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TITLE

**Exploring Human Rights and Environmental Impacts of Foreign Fishmeal factories
on Children in Kombo South in the Gambia.**

Subtitle

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ABSTRACT

The expansion of foreign-owned fishmeal factories in The Gambia has generated increasing debate regarding their environmental and socio-economic impacts on coastal communities. While these factories are often promoted as contributors to economic growth, employment creation, and export earnings, concerns have emerged regarding environmental degradation, depletion of fish stocks, and the implications of these developments for the rights and wellbeing of children. This study examines the environmental and human rights impacts of foreign-owned fishmeal factory operations on children in Kombo South, The Gambia, with particular focus on the communities of Sanyang, Gunjur, and Kartong.

The study adopts the Human Rights-Based Approach (HRBA) as its theoretical framework and employs a qualitative doctrinal research methodology based on the review and analysis of secondary sources, including academic literature, policy documents, legal instruments, government reports, and publications from civil society organizations. Particular attention is given to the rights of children as recognized under the United Nations Convention on the Rights of the Child (UNCRC).

The findings reveal that fishmeal factory operations have contributed to environmental challenges including air pollution, wastewater contamination, marine ecosystem degradation, and increased pressure on small pelagic fish stocks. These environmental impacts have significant implications for children's rights to health, food and nutrition, education, and a safe, clean, healthy, and sustainable environment. The study further finds that the expansion of the fishmeal industry has contributed to declining access to affordable fish, food insecurity, livelihood disruptions, and environmental conditions that disproportionately affect vulnerable groups, particularly children and women.

Applying the Human Rights-Based Approach, the study identifies shortcomings relating to participation, accountability, transparency, empowerment, and the protection of vulnerable groups. It concludes that current patterns of industrial fisheries development in Kombo South are insufficiently aligned with children's rights and sustainable development objectives. The study recommends stronger environmental regulation, improved fisheries governance, enhanced

community participation, greater transparency, and the integration of child-rights considerations into environmental and development decision-making processes.

Keywords: Fishmeal factories, children's rights, environmental degradation, Human Rights-Based Approach, fisheries governance, food security, Kombo South, The Gambia.

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LIST OF ABBREVIATIONS

BOD – Biochemical Oxygen Demand

COD – Chemical Oxygen Demand

CRC – Convention on the Rights of the Child

EIA – Environmental Impact Assessment

ETIAS – Environmental Impact Assessment Study

FAO – Food and Agriculture Organization of the United Nations

FDI – Foreign Direct Investment

FMFO – Fishmeal Factory Operations

GDP – Gross Domestic Product

GIEPA – Gambia Investment and Export Promotion Agency

HRBA – Human Rights-Based Approach

NEA – National Environment Agency

NGO – Non-Governmental Organization

OHCHR – Office of the United Nations High Commissioner for Human Rights

SDGs – Sustainable Development Goals

UN – United Nations

UNCRC – United Nations Convention on the Rights of the Child

UNEP – United Nations Environment Program

UNGPs – United Nations Guiding Principles on Business and Human Rights

UNHRC – United Nations Human Rights Council

VDC – Village Development Committee

WHO – World Health Organization

REFERENCES

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Fish provide more than 4.5 billion people with at least 15% of their average per capita intake of animal protein, and a Fish's unique nutritional properties make it also essential to health of billions of consumers in both developed and developing countries [¹]. From 1961 to 2016 average fish consumption outpaced population growth and exceeded that of meat [²]. The demand for fish-based ingredient has increase with the fishing industry rapidly growing around the world, especially in Asia, South America and Africa. In response to increasing global demand for Fish derived Ingredient (FDI), the fishmeal industry has increasingly relied on fish species traditionally used for direct human consumption [³]. This already place a high stake on the livelihood of people who entirely depends on fish and fishing as a means of sustenance and economy gains, most especially those living around coastal communities. This increasing demand has intensified pressure on marine resources, particularly small pelagic fish species that are essential for both ecological sustainability and human consumption, and the industry exerts real pressure on the nutritional security of West African Countries, as pelagic fish as the main source of animal protein in Gambia and Senegal and have been over exploited in recent years [⁴]. In the Gambia, the fishmeal industry is dominated by foreign owned companies. While the establishment of such industries is often presented as economically beneficial for host country, emerging evidence suggests that their impacts are more complex, particularly in developing

¹ Christophe Béné et al., "Feeding 9 Billion by 2050 – Putting Fish Back on the Menu," *Food Security* 7, no. 2 (2015): 261–74, <https://doi.org/10.1007/s12571-015-0427-z>.

² FAO, ed., *Meeting the Sustainable Development Goals, The State of World Fisheries and Aquaculture 2018* (Rome, 2018).

³ Tim Cashion et al., "Most Fish Destined for Fishmeal Production Are Food-grade Fish," *Fish and Fisheries* 18, no. 5 (2017): 837–44, <https://doi.org/10.1111/faf.12209>.

⁴ El Hadj Bara Dème et al., "Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa: Cases of Mauritania, Senegal and the Gambia," *Frontiers in Marine Science* 10 (March 2023): 871911, <https://doi.org/10.3389/fmars.2023.871911>.

coastal states and studies have indicated that The Gambia is not an exception to that menace caused by the presence of fishmeal factories; from environmental degradation, pollution, public health issues, risk to the lives of communities in the coastline and most particularly the most vulnerable, Children. Notably, there are three fishmeal factories in The Gambia, located in the coastal communities of Sanyang (Nessim Fishing and Fish Processing Company Limited (established in 2016), Gunjur (Golden Lead Import and Export Trade Company Limited (established in 2014) and Kartong JXYG Aquatic Products Limited (established in 2016) in Kombo South District, two are fully owned, run and managed by the Chinese, while the other one is run by the Chinese and co-owned by a Mauritanian. Their presence is cited to be one of the causes of lack of fish in Gambian households [5]. The primary species for the fishmeal are round and flat sardinella (*Sardinella aurita* and *S. maderensis*) and bonga (*Ethmalosa fimbriata*) which are essential to food security and livelihoods in fishing communities, particularly in Senegal and The Gambia [6].

These species of fish constitute a primary source of animal protein, essential micronutrients, and fatty acids for millions of people in West Africa, especially among low-income populations [7]. According to FAO report, In some regions, fish accounts for up to 60% of total dietary protein intake [8]. Which is evident in the Gambia, just like other coastal countries, and the presence of these fishmeal factories placed significant pressure on artisanal fishermen who provide fish for the general populace who are highly dependent on fish. This trend raises significant concerns regarding food security, particularly in low-income countries where fish constitutes a major component of local diets [9]. This place fishmeal factories in direct competition with local artisanal fishers, thereby threatening livelihoods and national food security.

Furthermore, local communities have reported environmental concerns, including pollution from wastewater disposal, unpleasant odors, and negative impacts on coastal tourism [10]. The

⁵ “EU-The_gambia-Fishery_june_2020 REPORT,” n.d.

⁶ “A WASTE - Greenpeace 2019,” n.d.

⁷ Djiga Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal,” *Aquatic Living Resources* 31 (2018): 25, <https://doi.org/10.1051/alr/2018009>.

⁸ FAO, ed., *Opportunities and Challenges*, The State of World Fisheries and Aquaculture 2014 (Rome, 2014).

⁹ Béné et al., “Feeding 9 Billion by 2050 – Putting Fish Back on the Menu.”

¹⁰ “CM-WEB-FINAL-FISHING-FOR-CATASTROPHE-2019,” n.d.

expansion of these factories gained momentum during the later years of the government of former President Yahya Jammeh. Despite their perceived economic benefits, studies indicate that their operations have generated significant environmental and social challenges due to their proximity to coastal communities and such has cost some social tension among the native of Sanyang were Nessim Fishmeal factory is located and resulted to a loss of a live, and for Golden lead, they were equally accused of polluting the beaches, over fishing and caused lot of environmental degradation, and in response, the National Environmental Agency (NEA) temporarily ordered for closure. Social tensions linked to these factories have also emerged. For example, in March 2021, protests occurred in Sanyang involving local youth and the Nessim fishmeal factory, reflecting growing dissatisfaction within affected communities [¹¹].

These developments highlight the broader social and environmental implications of industrial fishmeal production. Also, environmental degradation and reduced access to food resources are increasingly recognized not only as ecological and economic issues, but also as human rights concerns, particularly in relation to the rights to health, food, and a safe environment.

This position is reinforced by the United Nations General Comment on Children's Rights and Environment, which recognizes that the protection of the environment contributes directly to human wellbeing and the full enjoyment of human rights for both present and future generations. The council further acknowledges that the consequences of environmental harm are experienced most acutely by persons already in vulnerable situations, including children, whose rights to health, nutrition, development and a safe environment may be disproportionately affected [¹²]. These impacts are caused by corporations that are private and they have a responsibility to respect and not to harm people and the environment and on similar case, the states duty to protect people from any form of abuses or violations by nonstate actors.

The United Nations, through its Guiding Principles on Business and Human Rights, emphasizes that states have a duty to protect individuals from human rights abuses, while corporations have a responsibility to avoid causing environmental and social harm. This framework is particularly

¹¹ "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.

¹² "General Comment No. 26 (2023) on Children's Rights and the Environment, with a Special Focus on Climate Change: Committee on the Rights of the Child," *International Human Rights Law Review* 12, no. 2 (2023): 322–55, <https://doi.org/10.1163/22131035-12020006>.

relevant in contexts where industrial activities intersect with vulnerable populations and weak regulatory enforcement. In this regard, the impacts of fishmeal factories raise critical concerns about environmental governance and human rights, particularly children, who represent one of the most vulnerable groups and may face disproportionate risks related to health, nutrition, and overall wellbeing

1.2 Problem Statement

The existence of fishmeal factories in the coastal communities of Sanyang, Gunjur and Kartong has generated increasing concern regarding environmental degradation, including pollution, depletion of fish stocks and associated health risks for the local population. These challenges pose significant threats to communities that depend heavily on fisheries for income and livelihoods. While these industries are often justified on the basis of economic growth and employment opportunities, existing evidence suggests that their operations may be contributing to marine pollution, reduced access to fish resources and heightened social tensions within host communities [13] [14]. These challenges are particularly significant in The Gambia, where fish constitutes an essential source of food, livelihoods and household nutrition, especially among low-income coastal communities [15].

