



A Review of Illegal, Unreported and Unregulated (IUU) Fishing: Global Trends, Drivers, Impacts and Management Responses

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ABSTRACT

Fish and other aquatic resources are critical to global food security, economic development, and livelihoods, especially in developing countries. However, illegal, unreported, and unregulated (IUU) fishing continues to jeopardise fisheries' viability and undercut global conservation and management efforts. This article investigates the idea and forms of IUU fishing, identifies the primary causes, and assesses the environmental, economic, and social consequences. It also examines current management and policy responses on the national and international levels. Furthermore, the study identifies rising global trends in IUU fishing, such as its concentration in weakly governed countries like West Africa and the growing sophistication of illegal fishing operations. The study highlights the importance of stronger governance frameworks, better monitoring and enforcement systems, improved traceability in seafood supply chains, and expanded international cooperation. Strengthening these measures is crucial for ensuring sustainable fisheries management and protecting marine biodiversity.

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INTRODUCTION

Fish and other aquatic organisms are some of the world's most valuable renewable natural resources. Aquatic food production and consumption have expanded dramatically in recent decades as a result of population growth, urbanisation, and shifting dietary preferences (Bakhah *et al.*, 2023). Aquatic foods are currently among the world's most commonly traded food commodities, making significant contributions to both national and global economy. In many poor nations, fisheries and aquaculture provide food, employment, poverty relief, and foreign exchange revenues (Ghosh and Dey, 2025). Fish accounts for a substantial amount of animal protein consumption for billions of people, particularly in coastal and inland populations (Tacon *et al.*, 2025). In addition to protein, fish contains critical micronutrients such as omega-3 fatty acids, vitamins, and minerals that are required for human health. The fisheries sector employs millions of

people across the value chain, including harvesting, processing, transportation, marketing, and exportation, making fisheries sustainability intimately related to food security and economic development (Gul *et al.*, 2024). Despite its importance, the fisheries sector confronts various issues, such as overfishing, habitat deterioration, climate change, pollution, and ineffective governance systems. Among them, illegal, unreported, and unregulated (IUU) fishing is still one of the most serious risks to marine resource sustainability. IUU fishing refers to actions that violate national, regional, or international fisheries conservation and management standards (Hayashi, 2004). Although IUU fishing is a global issue that affects both developed and developing countries (Hosch and Macfadyen, 2022), its consequences are especially severe in areas with inadequate institutional capability and limited enforcement. In West Africa, the situation is

aggravated by poor monitoring systems, corruption, a lack of regional cooperation, and the use of distant-water fishing fleets (Okafor-Yarwood 2019). Nigeria, as one of the region's largest coastal nations, is facing serious implications, including risks to food security, employment, and financial stability.

This paper critically examines the concept and forms of IUU fishing, analysing its fundamental drivers, assessing its environmental, economic, and social consequences, and synthesising current management and policy solutions, with a focus on global patterns and regional ramifications.

Global Trends in IUU Fishing

According to recent studies, IUU fishing is a chronic and evolving global concern with considerable regional and temporal variability. According to estimates, IUU fishing kills between 11 and 26 million tonnes of fish each year, resulting in significant global economic losses (Guida *et al.*, 2024; Zhu and Tang, 2024). Geographically, IUU fishing is most common in areas with weak governance and minimal enforcement capacity, particularly in West Africa, Southeast Asia, and parts of the Pacific. West Africa has been designated as a global hotspot due to high-value fisheries, weak regulatory institutions, and widespread exploitation by distant-water fleets (Cheng *et al.*, 2025). The nature of IUU fishing has varied over time as technology has advanced. To avoid discovery, modern illegal fishing activities increasingly use sophisticated equipment such as satellite navigation, AIS manipulation, and at-sea transshipment (Zuzanna *et al.*, 2022). These advances have made enforcement more complicated and expensive. Furthermore, globalisation of the seafood trade has increased the complexity of supply systems, making tracing more difficult and allowing illegally obtained fish to infiltrate global markets. Climate change exacerbates the problem by displacing fish stocks across borders, posing

additional governance challenges, and increasing the possibility of unregulated exploitation.

Concept and Forms of IUU Fishing

Illegal, unreported, and unregulated (IUU) fishing encompasses a range of practices that undermine fishery management systems and harm marine ecosystems. Illegal fishing is defined as fishing that occurs without authorisation or in violation of applicable laws and regulations (Kuemlangan *et al.*, 2023; Collins, 2022). Such behaviours include fishing without a valid licence, in restricted or closed areas, exceeding catch quotas, harvesting protected or endangered species, and using prohibited fishing equipment. These behaviours are directly related to stock decline and habitat destruction. According to (Eruaga and Okukpon, 2023), the global economic losses from illegal fishing are expected to be over US\$23 billion year.

Unreported fishing occurs when catches are not reported, underreported, or purposefully misreported to the proper authorities (Sok, 2022). Accurate catch data is crucial for evaluating stocks and allocating quota. Misreported catches have an impact on fisheries statistics, imperil management decisions, and may increase overfishing. Unregulated fishing is frequent in areas beyond national jurisdiction, particularly on the high seas, where management measures may be absent or weakly enforced (Blasiak and Claudet, 2024). The vastness of international waters, combined with little monitoring capability, allows for exploitation without accountability. Common IUU practices include fishing without a license, fishing during closed seasons, harvesting endangered species, exceeding catch limits, employing destructive gear such as drift nets and explosives, and engaging in transshipment at sea to evade detection (Mozumder *et al.*, 2023).

