate climate-smart aquaculture: salinity-tolerant breeds, mangrove restoration, insurance schemes, and early-warning systems for coastal/Delta communities	1. Allocate fund for breeding selection & adaptive husbandry trials 2. Prioritize mangrove restoration in delta alongside levee maintenance	Major climate change issues include sea level rise and salinity intrusion in the Mekong Delta; ocean warming linked increase in typhoons

	Dimension	Policy recommendation	Actions	Rationale
			3. Launch index-insurance pilots linked to extension and EWS	

11.2. Recommendations (specific, feasible, and linked to national priorities)

Table 11.2: Recommendations linked to national priorities

	Dimension	Policy recommendation	Linked national policies/ plans
1	**Fish Loss & Waste (FLW)**	Establish a national cold-chain & pooled logistics programme targeting landing sites, rural aggregation hubs and domestic market corridors.	Vietnam Fisheries Development Strategy to 2030, Vision to 2045 (Decision 339/QĐ-TTg, 2021) – emphasizes post-harvest loss reduction and modernization of logistics; Law on Fisheries (2017, effective 2019) – mandates improved handling & quality; MARD/MoAE (2025) institutional framework for infrastructure development
2	**Gender Inclusion**	Launch a Women in Aquatic Value Chains (WAVC) programme: access to microcredit, equipment grants, training and group certification for women processors and traders.	Vietnam Fisheries Development Strategy 2030 recognizes labour and social development roles; National gender and rural development priorities implemented through MARD/MoAE provincial system
3	**Compliance & Trade Readiness**	Scale group/ cooperative HACCP/ traceability certification & inexpensive digital traceability for smallholders to meet export and FTA SPS requirements.	**aw on Fisheries (2017)** – licensing, catch monitoring & traceability; **HACCP mandatory for exports**; **PSMA accession (2019)**; **FTA frameworks (EVFTA, CPTPP)** that require SPS compliance; **Vietnam Fisheries Dev. Strategy 2030** – value chain modernization & certification uptake

	Dimension	Policy recommendation	Linked national policies/ plans
4	**Environmental Sustainability**	Incentivize sustainable feed, effluent regulation, mangrove–shrimp integration & IMTA demonstrations.	Law on Fisheries (2017) – regulates aquaculture practices & environmental safeguards; Vietnam Fisheries Development Strategy 2030 – sustainable intensification, habitat protection; MoAE (2025) – integrates environment & aquaculture management
5	**Nutrition Contribution**	Promote small-fish micro-processing (nutrient-dense pastes/powders), school-feeding aquatic products and social-marketing to increase intra-household intake of micronutrient-rich specie	National Nutrition Strategies (through MOH) – target micronutrient deficiencies; Vietnam Fisheries Dev. Strategy 2030 – recognizes fish as key to food security; MoAE–MOH food safety & nutrition coordination referenced.
6	**Climate Resilience & Readiness**	Integrate climate-smart aquaculture: salinity-tolerant breeds, mangrove restoration, insurance schemes, and early-warning systems for coastal/Delta communities	Vietnam Fisheries Development Strategy 2030 – climate adaptation priority; Law on Fisheries (2017) – management of aquaculture systems; MoAE (2025) mandate – integrates agriculture + environment; National climate adaptation frameworks for Mekong Delta referenced in diagnostics

12.Provide the traffic-light scoring for the six key dimensions

1 2 3 4 5

Table 12.1: Traffic-light scores for the six dimensions

	Dimension	Score	Colour	Rationale
1	**Fish Loss & Waste (FLW)**	2		significant losses (15–30%) across landing, transport, small-scale processing and wet markets due to deficient cold-chain, limited ice, poor handling, power instability and fragmented smallholder chains

	Dimension	Score	Colour	Rationale
2	**Gender Inclusion**	2		Women are central to post-harvest, processing and trade, yet face limited access to credit, technology, training and formal markets. Much of women's work is informal, low-value, and lacks institutional support.
3	**Compliance & Trade Readiness**	4		Export chains are highly compliant (HACCP mandatory, ASC/GG uptake, strong residue testing), Viet Nam has ratified PSMA, and meets major SPS requirements for key markets (EU/US/Japan). However, smallholders struggle with certification costs, audits, traceability, and regulatory complexity causing uneven compliance abilities
4	**Environmental Sustainability**	3		Aquaculture intensification and coastal fisheries face significant environmental pressures: effluents, nutrient pollution, mangrove loss, and habitat degradation. National strategies support integrated systems and mangrove–shrimp restoration, but overfishing and habitat pressures remain substantial, and enforcement capacity is limited
5	**Nutrition Contribution**	4		Fish provide ~23–30% of animal protein, with high per capita consumption and micronutrient-rich small fish widely available. However, micronutrient deficiencies persist, especially in vulnerable groups; intra-household access and food safety gaps weaken conversion of availability into intake. Small fish remain a major positive nutrition asset
6	**Climate Resilience & Readiness**	3		Viet Nam faces severe climate risks such as salinity intrusion, storms, sea-level rise. There are well-established adaptation measures: mangrove restoration,

	Dimension	Score	Colour	Rationale
				salinity-tolerant breeds, diversification, insurance pilots and early-warning systems. Implementation gaps remain at local levels and smallholder resilience is uneven.

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