Children, as one of the most vulnerable groups, may be disproportionately affected through reduced access to nutrition, exposure to environmental hazards and broader impacts on their wellbeing. Despite these growing challenges, there remains limited attention to the extent to which fishmeal production activities affect the human rights of local communities, particularly children. The United Nations Human Rights Council recognizes that environmental harm is closely linked to the enjoyment of fundamental human rights and that its impacts are often felt most acutely by vulnerable groups, including children [16].

Recent scholarship has largely focused on economic benefits and general environmental impacts, with limited emphasis on how these processes affect environmental justice, public health and

¹³ “Fishing-For-CATASTROPHE-2019-Changing Market-2019.”

¹⁴ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

¹⁵ Béné et al., “Feeding 9 Billion by 2050 – Putting Fish Back on the Menu.”

¹⁶ “A_HRC_RES_48_13-EN,” n.d.

children's rights. Furthermore, although international frameworks such as the United Nations Guiding Principles on Business and Human Rights (UNGP), emphasize the responsibility of states and corporations to prevent environmental harm and protect human rights, there remains a lack of clarity regarding how these principles are implemented and enforced in the Gambian context. Therefore, there is a need for a focused exploration of the environmental and human rights impacts of fishmeal factories in Kombo South, with particular attention to how these impacts affect children and other vulnerable groups. Addressing this gap will contribute to a better understanding of the relationship between industrial activity, environmental governance and the human rights of children in coastal communities in The Gambia.

Consequently, concerns have emerged regarding whether the economic benefits associated with industrial fishmeal production are being achieved at the expense of children's rights, environmental sustainability, and community wellbeing.

1.3 Research Gap

Previous studies on fishmeal factories in The Gambia and West Africa have mainly examined environmental degradation, overfishing, and their socio-economic impacts. However, there is limited research that specifically examines how these industrial and environmental processes affect the human rights of children, particularly their rights to health, food, development, and a safe environment in Kombo South. This study seeks to fill this gap by providing a child-rights-focused analysis of the environmental and human rights implications of fishmeal factory operations

1.4 Research Question(s)

What are the environmental and human rights impacts of foreign-owned fishmeal factories operation on children in Kombo South, The Gambia?

Sub Research Questions

1. What environmental impacts have foreign-owned fishmeal factory operations caused in Kombo South, The Gambia?

2. How do these environmental impacts affect children's health, food security, education, and overall wellbeing?
3. What human rights issues emerge from the environmental impacts of fishmeal factory operations on children in Kombo South?

1.5 Research Objective

General Objective

To examine the environmental and human rights impacts of foreign-owned fishmeal factory operations on children in Kombo South, The Gambia.

Specific Objectives

1. To assess the environmental impacts of fishmeal factory operations in Kombo South, The Gambia.
2. To analyse how these environmental impacts affect children's health, food security, education, and overall wellbeing.
3. To examine the human rights implications of these impacts, particularly in relation to children's rights.

1.6 Significance/Justification of the Study

This study is significant from both academic and practical perspectives. Academically, it contributes to the limited body of literature examining the relationship between industrial fisheries development, environmental degradation, and children's rights in The Gambia. While existing studies have largely focused on the economic and environmental dimensions of fishmeal production, relatively little attention has been given to its implications for children's rights and wellbeing. By adopting a child-rights perspective and applying the Human Rights-Based Approach (HRBA), this study contributes to scholarship on environmental justice, human rights, and sustainable development within coastal communities.

Practically, the study is relevant to policymakers, regulatory institutions, civil society organizations, and community stakeholders concerned with fisheries governance and environmental protection. By highlighting the environmental and human rights challenges

associated with fishmeal factory operations, the study provides insights that may support the development of more effective regulatory, environmental, and child-sensitive policy responses. The study is also important because it demonstrates how environmental degradation and resource depletion can affect children's rights to health, food, education, development, and a safe, clean, healthy, and sustainable environment. Given that children are among the most vulnerable groups in society, understanding the impacts of industrial activities on their wellbeing is essential for promoting inclusive and rights-based development.

At the local level, the study brings attention to the experiences of communities in Kombo South, particularly children and other vulnerable groups affected by fishmeal factory operations. In doing so, it contributes to ongoing discussions on environmental governance, corporate responsibility, sustainable fisheries management, and community wellbeing in The Gambia. Finally, the study contributes to broader international debates on business and human rights by demonstrating how industrial development projects can generate environmental and social impacts that affect the enjoyment of fundamental human rights, particularly among vulnerable populations.

1.7 Scope and Limitations

This study focuses on the environmental and human rights impacts of foreign-owned fishmeal factory operations on children in Kombo South, The Gambia, with particular attention to the communities of Sanyang, Gunjur, and Kartong. The study examines issues relating to environmental degradation, access to food resources, health risks, and the rights of children to health, development, education, and a safe, clean, healthy, and sustainable environment.

The study is geographically limited to Kombo South and does not provide a comparative analysis of fishmeal factory operations in other districts of The Gambia or other West African countries. Furthermore, the research focuses primarily on children and other vulnerable groups and therefore does not comprehensively examine the broader macroeconomic impacts of the fishmeal industry.

A further limitation relates to the availability of recent empirical data and community-based information concerning the long-term environmental and human rights impacts of fishmeal

factory operations. As the study relies primarily on secondary sources, the findings are constrained by the availability, quality, and scope of existing literature.

1.8 THESIS OUTLINE/CHAPTER OVERVIEW.

This thesis is structured into five chapters. Chapter One introduces the study and presents the background, problem statement, research questions, objectives, significance, scope, and organization of the study. Chapter Two reviews the relevant literature on fishmeal factory operations, environmental impacts, children's rights, and the Human Rights-Based Approach (HRBA), and discusses the theoretical and conceptual frameworks underpinning the study. Chapter Three outlines the research methodology, including the research design, data collection methods, data sources, and analytical framework employed in the study. Chapter Four presents the findings and analyses them using the Human Rights-Based Approach, with particular attention to the environmental and human rights impacts of fishmeal factory operations on children in Kombo South, The Gambia. Chapter Five summarizes the major findings, draws conclusions, and provides recommendations for policy, practice, and future research.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter reviews existing literature on the environmental and human rights impacts of fishmeal factory operations, with particular focus on children's rights, environmental justice, and business and human rights within coastal communities in The Gambia.

2.1 Fishmeal Industry and Environmental Impacts

Existing literature has increasingly drawn attention to the environmental consequences associated with fishmeal factory operations in coastal communities. Studies indicate that one of the most significant impacts is the over-exploitation of fish stocks, particularly small pelagic

species that are essential for both ecological balance and food security in The Gambia and the wider West African region [¹⁷] This has contributed to declining fish availability and increased pressure on artisanal fishing communities that depend on these resources for their livelihoods. In addition, the literature highlights issues of environmental pollution and waste management associated with fishmeal processing activities, including wastewater discharge and coastal contamination in affected communities [¹⁸]. These environmental challenges are often compounded by broader ecosystem degradation and climate-related vulnerabilities, which further threaten marine biodiversity and the sustainability of fisheries [¹⁹]. Additionally, some studies highlight the absence or limited public accessibility of Environmental Impact Assessment (EIA) reports related to the fishmeal factory operations [²⁰].

2.2.1 Over-exploitation and Fish Stock Depletion

One of the most widely documented environmental impacts of fishmeal factory operations is the over-exploitation and depletion of fish stocks. Existing literature consistently shows that the fishmeal industry relies heavily on food-grade fish species that are suitable for direct human consumption. These species, particularly small pelagic fish such as sardinella and bonga, constitute an important source of protein and livelihoods for coastal communities in The Gambia and the wider West African region. As industrial demand for fishmeal continues to rise, increasing pressure has been placed on these already vulnerable fish stocks, contributing to their decline and threatening the sustainability of marine resources [²¹].

¹⁷ FAO, *Opportunities and Challenges; The State of World Fisheries and Aquaculture 2020* (FAO, 2020), <https://doi.org/10.4060/ca9229en>; Omar Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia: A Study in Sanyang Village,” *OALib* 10, no. 04 (2023): 1–9, <https://doi.org/10.4236/oalib.1109581>.

¹⁸ “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018,” n.d.; “NHRC 2024 Human Rights Report,” n.d.
¹⁹ *The State of World Fisheries and Aquaculture 2020*; FAO, *Opportunities and Challenges*; “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018.”

²⁰ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²¹ Cashion et al., “Most Fish Destined for Fishmeal Production Are Food-grade Fish”; FAO, *Meeting the Sustainable Development Goals*; Béné et al., “Feeding 9 Billion by 2050 – Putting Fish Back on the Menu”; Dème et al., “Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa.”

The literature further emphasizes that the depletion of small pelagic fish has broader ecological consequences beyond the issue of declining fish numbers. As forage fish occupying lower trophic levels, species such as sardinella play a crucial role in the marine food web by transferring energy from plankton to higher-level predators, including larger fish species, marine mammals, and seabirds. Their continued depletion therefore contributes to ecosystem disruption and threatens marine biodiversity. In addition, some studies point to the use of small mesh nets and other industrial fishing practices that result in the capture of juvenile fish, thereby reducing the reproductive capacity of fish populations and undermining long-term stock recovery [²²].

Beyond the ecological dimension, existing studies increasingly link fish stock depletion to significant socio-economic and human rights concerns. In addition to competition between industrial processing and local consumption needs, fish stocks depletion has contributed to rising fish prices and reduced access to affordable nutrition. This has particularly serious implications for children, who may face heightened risks of malnutrition, stunting, and broader impacts on their health and development. Moreover, artisanal fishers and women fish processors in coastal communities are often disproportionately affected as industrial operations divert fish resources away from local markets and livelihoods. [²³]. The literature in overall suggests that over-exploitation of fish stocks poses serious risks to marine ecosystems and threatens the sustainability of fisheries-dependent communities.

2.2.2 Pollution and Waste Disposal

Several studies have highlighted pollution and waste disposal as key environmental challenges associated with fishmeal factory operations. One of the most frequently documented issues identified is the emission of noxious odors and air pollutants during the processing phase. These emissions often generated through cooking and drying processes, release volatile organic compounds that negatively affect air quality in surrounding communities. Studies also indicate

²² Cashion et al., “Most Fish Destined for Fishmeal Production Are Food-grade Fish”; FAO, *Opportunities and Challenges; The State of World Fisheries and Aquaculture 2020*;

²³ Béné et al., “Feeding 9 Billion by 2050 – Putting Fish Back on the Menu”; Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal”.

that such conditions can lead to respiratory discomfort, irritation, and reduced quality of life for nearby residents, while also affecting local economic activities such as tourism in coastal areas [24]. In addition to air pollution, the discharge of industrial wastewater represents a significant environmental challenge associated with fishmeal factories. The literature highlights that untreated or poorly managed wastewater is often released into nearby marine and terrestrial environments, leading to contamination of water sources and surrounding land [25].