Table 1: Forms and Characteristics of IUU Fishing

Component	Definition	Key Characteristics	Consequences
Illegal Fishing	Fishing conducted in violation of national or international laws	No license, quota violations, fishing in closed areas, use of banned gear	Stock depletion, habitat destruction, revenue loss
Unreported Fishing	Failure to report or deliberate misreporting of catches	Under-declaration, falsified logbooks, concealed landings	Inaccurate stock assessment, poor management
Unregulated Fishing	Fishing in areas lacking effective management frameworks	High seas exploitation, weak or absent oversight	Overexploitation, governance gaps

Drivers of IUU Fishing

The reasons of IUU fishing are multifaceted and interwoven. The huge global demand for seafood offers substantial economic incentives for illicit fishing, particularly for high-value species like tuna and prawns (Rifai, 2025). Poverty and a lack of alternative livelihoods in

many coastal regions encourage people to engage in illegal fishing (Nauen and Boschetti, 2022). Weak governance systems, corruption, and insufficient enforcement capacity worsen the issue, especially in developing nations (Okafor-Yarwood, 2019). Furthermore, damaging subsidies and the rise of distant-water fleets push fishing

pressure beyond sustainable limits, even though these processes are frequently poorly monitored. Technological improvements, such as advanced navigation tools and fish detection technologies, allow illicit operators to access isolated fishing sites while

evading surveillance systems (Mozumder *et al.*, 2023). Furthermore, poor international regulatory frameworks, particularly on the high seas, promote unregulated exploitation (Blasiak and Claudet, 2024).

Table 2: Major Drivers of IUU Fishing

Category	Specific Drivers	References
Economic	High seafood demand, profitability of high-value species	Rifai (2025)
Social	Poverty, lack of alternative livelihoods	Nauen and Boschetti (2022)
Governance	Weak enforcement, corruption, limited cooperation	Okafor-Yarwood (2019)
Technological	Advanced detection systems, evasion technologies	Mozumder <i>et al.</i> (2023)
Institutional	Weak high-seas governance frameworks	Blasiak and Claudet (2024)

Environmental, Economic and Social Impacts

IUU fishing has serious environmental repercussions, including overfishing and disruption of marine ecosystems (Hountcheme and Simon, 2024; Batool *et al.*, 2025). The extinction of important species disrupts food webs and environmental balance (Eruaga and Okukpon, 2023).

Destructive activities harm vital habitats like coral reefs and seagrass beds (Dao *et al.*, 2024), and bycatch endangers sensitive marine animals. Climate change exacerbates these effects by changing species distribution and increasing ecological vulnerability, amplifying the effects of IUU fishing Voigt (2020).

Table 3: Summary of Impacts of IUU Fishing

Dimension	Key Effects	References
Environmental	Stock depletion, habitat destruction, biodiversity loss	Eruaga and Okukpon (2023); Dao <i>et al.</i> (2024)
Economic	Revenue loss, unfair competition, market distortion	Sumaila <i>et al.</i> (2020); Collyns (2022)
Social	Poverty, food insecurity, conflict, links to crime	Nauen and Boschetti (2022); Okafor-Yarwood (2019)

Management and Policy Responses

Combating IUU fishing necessitates coordinated, multi-level approaches. Strengthening monitoring, control, and surveillance (MCS) systems, such as vessel monitoring and satellite tracking, improves detection and enforcement (Sok, 2022). However, implementation is still unequal, especially in developing nations, due to high prices and technical capability constraints. Stricter fines and strengthened legal frameworks can serve as deterrents (Sumaila *et al.*, 2020), but enforcement efficacy is frequently determined by institutional ability and political will. Enhancing transparency and traceability through capture documentation methods lessens the opportunity for illegally obtained fish to enter legal markets (Hopkins *et al.*, 2024), but global supply chain complexity remains a concern.

assuring long-term management of shared fish populations.

International cooperation is crucial. The FAO Port State Measures Agreement (PSMA) is a significant legally binding agreement designed to prevent IUU-caught seafood from entering ports (Gouache, 2021). While the PSMA has seen increased ratification, its effectiveness differs by location due to variances in implementation capacity. Regional cooperation, particularly in West Africa, is crucial for improving enforcement, exchanging intelligence, and

CONCLUSION

Illegal, unreported, and uncontrolled fishing nevertheless poses a significant danger to marine ecosystems, economic stability, and global food security. It contributes to stock depletion, habitat damage, financial losses, and increased vulnerability for coastal populations.

RECOMMENDATIONS

Addressing IUU fishing necessitates targeted and coordinated efforts. First, governments should improve monitoring, control, and surveillance mechanisms, particularly by investing in technology and capacity building. Second, establishing transparency and traceability in seafood supply chains is critical for preventing illegal fish from reaching global markets. Third, strengthening regional and international cooperation is vital, particularly in high-risk regions like West Africa. Furthermore, policies should address underlying socioeconomic drivers by providing alternative livelihoods for coastal communities. Future research should focus on evaluating the effectiveness of existing policy instruments,

quantifying regional IUU trends, and investigating the relationship between IUU fishing and climate change.

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