The literature points to persistent challenges in solid waste management, particularly the disposal of excess or spoiled fish in coastal environments associated with fishmeal factory operations (see Appendix A, Figure A1). This phenomenon has been linked to situations where fishmeal factories are unable to process the volume of fish landed, that results in large quantities of fish being discarded along the beaches or in surrounding environment [26](see Appendix A, Figure A2). Such practices contribute to environmental degradation, produce strong odors, and negatively affect local economic activities such as tourism. More broadly these patterns reflect underlying challenges in the management of fisheries resources and industrial capacity, reinforcing concerns about unsustainable exploitation.

Finally, a recurring concern across the literature is the lack of transparency and weak enforcement of environmental regulations governing fishmeal factory operations. Studies highlighted limited public access to Environmental Impact Assessment (EIA) reports and insufficient monitoring of pollution levels [27]. This lack of accountability undermines effective environmental governance and raises broader human rights concerns, particularly in relation to the right to a healthy environment.

²⁴ “NHRC 2024 Human Rights Report”; “Changing Markets Foundation -2019-Until the Seas Run Dry,” n.d.; “A WASTE - Greenpeace 2019.”

²⁵ “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018”; “NHRC 2024 Human Rights Report”; “A WASTE - Greenpeace 2019”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

²⁶ “Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “A WASTE - Greenpeace 2019.”

²⁷ “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018”; “NHRC 2024 Human Rights Report”;

2.2.3 Degradation of Marine and Coastal Ecosystems Linked to Fisheries Exploitation and Fishmeal Production

The expansion of the fishmeal industry in West Africa has been increasingly associated with the degradation of marine and coastal ecosystems. In The Gambia, this degradation is largely driven by intensified fishing practices aimed at supplying fishmeal factories, which prioritize export-oriented production over ecological sustainability. Studies indicate that this industrial shift has placed significant pressure on marine resources, contributing to long-term environmental decline [28]. A key concern highlighted in the literature is the over-exploitation of small pelagic species such as sardinella and bonga, which play a critical role in marine ecosystems. These species are widely classified as overexploited, yet they remain the primary raw material for fishmeal production. Their large-scale removal disrupts marine food webs by reducing the availability of prey for higher trophic species, including larger fish, seabirds, and marine mammals. This imbalance threatens overall ecosystem stability and increases the risk of localized ecological decline [29] (see Appendix A, Figure A3).

In addition to resource depletion, industrial fishmeal production contributes to environmental degradation through pollution and unsustainable fishing practices. The discharge of untreated or poorly managed wastewater into marine environments has been identified as a significant threat, leading to water contamination and ecological stress. Furthermore, the increasing demand for fishmeal has been linked to illegal, unreported, and unregulated fishing, including the use of inappropriate fishing gear that captures juvenile fish, thereby undermining stock regeneration and long-term sustainability [30]. Coastal ecosystems are also affected by the physical expansion of industrial activities associated with fishmeal production. Infrastructure development and related activities, such as coastal sand mining, contribute to shoreline degradation, erosion, and the destruction of sensitive habitats, including mangrove ecosystems. These habitats are essential

²⁸ FAO, *Meeting the Sustainable Development Goals*; Cashion et al., “Most Fish Destined for Fishmeal Production Are Food-grade Fish”; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

²⁹ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.;

³⁰ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “Changing Markets Foundation - 2019-Until the Seas Run Dry.”

for biodiversity conservation and coastal protection, and their degradation further weakens ecosystem resilience in the face of environmental and climate-related pressures [³¹].

These forms of marine and coastal ecosystem degradation have significant implications for human wellbeing, particularly for vulnerable populations that depend directly on these ecosystems for food, livelihoods, and survival.

Building on these environmental challenges, the following section examines their implications for human rights, particularly among vulnerable populations in coastal communities

2.3 Human Rights Implications of Fishmeal Factories (on Vulnerable Communities)

Existing literature increasingly highlights that the environmental and socio-economic impacts of fishmeal factory operations extend beyond ecological degradation to significant human rights concerns. These impacts disproportionately affect vulnerable groups, particularly children, women, and artisanal fishing communities that depend directly on marine resources for food, livelihoods, and wellbeing

2.3.1 Right to Food and Nutritional Security

Existing literature recognises the right to adequate food and nutritional security as a fundamental human right protected under article 11 of the International Covenant on Economic, Social, and Cultural Rights (ICESCR) and The Universal Declaration Human Rights (UDHR), which recognizes the right of everyone to an adequate standard of living, adequate standard of living, including adequate food, and the fundamental rights to freedom from hunger [³²]. The committee on Economic, Social and Cultural Rights further clarifies that the right to food encompasses both

³¹ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “MINISTRY-OF-ENVIRONMENT-CLIMATE-CHANGE-AND-NATURAL-RESOURCES-STRATEGIC-PLAN-2019-2022,” n.d.; “The-Gambia-National-Development-Plan-2018-2021,” n.d.

³² “International Covenant on Economic, Social and Cultural Rights, adopted 16 December 1966, 993 UNTS 3 (entered into force 3 January 1976) art 11.

the availability and accessibility of nutritionally adequate and culturally acceptable food necessary for human dignity and wellbeing [33].

The literature consistently argues that the rapid expansion of fishmeal factories in West Africa has intensified pressure on already vulnerable fish stocks by diverting large quantities of food-grade fish away from local consumption towards industrial export markets. Several studies indicate that species such as bonga and sardinella, which traditionally serve as staple protein sources for local populations, are increasingly processed into fishmeal and fish oil for aquaculture and livestock feed industries abroad, particularly in Asian and European markets [34]. Researchers further note that small pelagic fish provide more than half of the animal protein intake for many West African populations, making their depletion a significant food security concern [35]. Consequently, critics argue that the expansion of the FMFO industry contributes to the externalisation of nutritional resources from food-insecure regions towards global industrial feed supply chains [36]. Existing studies further demonstrate that target species used by FMFO are already fully exploited or overexploited, while the establishment of industrial processing facilities has accelerated fishing intensity and unsustainable harvesting practices, including the capture of juvenile fish [37]. The literature widely identifies fishmeal production as a major driver of increasing demand for small pelagic fish, thereby contributing to declining fish availability in local markets and undermining traditional food systems relied upon by coastal populations [38]

³³ “Committee on Economic, Social and Cultural Rights Twentieth Session Geneva, 26 April–14 May 1999 Agenda Item 7,” *The International Journal of Children’s Rights* 7, no. 4 (1999): 395–98, <https://doi.org/10.1163/15718189920494462>.

³⁴ “*Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa* (FAO; WorldFish ; University of Greenwich; 2022), <https://doi.org/10.4060/cb7990en>; Dème et al., “Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa”; Fatou H. Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*, n.d.

³⁵ “A WASTE - Greenpeace 2019”; FAO, *Meeting the Sustainable Development Goals; Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Béné et al., “Feeding 9 Billion by 2050 – Putting Fish Back on the Menu”; “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018.”

³⁶ Cashion et al., “Most Fish Destined for Fishmeal Production Are Food-grade Fish”; “A WASTE - Greenpeace 2019”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

³⁷ “A WASTE - Greenpeace 2019”; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

³⁸ “A WASTE - Greenpeace 2019”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

Several studies also report substantial increases in local fish prices associated with the expansion of fishmeal factories operations. In The Gambia, for example, reports indicate that the price of a basket of bonga fish has increased dramatically in recent years, with some studies documenting price increases from approximately GMD 100 to GMD 500, while others report increases from GMD 500 to nearly GMD 2,000 in certain coastal communities [39]. Similar trends have been observed in neighboring countries such as Mauritania, where the market price of sardinella reportedly increased from below USD 100 per ton to more than USD 400 per ton following the growth of fishmeal production [40]. Rising prices have significantly reduced the affordability of fish for low-income households and increased the vulnerability of already food-insecure communities [41]. Some studies further associate declining fish accessibility with worsening food insecurity indicators in The Gambia, where national food insecurity rates have reportedly risen in recent years partly due to the scarcity of bonga fish targeted by industrial factories [42].

The literature additionally highlights an important debate regarding the nature of fish used within the fishmeal industry. Industry actors and trade organizations often maintain that fishmeal production primarily utilizes “trash fish,” fish by-products, or species unsuitable for direct human consumption [43]. However, independent studies challenge this claim by demonstrating that a substantial proportion of fish processed into fishmeal consists of food-grade species that could otherwise be consumed directly by local populations [44]. Some research estimates that

³⁹ “EU-The_gambia-Fishery_june_2020 REPORT”; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

⁴⁰ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

⁴¹ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa; The State of Food Security and Nutrition in the World 2025* (FAO; IFAD; UNICEF; WFP; WHO, 2025), <https://doi.org/10.4060/cd6008en>; “EU-The_gambia-Fishery_june_2020 REPORT”;

⁴² “EU-The_gambia-Fishery_june_2020 REPORT”; “The-Gambia-National-Development-Plan-2018-2021”; “Gambia Recovery Focus-NDP-2023-2027,” n.d.

⁴³ T. Hecht and C. L. W. Jones, *Use of Wild Fish and Other Aquatic Organisms as Feed in Aquaculture – a Review of Practices and Implications in Africa and the Near East*, n.d.; “De-Koning-2005-Properties-of-South-African-Fish-Meal-a-Review-Research-in-Action (1),” n.d.; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

⁴⁴ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “A WASTE - Greenpeace 2019”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

approximately 90 per cent of wild-caught fish used in FMFOs production is suitable for human consumption [45]. This has generated growing criticism from researchers and civil society organizations, which argue that the conversion of nutritionally valuable fish into industrial feed products undermines local food sovereignty and disproportionately affects populations already experiencing nutritional insecurity [46].

Existing studies further demonstrate that the socio-economic consequences of fish scarcity disproportionately affect vulnerable groups, particularly women engaged in artisanal fish processing and fish marketing activities. In many coastal communities, women play a central role in local fish distribution systems and household food provision [47]. However, because fishmeal factories frequently purchase fish in large quantities and offer immediate cash payments, local women processors and vendors often struggle to compete for access to raw materials, especially where traditional transactions rely on informal credit arrangements [48]. Consequently, the expansion of industrial fishmeal production has disrupted traditional livelihood systems, weakened local food distribution networks, and increased economic insecurity among women-dependent households [49]. The literature further suggests that the economic benefits promoted by governments and investors often fail to compensate for the broader loss of artisanal livelihoods and local food resilience within affected communities [50].

In addition to economic concerns, studies report that fishmeal factory operations have generated significant environmental and social impacts within coastal communities. Residents living near factories frequently complain about pungent odors, smoke emissions, wastewater discharge, and

⁴⁵ Cashion et al., “Most Fish Destined for Fishmeal Production Are Food-grade Fish”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*.

⁴⁶ “A WASTE - Greenpeace 2019”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia; Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Cashion et al., “Most Fish Destined for Fishmeal Production Are Food-grade Fish”; Helen Onyeaka et al., “Beyond Hunger: Unveiling the Rights to Food in SUB-SAHARAN Africa,” *Food and Energy Security* 13, no. 1 (2024): e530, <https://doi.org/10.1002/fes3.530>.

⁴⁷ “EU-The_gambia-Fishery_june_2020 REPORT”.

⁴⁸ “Changing Markets Foundation -2019-Until the Seas Run Dry”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

⁴⁹ “EU-The_gambia-Fishery_june_2020 REPORT”; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

⁵⁰ “Changing Markets Foundation -2019-Until the Seas Run Dry”.

environmental pollution affecting beaches and residential areas [⁵¹]. Some studies note that these environmental conditions have negatively affected local tourism activities and contributed to community protests, social tensions, and conflict between local residents, factory operators, and state authorities [⁵²].

The literature also highlights growing concerns regarding the implications of fish depletion for children's health and nutritional wellbeing. Reduced access to affordable fish may contribute to malnutrition, micronutrient deficiencies, stunting, and developmental challenges among children who rely heavily on fish-based diets [⁵³]. These concerns are particularly significant in The Gambia, where child malnutrition and stunting remain persistent public health challenges, with existing studies indicating that approximately one in four children experiences stunted growth [⁵⁴]. Given the nutritional importance of small pelagic fish as sources of protein and essential fatty acids necessary for cognitive and physical development, declining fish accessibility may further exacerbate existing inequalities in child health and nutrition [⁵⁵].

Beyond nutritional impacts, studies also report that children living near fishmeal factories experience various respiratory and environmental health problems associated with factory emissions and pollution [⁵⁶]. Reported illnesses include asthma, rhinitis, chronic coughing, and breathing difficulties linked to smoke and noxious odors emitted during factory operations [⁵⁷].

⁵¹ "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d., Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

⁵² "Changing Markets Foundation -2019-Until the Seas Run Dry"; "EU-The_gambia-Fishery_june_2020 REPORT."

⁵³ Ana Ayala and Benjamin Mason Meier, "A Human Rights Approach to the Health Implications of Food and Nutrition Insecurity," *Public Health Reviews* 38, no. 1 (2017): 10, <https://doi.org/10.1186/s40985-017-0056-5>; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; FAO, *Meeting the Sustainable Development Goals*; *The State of World Fisheries and Aquaculture 2020*; Béné et al., "Feeding 9 Billion by 2050 – Putting Fish Back on the Menu"; "Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018."

⁵⁴ "The-Gambia-National-Development-Plan-2018-2021"; "Gambia Recovery Focus-NDP-2023-2027"; "EU-The_gambia-Fishery_june_2020 REPORT."

⁵⁵ FAO, *Meeting the Sustainable Development Goals*; *The State of World Fisheries and Aquaculture 2020*; Béné et al., "Feeding 9 Billion by 2050 – Putting Fish Back on the Menu."

⁵⁶ "CM-WEB-FINAL-FISHING-FOR-CATASTROPHE-2019"; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; "Changing Markets Foundation -2019-Until the Seas Run Dry"; "Development of an Air Pollutant - Peru," n.d.

⁵⁷ "EU-The_gambia-Fishery_june_2020 REPORT"; "Changing Markets Foundation -2019-Until the Seas Run Dry"; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*.

In certain coastal communities, environmental pollution associated with fishmeal processing has reportedly disrupted educational activities, with schools near affected beaches occasionally forced to suspend operations due to unbearable environmental conditions [58]. These findings suggest that the impacts of industrial fishmeal production extend beyond food insecurity alone and may affect a broader range of children's socio-economic and developmental rights.

Despite increasing recognition of these concerns, important gaps remain within the existing literature. Current studies provide limited long-term empirical data directly examining the relationship between fishmeal factory operations and specific childhood nutritional outcomes such as stunting rates, micronutrient deficiencies, and developmental health indicators [59]. There is also insufficient research examining the broader implications of declining artisanal fisheries on children's education, household welfare, and potential child labor risks within affected coastal communities [60]. Furthermore, limited transparency surrounding factory operations, fish sourcing practices, catch composition, and production volumes continues to constrain comprehensive scientific and human rights assessments of the industry's overall socio-economic and nutritional impacts.[61] As many factories reportedly provide limited public access to operational data, researchers face significant challenges in accurately evaluating the full scale of environmental exploitation and human rights implications associated with industrial fishmeal production.[62] These gaps underscore the importance of further research examining the intersection between industrial fisheries, environmental exploitation, food security, and children's rights in Gambian coastal communities.

2.3.2 Right to Work and Livelihoods

⁵⁸ Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

⁵⁹ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Elena M. Finkbeiner et al., "Insights from a Community of Practice: Integrating Human Rights in Fisheries Improvement," *Marine Policy* 163 (May 2024): 106100, <https://doi.org/10.1016/j.marpol.2024.106100>.

⁶⁰ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; "EU-The_gambia-Fishery_june_2020 REPORT"; Finkbeiner et al., "Insights from a Community of Practice."

⁶¹ "A WASTE - Greenpeace 2019"; "EU-The_gambia-Fishery_june_2020 REPORT."

⁶² "EU-The_gambia-Fishery_june_2020 REPORT"; "A WASTE - Greenpeace 2019".

Existing literature increasingly highlights that fishmeal factory operations have significant implications for the right to work and livelihoods within coastal communities in The Gambia and the wider West African region. Small-scale fisheries and related post-harvest activities constitute important sources of employment and income for local populations, particularly artisanal fishers and women engaged in fish processing and marketing activities [⁶³].

Studies indicate that the expansion of industrial fishmeal production has intensified pressure on already depleted fish stocks, thereby undermining the livelihoods of artisanal fishers who depend on small pelagic species for survival [⁶⁴]. Existing literature further reports that industrial trawlers associated with fishmeal supply chains frequently encroach into artisanal fishing zones, causing destruction of fishing nets and significant financial losses for local fishers [⁶⁵]. As fish availability declines, many fishers are reportedly forced to travel further offshore and spend longer periods at sea in search of fish, increasing both economic vulnerability and occupational risks [⁶⁶].

The literature further demonstrates that women involved in artisanal fish processing and fish marketing are among the groups most adversely affected by fishmeal factory operations. Women dominate the post-harvest fisheries sector in many Gambian coastal communities; however, fishmeal factories often outbid local processors through immediate cash payments for fish

⁶³ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia; Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “EU-The_gambia-Fishery_june_2020 REPORT.”

⁶⁴ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “A WASTE - Greenpeace 2019”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

⁶⁵ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “EU-The_gambia-Fishery_june_2020 REPORT”; “NHRC 2024 Human Rights Report”

⁶⁶ “EU-The_gambia-Fishery_june_2020 REPORT”; “UN Special RAPP-The Right to Food Note by the Secretary-General,” n.d.

supplies [67]. This has weakened traditional credit-based fish distribution systems and reduced women's access to raw materials necessary for sustaining their businesses [68]. In some communities, studies additionally report that wastewater discharge and industrial expansion have negatively affected women's vegetable gardens and traditional processing sites, thereby deepening economic insecurity among households dependent on these activities [69].

Existing studies also suggest that environmental pollution associated with fishmeal processing has negatively affected tourism-dependent livelihoods in several coastal communities. Noxious odours, wastewater discharge, and declining environmental conditions have reportedly driven customers away from local restaurants, lodges, and eco-tourism businesses [70]. Although fishmeal factories are often promoted as contributors to economic development and employment creation, several studies argue that the number of local jobs generated remains relatively limited compared to the broader economic losses experienced within artisanal fisheries and tourism sectors [71].

⁶⁷ "Elena M. Finkbeiner et al., "A Call for Protection of Women's Rights and Economic, Social, Cultural (ESC) Rights in Seafood Value Chains," *Marine Policy* 128 (June 2021): 104482, <https://doi.org/10.1016/j.marpol.2021.104482>; Dème et al., "Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa."

⁶⁸ "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; "Changing Markets Foundation -2019-Until the Seas Run Dry"; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; "EU-The_gambia-Fishery_june_2020 REPORT"; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

⁶⁹ "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia"; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; "EU-The_gambia-Fishery_june_2020 REPORT."

⁷⁰ "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; "Changing Markets Foundation -2019-Until the Seas Run Dry"; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia"; "EU-The_gambia-Fishery_june_2020 REPORT"; "Fishing-For-CATASTROPHE-2019-Changing Market."

⁷¹ "Fishing-For-CATASTROPHE-2019-Changing Market"; "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; "EU-The_gambia-Fishery_june_2020 REPORT"; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; "A WASTE - Greenpeace 2019"; "Changing Markets Foundation -2019-Until the Seas Run Dry."

A recurring debate within the literature concerns the tension between industrial economic development and the protection of local livelihoods and socio-economic rights. While governments and investors frequently justify fishmeal production as a source of foreign direct investment and economic growth, critics argue that the socio-economic costs imposed on vulnerable coastal communities may outweigh the perceived economic benefits [72].

Despite growing scholarship on these issues, there remains limited empirical research examining the long-term sustainability of local livelihoods under continued industrial fishmeal expansion, particularly regarding the indirect impacts on women, children, and household welfare in affected communities [73].

2.3.3 Right to Health and a Healthy Environment

Existing literature recognizes the right to health and the right to a clean, healthy, and sustainable environment as fundamental human rights protected under international and regional human rights frameworks, including the African Charter on Human and Peoples' Rights and the Convention on the Rights of the Child [74]. These rights require states to take appropriate measures to prevent environmental harm, protect public health, and ensure safe living conditions for individuals and communities [75]. Within the Gambian context, the literature increasingly

⁷² Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia; Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “EU-The_gambia-Fishery_june_2020 REPORT.”

⁷³ FAO, *Meeting the Sustainable Development Goals; Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Finkbeiner et al., “A Call for Protection of Women’s Rights and Economic, Social, Cultural (ESC) Rights in Seafood Value Chains”; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

⁷⁴ Julia Cirne Lima Weston and Ingrid Kelling, “Navigating Responsibility for Human Rights Compliance in the Fishing Industry,” *Reviews in Fisheries Science & Aquaculture* 32, no. 4 (2024): 529–44, <https://doi.org/10.1080/23308249.2024.2329915>; Ayala and Meier, “A Human Rights Approach to the Health Implications of Food and Nutrition Insecurity”.

⁷⁵ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “NHRC 2024 Human Rights Report”; Lima Weston and Kelling, “Navigating Responsibility for Human Rights Compliance in the Fishing Industry.”

argues that the expansion of fishmeal factories operation (FMFO) has generated significant environmental and public health concerns for coastal communities, particularly among children and other vulnerable populations [⁷⁶].

A major area of concern identified within the literature relates to the multidimensional pollution associated with fishmeal factory operations. Several studies report that FMFO generate intense air pollution and noxious odor emissions during fish processing activities [⁷⁷]. Residents in communities such as Sanyang and Gunjur frequently describe the odor produced by factories as unbearable, pungent, and suffocating, with reports indicating that the smell can spread from approximately 200 meters to several kilometers depending on wind conditions [⁷⁸]. Existing studies further note that smoke and airborne particles emitted during production processes contribute to deteriorating environmental quality and negatively affect surrounding residential areas [⁷⁹].

The literature additionally highlights widespread concerns regarding wastewater discharge and marine pollution associated with fishmeal production. Multiple studies report that factories frequently discharge untreated or inadequately treated wastewater directly into nearby marine ecosystems, lagoons, and environmentally sensitive areas [⁸⁰]. One frequently cited example involves the reported contamination of the Bolong Fenyo Wildlife Reserve in Gunjur, where industrial effluent allegedly caused sections of the waterbody to turn red [⁸¹]. Researchers further document recurring incidents involving large quantities of dead fish washing ashore near factory

⁷⁶ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; “A WASTE - Greenpeace 2019.”

⁷⁷ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “EU-The_gambia-Fishery_june_2020 REPORT”.

⁷⁸ “Changing Markets Foundation -2019-Until the Seas Run Dry”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

⁷⁹ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “Development of an Air Pollutant - Peru”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

⁸⁰ “Changing Markets Foundation -2019-Until the Seas Run Dry”; “EU-The_gambia-Fishery_june_2020 REPORT.”

⁸¹ “EU-The_gambia-Fishery_june_2020 REPORT.”

sites, often attributed to fish spoilage, overcapacity, or waste disposal practices associated with factory-contracted fishing vessels [82]. Such practices are widely viewed within the literature as contributing to marine ecosystem degradation, coastal pollution, and declining environmental quality within affected communities [83].

Existing studies consistently associate these environmental conditions with a range of public health concerns affecting coastal populations. The literature demonstrates broad consensus that air pollution generated by FMFO plants contributes to respiratory illnesses among nearby residents [84]. Commonly reported health conditions include asthma, rhinitis, chronic coughing, chest infections, and breathing difficulties linked to prolonged exposure to smoke, odors, and airborne pollutants [85]. Several studies additionally report that contact with contaminated wastewater and fish waste may contribute to skin diseases, rashes, and infections among community members and factory workers [86]. Incidents of nausea, diarrhea, vomiting, and other digestive illnesses are also frequently documented and are commonly associated with poor sanitation conditions, water contamination, and exposure to rotting fish waste [87].

The literature further highlights occupational health and decent work concerns affecting workers within fishmeal processing industries. Existing studies indicate that factory workers and artisanal fish processors, particularly women, often operate under poor working conditions characterized by limited access to protective equipment and prolonged exposure to smoke, dust, and sharp fish-

⁸² “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “Changing Markets Foundation -2019-Until the Seas Run Dry”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

⁸³ Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

⁸⁴ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “Changing Markets Foundation -2019-Until the Seas Run Dry”.

⁸⁵ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “Changing Markets Foundation -2019-Until the Seas Run Dry”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “Development of an Air Pollutant - Peru.”

⁸⁶ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “Changing Markets Foundation -2019-Until the Seas Run Dry”; “EU-The_gambia-Fishery_june_2020 REPORT.”

⁸⁷ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Ayala and Meier, “A Human Rights Approach to the Health Implications of Food and Nutrition Insecurity”; Onyeaka et al., “Beyond Hunger”; “EU-The_gambia-Fishery_june_2020 REPORT.”

processing materials [⁸⁸]. Researchers report that workers frequently experience cuts, injuries, respiratory complications, and other long-term health risks associated with unsafe workplace conditions [⁸⁹]. These findings have contributed to growing calls for stronger labor protections and improved occupational health standards within industrial fisheries sectors [⁹⁰].

Children are identified within the literature as one of the groups most vulnerable to the environmental and health impacts associated with FMFO [⁹¹]. Existing studies indicate that children living near factory sites are particularly susceptible to respiratory illnesses such as asthma and chronic coughs due to prolonged exposure to polluted air and environmental contaminants [⁹²]. The literature additionally emphasizes that the diversion of nutritionally valuable small pelagic fish away from local consumption towards fishmeal production threatens children's nutritional wellbeing, particularly during the first 1,000 days of life, which are widely recognized as critical for cognitive and physical development [⁹³]. Several studies further note that declining access to affordable fish protein may contribute to malnutrition and stunting, conditions that remain persistent public health challenges within The Gambia, where approximately one in four children is reportedly stunted [⁹⁴].

⁸⁸ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “EU-The_gambia-Fishery_june_2020 REPORT”; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

⁸⁹ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “EU-The_gambia-Fishery_june_2020 REPORT”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; Katrina Nakamura et al., “Seeing Slavery in Seafood Supply Chains,” *Science Advances* 4, no. 7 (2018): e1701833, <https://doi.org/10.1126/sciadv.1701833>; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d..

⁹⁰ *The State of World Fisheries and Aquaculture 2020*; Finkbeiner et al., “Insights from a Community of Practice”; “UN Special RAPP-The Right to Food Note by the Secretary-General.”

⁹¹ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “Development of an Air Pollutant - Peru.”

⁹² *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “Development of an Air Pollutant - Peru”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d..

⁹³ *The State of World Fisheries and Aquaculture 2020*; “UN Special RAPP-The Right to Food Note by the Secretary-General”; “Gambia Recovery Focus-NDP-2023-2027”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

⁹⁴ “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018”; “Gambia Recovery Focus-NDP-2023-2027”; “EU-The_gambia-Fishery_june_2020 REPORT.”

Beyond direct health impacts, the literature also documents the effects of environmental pollution on children's educational environments and broader developmental wellbeing. In Sanyang, for example, reports indicate that schools located near the beach were at times forced to suspend operations due to the intolerable odors emitted by nearby fishmeal factories [⁹⁵]. Such disruptions have been interpreted by researchers as evidence of the broader socio-environmental consequences of industrial fishmeal production on children's rights and educational access [⁹⁶]. Some studies additionally note the visible presence of children at fish landing sites where economic hardship linked to declining artisanal livelihoods may increase vulnerability to hazardous labor practices, including carrying heavy fish loads and diving to untangle fishing nets [⁹⁷].

The literature further establishes that environmental degradation associated with fishmeal factories negatively affects local living conditions and secondary economic activities within coastal communities. Researchers report that industrial waste pipes, wastewater discharge, and fish waste dumping have damaged beaches, reduced the aesthetic value of coastal areas, and undermined local tourism activities within what is commonly referred to as "The Smiling Coast" [⁹⁸]. Existing studies additionally indicate that horticultural activities undertaken by women gardeners have been adversely affected by pests and insects attracted to rotting fish waste near factory sites [⁹⁹]. In some cases, women reportedly experienced substantial financial losses due to reduced vegetable yields and crop destruction associated with environmental contamination and increased pest activity [¹⁰⁰].

⁹⁵ Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

⁹⁶ "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

⁹⁷ "EU-The_gambia-Fishery_june_2020 REPORT"; Lydia C. L. Teh et al., "The Role of Human Rights in Implementing Socially Responsible Seafood," *PLOS ONE* 14, no. 1 (2019): e0210241, <https://doi.org/10.1371/journal.pone.0210241>; "Changing Markets Foundation -2019-Until the Seas Run Dry."

⁹⁸ "Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia"; "EU-The_gambia-Fishery_june_2020 REPORT"; "Changing Markets Foundation -2019-Until the Seas Run Dry."

⁹⁹ "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

¹⁰⁰ "Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

A significant body of literature also highlights governance, transparency, and accountability concerns surrounding FMFO in The Gambia and across West Africa. Communities frequently report inadequate consultation prior to the establishment of factories and limited public participation in environmental decision-making processes [¹⁰¹]. Several studies further describe fishmeal factories as highly secretive entities that often fail to disclose production data, environmental practices, or Environmental Impact Assessments (EIAs) to affected communities and relevant authorities [¹⁰²]. Although regulatory institutions such as the National Environment Agency (NEA) have occasionally sanctioned or temporarily closed factories due to environmental violations, researchers argue that weak enforcement mechanisms and close political-economic relationships frequently undermine effective accountability and environmental remediation efforts [¹⁰³].

Despite some variation in emphasis, the literature demonstrates broad agreement that the current scale and operational practices of FMFO production in West Africa are environmentally and socially unsustainable [¹⁰⁴]. However, some debate exists regarding the extent to which factories contribute to fish waste reduction. While governments and investors often frame FMFO as mechanisms for reducing post-harvest fish waste, critics argue that factories primarily target fresh, food-grade fish and may themselves generate additional waste through overproduction and the dumping of spoiled catches [¹⁰⁵]. Existing studies also provide significant quantitative evidence illustrating the scale of industrial fishmeal production, including estimates that approximately 4.5 to 5 kilograms of fresh fish are required to produce 1 kilogram of fishmeal,

¹⁰¹ “Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “EU-The_gambia-Fishery_june_2020 REPORT”; “A WASTE - Greenpeace 2019.”

¹⁰² “EU-The_gambia-Fishery_june_2020 REPORT”;

¹⁰³ “Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “EU-The_gambia-Fishery_june_2020 REPORT”; “The-Gambia-National-Development-Plan-2018-2021.”

¹⁰⁴ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; Dème et al., “Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

¹⁰⁵ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; Cashion et al., “Most Fish Destined for Fishmeal Production Are Food-grade Fish”; “Changing Markets Foundation -2019-Until the Seas Run Dry”.

while some factories have reportedly processed quantities equivalent to substantial proportions of national fish catches [¹⁰⁶].

Despite increasing scholarly attention to these issues, important gaps remain within the literature. Existing studies provide limited clinical and longitudinal data directly linking factory emissions and environmental pollutants to long-term health outcomes among children, elderly populations, and other vulnerable groups [¹⁰⁷]. There is also insufficient research examining the precise chemical composition and toxicity levels of wastewater discharged by fishmeal factories within the sub-Saharan African context [¹⁰⁸]. Furthermore, limited transparency regarding industrial supply chains and factory operations continues to hinder comprehensive assessments of the relationship between local environmental harms and global aquaculture markets [¹⁰⁹]. These gaps underscore the need for further interdisciplinary research examining the intersection between environmental degradation, public health, children's rights, and industrial fisheries governance within Gambian coastal communities.

2.3.4 Children's Rights and Vulnerability

Existing literature increasingly identifies children as among the groups most vulnerable to the environmental, nutritional, and socio-economic impacts associated with the expansion of fishmeal factories in West Africa [¹¹⁰]. Within the Gambian context, the literature argues that

¹⁰⁶ *Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Banjul, the Gambia, 26 June–1 July 2018. Rapport Du Groupe de Travail de La FAO Sur l'évaluation Des Petits Pélagiques Au Large de l'Afrique Nord-Occidentale. Banjul, Gambie, 26 Juin–1 Juillet 2018.*; “Changing Markets Foundation - 2019-Until the Seas Run Dry.”

¹⁰⁷ “Development of an Air Pollutant - Peru”; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*.

¹⁰⁸ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

¹⁰⁹ “Changing Markets Foundation -2019-Until the Seas Run Dry”; “A WASTE - Greenpeace 2019”; “EU-The_gambia-Fishery_june_2020 REPORT.”

¹¹⁰ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang

industrial fishmeal production affects multiple interconnected dimensions of children's rights, including the rights to health, nutrition, development, education, and protection from economic exploitation [¹¹¹]. These concerns are examined within the framework of the Convention on the Rights of the Child, which recognizes children's rights to the highest attainable standard of health, adequate nutrition, education, and protection from harmful labor practices [¹¹²]. Existing scholarship further emphasizes that children possess heightened vulnerability to environmental degradation and socio-economic instability due to their physiological dependence, developmental needs, and limited capacity to protect themselves from harmful conditions [¹¹³].

The Committee on the Rights of the Child has increasingly recognized the relationship between environmental protection and children's rights. General Comment No. 26 on children's rights and the environment emphasizes that children are disproportionately affected by environmental harm and that states have heightened obligations to protect them from pollution and environmental degradation [¹¹⁴]. Similarly, General Comment No. 15 on the right of the child to health highlights the importance of adequate nutrition, clean environments, and preventive public health measures for children's physical and cognitive development [¹¹⁵]. Existing literature argues that these protections are particularly relevant within Gambian coastal communities

threatens Human Rights 2023," n.d.; "EU-The_gambia-Fishery_june_2020 REPORT"; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia; Guidance on Addressing Child Labour in Fisheries and Aquaculture* (Food and Agriculture Organization of the United Nations ; ILO, 2013); "General Comment No. 26 (2023) on Children's Rights and the Environment, with a Special Focus on Climate Change."

¹¹¹ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; "EU-The_gambia-Fishery_june_2020 REPORT"; "Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018"; "Gambia Recovery Focus-NDP-2023-2027"; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; "Changing Markets Foundation -2019-Until the Seas Run Dry."

¹¹² *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; "General Comment No. 15 (2013) on the Right of the Child to the Enjoyment of the Highest Attainable Standard of Health (Art. 24)," n.d.; "General Comment No. 26 (2023) on Children's Rights and the Environment, with a Special Focus on Climate Change"; "Gambia Recovery Focus-NDP-2023-2027."

¹¹³ Jonathan Herring, "Vulnerability and Children's Rights," *International Journal for the Semiotics of Law - Revue Internationale de Sémiotique Juridique* 36, no. 4 (2023): 1509–27, <https://doi.org/10.1007/s11196-022-09951-0>; "UNICEF-Climate-Crisis-Child-Rights-Crisis," n.d.; "General Comment No. 26 (2023) on Children's Rights and the Environment, with a Special Focus on Climate Change."

¹¹⁴ "General Comment No. 26 (2023) on Children's Rights and the Environment, with a Special Focus on Climate Change."

¹¹⁵ "General Comment No. 15 (2013) on the Right of the Child to the Enjoyment of the Highest Attainable Standard of Health (Art. 24); "UNICEF-Climate-Crisis-Child-Rights-Crisis."

where industrial fisheries activities increasingly intersect with children's health and wellbeing [116].

A major concern identified across the literature relates to declining access to nutritionally important fish species resulting from the diversion of small pelagic fish towards industrial Fishmeal production [117]. Species such as bonga and sardinella constitute essential sources of affordable protein and micronutrients for many low-income households in The Gambia and across West Africa [118]. Existing studies indicate that fish contributes more than half of animal protein intake for many coastal populations, while bonga remains one of the most accessible protein sources for poorer households [119]. Researchers further emphasize that fish provides critical nutrients including iron, iodine, omega-3 fatty acids, and long-chain polyunsaturated fatty acids (LC-PUFAs), all of which are essential for children's growth, brain development, and cognitive functioning [120].

The literature further demonstrates that declining fish accessibility and rising fish prices may significantly undermine children's nutritional wellbeing [121]. Existing studies report substantial increases in the price of bonga fish following the expansion of FMFO, with some reports indicating increases from approximately GMD 500 to GMD 2,000 in recent years [122]. Such increases have reduced the affordability of nutritionally valuable fish among vulnerable

¹¹⁶ "Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia"; "General Comment No. 26 (2023) on Children's Rights and the Environment, with a Special Focus on Climate Change."

¹¹⁷ Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal"; "A WASTE - Greenpeace 2019"; "EU-The_gambia-Fishery_june_2020 REPORT"; Cashion et al., "Most Fish Destined for Fishmeal Production Are Food-grade Fish."

¹¹⁸ Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal"; "EU-The_gambia-Fishery_june_2020 REPORT."

¹¹⁹ *The State of World Fisheries and Aquaculture 2020*; "EU-The_gambia-Fishery_june_2020 REPORT."

¹²⁰ Béné et al., "Feeding 9 Billion by 2050 – Putting Fish Back on the Menu"; FAO, *Meeting the Sustainable Development Goals; The State of World Fisheries and Aquaculture 2020*.

¹²¹ *The State of Food Security and Nutrition in the World 2025*; "EU-The_gambia-Fishery_june_2020 REPORT"; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

¹²² Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal"; "EU-The_gambia-Fishery_june_2020 REPORT."

households and contributed to broader food insecurity concerns [¹²³]. Researchers note that inadequate nutrition during the first 1,000 days of life may result in irreversible developmental consequences affecting children's cognitive abilities, educational performance, and long-term health outcomes [¹²⁴]. These concerns are particularly significant in The Gambia, where existing studies indicate that approximately one in four children experiences stunted growth [¹²⁵].

In addition to nutritional insecurity, the literature highlights serious environmental health risks affecting children living near fishmeal factory sites in coastal communities such as Sanyang, Gunjur, and Kartong [¹²⁶]. Existing studies indicate that children are physiologically more vulnerable to environmental pollutants due to their faster breathing rates and developmental sensitivity to toxic exposure [¹²⁷]. Researchers report that factory operations generate significant air pollution, particulate matter, smoke emissions, and strong odors that permeate residential areas and educational facilities [¹²⁸]. Exposure to these environmental conditions has been associated with increased incidences of asthma, bronchitis, rhinitis, chronic coughing, chest infections, and other respiratory illnesses among children residing near industrial processing facilities [¹²⁹].

¹²³ Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal"; "EU-The_gambia-Fishery_june_2020 REPORT."

¹²⁴ "Gambia Recovery Focus-NDP-2023-2027"; "UNICEF-Climate-Crisis-Child-Rights-Crisis"; FAO, *Meeting the Sustainable Development Goals; The State of World Fisheries and Aquaculture 2020*.

¹²⁵ "UNICEF Gambia Annual Report 2022 - Malnutrition," n.d.; "Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018"; "Gambia Recovery Focus-NDP-2023-2027."

¹²⁶ "Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa"; "Changing Markets Foundation -2019-Until the Seas Run Dry"; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

¹²⁷ "UNICEF- Clear_the_Air_for_Children_Executive_summary_ENG," n.d.; "UNICEF-Climate-Crisis-Child-Rights-Crisis"; *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; "General Comment No. 26 (2023) on Children's Rights and the Environment, with a Special Focus on Climate Change."

¹²⁸ "Development of an Air Pollutant - Peru"; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia".

¹²⁹ "UNICEF- Clear_the_Air_for_Children_Executive_summary_ENG"; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*.

Several studies additionally report concerns relating to wastewater discharge and environmental contamination associated with fishmeal factory operations [¹³⁰]. Existing literature indicates that untreated or inadequately treated wastewater discharged into coastal waters and surrounding environments may expose children to contaminated water sources and harmful pollutants [¹³¹]. Some studies further suggest that exposure to polluted water and fish waste contributes to skin infections, rashes, diarrhea diseases, and other health complications among children within affected communities [¹³²]. Researchers also note that limited transparency regarding the chemical composition of industrial wastewater continues to constrain comprehensive assessment of long-term environmental health risks [¹³³].

The literature further demonstrates that the socio-economic impacts of industrial fishmeal production may negatively affect children's educational opportunities and developmental wellbeing [¹³⁴]. Several studies indicate that the economic displacement of women fish processors and artisanal fishing households reduces household income available for school fees, uniforms, books, and other educational needs [¹³⁵]. Such environmental conditions have reportedly affected classroom concentration and learning environments for children in affected coastal communities [¹³⁶].

¹³⁰ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; "Changing Markets Foundation -2019-Until the Seas Run Dry"; M. E. Moulay Ely et al., "Assessment of the Environmental Impact of Discharges from Fishmeal Factories Located in Levrier Bay, Nouadhibou-Mauritania," *Nature Environment and Pollution Technology* 22, no. 3 (2023): 1529–36, <https://doi.org/10.46488/NEPT.2023.v22i03.038>; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia"; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

¹³¹ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; "Changing Markets Foundation -2019-Until the Seas Run Dry."

¹³² *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; "UNICEF-Climate-Crisis-Child-Rights-Crisis"; "Changing Markets Foundation -2019-Until the Seas Run Dry"; *Guidance on Addressing Child Labour in Fisheries and Aquaculture*.

¹³³ Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal"; "EU-The_gambia-Fishery_june_2020 REPORT"; "A WASTE - Greenpeace 2019."

¹³⁴ "EU-The_gambia-Fishery_june_2020 REPORT"; *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; "Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa."

¹³⁵ "EU-The_gambia-Fishery_june_2020 REPORT"; "Gambia Recovery Focus-NDP-2023-2027"; Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal."

¹³⁶ "UNICEF-Climate-Crisis-Child-Rights-Crisis"; "General Comment No. 26 (2023) on Children's Rights and the Environment, with a Special Focus on Climate Change"; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

Another area of concern identified within the literature relates to child labor and children's participation in hazardous fisheries-related activities [¹³⁷]. Although some studies recognize the cultural role of children's participation in family-based artisanal fisheries activities, researchers increasingly distinguish between socially accepted forms of child work and exploitative or hazardous child labor practices [¹³⁸]. Existing studies report that children in some fishing communities engage in dangerous tasks such as carrying heavy fish loads, sorting fish under unsanitary conditions, diving to untangle fishing nets, and handling juvenile fish catches [¹³⁹]. These activities expose children to physical injuries, drowning risks, infections, and educational disruption [¹⁴⁰]. Some researchers further argue that declining artisanal livelihoods and increasing economic insecurity associated with fishmeal fact expansion may heighten household dependence on child labor within fisheries economies [¹⁴¹].

The literature broadly agrees that children are disproportionately affected by the combined nutritional, environmental, and socio-economic consequences associated with industrial fishmeal production in West Africa [¹⁴²]. However, some debate persists regarding the balance between economic development objectives and the protection of socio-economic rights within vulnerable coastal communities [¹⁴³]. Governments and investors often frame fishmeal factories as drivers of employment creation and economic growth through foreign direct investment [¹⁴⁴]. In

¹³⁷ "EU-The_gambia-Fishery_june_2020 REPORT"; *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; Lima Weston and Kelling, "Navigating Responsibility for Human Rights Compliance in the Fishing Industry"; "Gambia Recovery Focus-NDP-2023-2027."

¹³⁸ "EU-The_gambia-Fishery_june_2020 REPORT"; *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; "Gambia Recovery Focus-NDP-2023-2027."

¹³⁹ *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; "EU-The_gambia-Fishery_june_2020 REPORT"; "Changing Markets Foundation -2019-Until the Seas Run Dry".

¹⁴⁰ *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; "EU-The_gambia-Fishery_june_2020 REPORT."

¹⁴¹ *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; "EU-The_gambia-Fishery_june_2020 REPORT"; "Changing Markets Foundation -2019-Until the Seas Run Dry."

¹⁴² "Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa"; "EU-The_gambia-Fishery_june_2020 REPORT."

¹⁴³ "Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018"; "EU-The_gambia-Fishery_june_2020 REPORT."

¹⁴⁴ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; "EU-The_gambia-Fishery_june_2020 REPORT"; Dème et al., "Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa."

contrast, critics argue that the broader social costs associated with environmental degradation, nutritional insecurity, and livelihood displacement disproportionately burden children and undermine long-term human development outcomes [¹⁴⁵].

Despite increasing scholarly attention to these issues, important gaps remain within the existing literature. Current studies provide limited longitudinal and disaggregated data examining the specific health outcomes of children living in close proximity to fishmeal factories compared to unaffected populations [¹⁴⁶]. There is also insufficient empirical research quantifying the direct relationship between fishmeal-induced livelihood insecurity and school dropout rates within Gambian coastal communities [¹⁴⁷]. Furthermore, limited transparency regarding industrial waste composition, pollution exposure levels, and factory operational practices constrains comprehensive assessments of the long-term implications of industrial fisheries activities for children's rights and wellbeing [¹⁴⁸].

These gaps highlight the need for further interdisciplinary research examining the intersection between industrial fisheries, environmental governance, socio-economic vulnerability, and children's rights within The Gambia and the wider West African region.

2.3.5 Governance, Corporate Accountability and Regulatory Challenges

Existing literature increasingly argues that the expansion of fishmeal factories in The Gambia and across West Africa has exposed significant weaknesses in environmental governance, fisheries regulation, and corporate accountability systems [¹⁴⁹]. Although several national,

¹⁴⁵ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; "Changing Markets Foundation - 2019-Until the Seas Run Dry"; "UNICEF-Climate-Crisis-Child-Rights-Crisis"; "Gambia Recovery Focus-NDP-2023-2027."

¹⁴⁶ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; "EU-The_gambia-Fishery_june_2020 REPORT."

¹⁴⁷ "EU-The_gambia-Fishery_june_2020 REPORT"; *Guidance on Addressing Child Labour in Fisheries and Aquaculture*.

¹⁴⁸ *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*; "EU-The_gambia-Fishery_june_2020 REPORT"; "A WASTE - Greenpeace 2019."

¹⁴⁹ "Changing Markets Foundation -2019-Until the Seas Run Dry"; "EU-The_gambia-Fishery_june_2020 REPORT"; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*.

regional, and international legal frameworks governing fisheries management and environmental protection formally exist, researchers consistently identify a substantial gap between legislative provisions and effective implementation [¹⁵⁰]. Within this context, the literature suggests that weak institutional oversight, limited transparency, inadequate enforcement mechanisms, and competing political-economic interests have contributed to the persistence of environmental degradation and human rights concerns associated with industrial fishmeal production [¹⁵¹].

The literature frequently situates the growth of the FMFO industry within broader state strategies aimed at attracting foreign direct investment (FDI) and promoting industrial economic development [¹⁵²]. Governments within West Africa, including The Gambia, often present fishmeal factories as important sources of employment creation, export revenue, and fisheries sector industrialization [¹⁵³]. Existing studies note that foreign investors, particularly from China and Mauritania, have received various forms of state support and investment incentives, including tax exemptions, customs duty waivers, and preferential access to land through institutions such as the Gambia Investment and Export Promotion Agency (GIEPA) [¹⁵⁴]. However, several researchers argue that the prioritization of industrial investment has frequently occurred at the expense of environmental sustainability and community welfare protections [¹⁵⁵].

¹⁵⁰ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “EU-The_gambia-Fishery_june_2020 REPORT”; “NHRC 2024 Human Rights Report”; “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018”; Lima Weston and Kelling, “Navigating Responsibility for Human Rights Compliance in the Fishing Industry”.

¹⁵¹ “Changing Markets Foundation -2019-Until the Seas Run Dry”; “EU-The_gambia-Fishery_june_2020 REPORT”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

¹⁵² Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; Dème et al., “Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa”; “EU-The_gambia-Fishery_june_2020 REPORT”; “Gambia Recovery Focus-NDP-2023-2027.”

¹⁵³ “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018”; “Gambia Recovery Focus-NDP-2023-2027”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; Dème et al., “Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa.”

¹⁵⁴ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “Changing Markets Foundation -2019-Until the Seas Run Dry”; “EU-The_gambia-Fishery_june_2020 REPORT.”

¹⁵⁵ “EU-The_gambia-Fishery_june_2020 REPORT”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

A significant body of literature further highlights the emergence of what some researchers describe as a “corporate-political nexus,” whereby economic dependence on foreign investment may weaken the willingness of regulatory institutions to enforce environmental and fisheries regulations strictly [¹⁵⁶]. Existing studies argue that governments often frame FMFO as mechanisms for reducing post-harvest fish waste and improving economic growth, while critics contend that factories primarily process fresh food-grade fish intended for human consumption [¹⁵⁷]. Researchers therefore question whether policies designed to encourage industrial fisheries investment may inadvertently contribute to resource depletion, food insecurity, and socio-economic displacement within vulnerable coastal communities [¹⁵⁸].

The literature consistently documents institutional weaknesses affecting fisheries monitoring, environmental regulation, and compliance enforcement within the FMFO sector [¹⁵⁹]. In The Gambia, studies indicate that agencies responsible for fisheries management and environmental oversight frequently operate with limited financial resources, inadequate staffing, and weak monitoring capacities [¹⁶⁰]. These institutional limitations reportedly constrain effective Monitoring, Control, and Surveillance (MCS) activities and reduce the ability of authorities to detect and sanction environmental violations, illegal fishing activities, and non-compliance with licensing conditions [¹⁶¹].

¹⁵⁶ “Changing Markets Foundation -2019-Until the Seas Run Dry”; “EU-The_gambia-Fishery_june_2020 REPORT”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

¹⁵⁷ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; Cashion et al., “Most Fish Destined for Fishmeal Production Are Food-grade Fish”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; “A WASTE - Greenpeace 2019.”

¹⁵⁸ “EU-The_gambia-Fishery_june_2020 REPORT”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

¹⁵⁹ Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal”; “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018”; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

¹⁶⁰ “EU-The_gambia-Fishery_june_2020 REPORT”; “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018”; Penny Urquhart, *National Climate Change Policy of The Gambia*, n.d.

¹⁶¹ “EU-The_gambia-Fishery_june_2020 REPORT”; “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018”; “Gambia Recovery Focus-NDP-2023-2027”; FAO, *Opportunities and Challenges*.

Researchers additionally report recurring failures relating to wastewater management, pollution control, and environmental compliance among fishmeal factories [¹⁶²]. Several studies document incidents involving the discharge of untreated or inadequately treated industrial effluent into coastal waters, beaches, wetlands, and surrounding agricultural areas [¹⁶³]. Although institutions such as the National Environment Agency (NEA) have occasionally imposed fines or temporary factory closures in response to environmental violations, existing literature suggests that these measures have often failed to ensure sustained compliance or meaningful environmental remediation [¹⁶⁴]. Some researchers further argue that weak enforcement systems and political considerations contribute to repeated reopening of factories despite ongoing environmental concerns [¹⁶⁵].

Environmental Impact Assessments (EIAs) and licensing procedures constitute another major area of criticism within the literature [¹⁶⁶]. Gambian environmental law formally requires developments with potentially significant environmental impacts to undergo detailed EIA processes prior to project approval [¹⁶⁷]. However, several studies indicate that EIA procedures associated with FMFO factories have frequently lacked transparency, adequate public participation, and independent scrutiny [¹⁶⁸]. Existing research further suggests that affected

¹⁶² “Moulay Ely et al., “Assessment of the Environmental Impact of Discharges from Fishmeal Factories Located in Levrier Bay, Nouadhibou-Mauritania”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal.”

¹⁶³ Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “Changing Markets Foundation -2019-Until the Seas Run Dry”.

¹⁶⁴ Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal”; “EU-The_gambia-Fishery_june_2020 REPORT”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; “THE HUMAN COST OF OVERFISHING HOW THE OVERUSE OF FISHERIES RESOURCES IN SANYANG THREATENS HUMAN RIGHTS,” n.d.

¹⁶⁵ “Changing Markets Foundation -2019-Until the Seas Run Dry”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”.

¹⁶⁶ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “A WASTE - Greenpeace 2019.”

¹⁶⁷ “A WASTE - Greenpeace 2019”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “Gambia Recovery Focus-NDP-2023-2027.”

¹⁶⁸ “EU-The_gambia-Fishery_june_2020 REPORT”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

communities are often excluded from meaningful consultation processes, while environmental assessment documents may remain inaccessible to local residents and civil society organizations [169]. In some cases, researchers argue that consultation processes have relied heavily on agreements with selected community leaders rather than broader participatory engagement with affected populations [170].

The literature also highlights serious transparency and accountability concerns surrounding fishmeal factory operations and industrial fisheries supply chains [171]. Multiple studies describe FMFO factories as highly secretive entities that often refuse to disclose operational information, including production volumes, species composition, sourcing practices, and export destinations [172]. Researchers argue that this opacity significantly undermines scientific fisheries management, environmental monitoring, and public accountability [173]. Existing studies additionally report concerns regarding underreporting of industrial fish catches, limited traceability of fishmeal exports, and allegations involving falsified documentation and informal trade channels designed to circumvent regulatory requirements [174].

Corporate accountability within the FMFO sector is increasingly analyzed through the framework of the United Nations Guiding Principles on Business and Human Rights [175]. The literature emphasized that under the UNGPs, states possess a duty to protect individuals and

¹⁶⁹ Moulay Ely et al., “Assessment of the Environmental Impact of Discharges from Fishmeal Factories Located in Levrier Bay, Nouadhibou-Mauritania”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “EU-The_gambia-Fishery_june_2020 REPORT”; “A WASTE - Greenpeace 2019.”

¹⁷⁰ “EU-The_gambia-Fishery_june_2020 REPORT”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

¹⁷¹ “Teh et al., “The Role of Human Rights in Implementing Socially Responsible Seafood”; “EU-The_gambia-Fishery_june_2020 REPORT”; “A WASTE - Greenpeace 2019.”

¹⁷² Dème et al., “Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa”; “EU-The_gambia-Fishery_june_2020 REPORT”; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

¹⁷³ “EU-The_gambia-Fishery_june_2020 REPORT”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; “A WASTE - Greenpeace 2019”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

¹⁷⁴ *The State of World Fisheries and Aquaculture 2020*; “EU-The_gambia-Fishery_june_2020 REPORT”; “A WASTE - Greenpeace 2019”; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

¹⁷⁵ Teh et al., “The Role of Human Rights in Implementing Socially Responsible Seafood”; Finkbeiner et al., “Insights from a Community of Practice.”

communities from business-related human rights abuses, while corporations have an independent responsibility to respect human rights and conduct due diligence regarding the impacts of their operations [¹⁷⁶]. Existing studies argue that fishmeal companies operating within The Gambia and West Africa should therefore be held accountable for environmental pollution, livelihood disruption, and socio-economic harms affecting coastal communities [¹⁷⁷]. However, researchers frequently criticize the limitations of voluntary corporate governance initiatives and private certification schemes, arguing that such mechanisms are often insufficient substitutes for binding state regulation and effective enforcement systems [¹⁷⁸].

The literature further links the rapid expansion of fishmeal production to increasing levels of Illegal, Unreported, and Unregulated (IUU) fishing within West African waters [¹⁷⁹]. Existing studies report that industrial trawlers and some artisanal fleets supplying fishmeal factories frequently engage in unsustainable and illegal fishing practices, including the use of prohibited small-mesh nets targeting juvenile fish species [¹⁸⁰]. Researchers additionally document incursions by industrial vessels into coastal zones reserved for artisanal fishers, as well as unauthorized transshipment activities conducted at sea to evade monitoring and landing regulations [¹⁸¹]. Such practices are widely viewed as undermining sustainable fisheries management and exacerbating tensions between industrial and artisanal fishing sectors [¹⁸²].

¹⁷⁶ Teh et al., “The Role of Human Rights in Implementing Socially Responsible Seafood”; Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; Finkbeiner et al., “Insights from a Community of Practice.”

¹⁷⁷ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

¹⁷⁸ Finkbeiner et al., “Insights from a Community of Practice”; Teh et al., “The Role of Human Rights in Implementing Socially Responsible Seafood”; “Changing Markets Foundation -2019-Until the Seas Run Dry.”

¹⁷⁹ “Changing Markets Foundation -2019-Until the Seas Run Dry”; Dème et al., “Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa.”

¹⁸⁰ “Changing Markets Foundation -2019-Until the Seas Run Dry”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; *Socio-Economic and Biological Impacts of the Fish-Based Feed Industry for Sub-Saharan Africa*.

¹⁸¹ “EU-The_gambia-Fishery_june_2020 REPORT”; “Gambia Recovery Focus-NDP-2023-2027”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

¹⁸² Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; *The State of World Fisheries and Aquaculture 2020*; “A WASTE - Greenpeace 2019.”

Despite some differences in emphasis, the literature demonstrates broad agreement that current governance systems regulating FMFO in West Africa remain inadequate to address the environmental, social, and human rights consequences associated with industrial fishmeal production [¹⁸³]. However, debate persists regarding the extent to which economic benefits derived from foreign investment justify the social and environmental costs experienced by local communities [¹⁸⁴]. While governments and investors often emphasize macroeconomic growth objectives and employment creation, critics argue that the long-term consequences for food security, public health, livelihoods, and children's wellbeing substantially outweigh the limited economic gains generated by the industry [¹⁸⁵].

Although existing scholarship provides substantial evidence regarding governance failures and accountability challenges, several important gaps remain within the literature. Current studies provide limited long-term empirical analysis regarding the effectiveness of environmental enforcement mechanisms and fisheries governance reforms within the FMFO sector [¹⁸⁶]. There is also insufficient technical research examining the chemical composition and long-term environmental effects of industrial waste generated by fishmeal factories [¹⁸⁷]. Furthermore, limited transparency regarding industrial operations and supply chains continues to constrain comprehensive assessments of the relationships between corporate activities, socio-economic

¹⁸³ "EU-The_gambia-Fishery_june_2020 REPORT"; Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal"; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

¹⁸⁴ "EU-The_gambia-Fishery_june_2020 REPORT"; Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal"; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia"; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

¹⁸⁵ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; Dème et al., "Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa."

¹⁸⁶ "EU-The_gambia-Fishery_june_2020 REPORT"; "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; "Changing Markets Foundation -2019-Until the Seas Run Dry"; "A WASTE - Greenpeace 2019."

¹⁸⁷ Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal"; Moulay Ely et al., "Assessment of the Environmental Impact of Discharges from Fishmeal Factories Located in Levrier Bay, Nouadhibou-Mauritania."

vulnerability, environmental degradation, and human rights impacts within Gambian coastal communities [¹⁸⁸].

These gaps highlight the need for further interdisciplinary research examining governance, regulatory accountability, and business-related human rights obligations within the context of industrial fisheries development in West Africa.

2.4 Chapter Summary

This chapter has examined the growing body of literature concerning the environmental and human rights implications of fishmeal factory operations (FMFO) in The Gambia and the wider West African region. The review demonstrates that while the expansion of the fishmeal industry is frequently justified through narratives of economic growth, foreign direct investment, and industrial development, existing scholarship increasingly associates the sector with significant environmental degradation, socio-economic disruption, and human rights concerns affecting vulnerable coastal communities.

The literature reviewed in this chapter consistently identifies over-exploitation of small pelagic fish species, particularly bonga and sardinella, as one of the most significant consequences of industrial fishmeal production. Existing studies show that the diversion of food-grade fish towards export-oriented fishmeal supply chains has intensified pressure on already vulnerable fish stocks, undermining marine ecosystem sustainability and threatening the livelihoods of artisanal fishing communities. The review further highlights how pollution, wastewater discharge, poor waste management practices, and coastal ecosystem degradation associated with fishmeal processing activities have contributed to deteriorating environmental conditions and increased public health concerns within affected communities.

The chapter also demonstrates that the impacts of fishmeal factory operations extend beyond environmental harm to broader human rights implications. Existing scholarship increasingly links industrial fishmeal production to threats to the rights to food, health, work, livelihood, and a healthy environment. The literature further reveals that these impacts are experienced

¹⁸⁸ “EU-The_gambia-Fishery_june_2020 REPORT”; “Changing Markets Foundation -2019-Until the Seas Run Dry”; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

disproportionately by vulnerable groups, particularly women involved in artisanal fish processing and marketing activities, as well as children living within coastal fishing communities.

A significant finding emerging from the literature is the heightened vulnerability of children to the nutritional, environmental, and socio-economic consequences associated with FMFO expansion. Existing studies indicate that declining access to affordable fish protein, worsening environmental pollution, and livelihood insecurity may negatively affect children's health, nutrition, education, and overall development. The review additionally demonstrates that children's rights concerns within industrial fisheries contexts remain insufficiently explored in existing scholarship, despite growing recognition under international human rights frameworks such as the Convention on the Rights of the Child and related General Comments.

The literature further identifies persistent governance and regulatory failures within the fishmeal operation sector. Weak enforcement of environmental regulations, limited institutional capacity, lack of transparency, inadequate community participation, and insufficient corporate accountability mechanisms are consistently highlighted as major challenges undermining effective fisheries governance and environmental protection in The Gambia and across West Africa. Existing studies further question whether the economic benefits associated with foreign investment in fishmeal production outweigh the broader environmental and social costs experienced by local communities.

Despite increasing scholarly and policy attention to these issues, the review identifies several important gaps within the existing literature. Current research provides limited longitudinal and empirical data examining the specific impacts of fishmeal factory operations on children's health, nutritional outcomes, educational access, and long-term wellbeing. There also remains insufficient research concerning the effectiveness of governance and accountability mechanisms regulating industrial fisheries activities within Gambian coastal communities. Furthermore, limited transparency surrounding factory operations, pollution levels, and industrial supply chains continues to constrain comprehensive assessment of the full human rights implications associated with fishmeal production.

Overall, the literature reviewed in this chapter suggests that the expansion of the FMFO industry raises important questions regarding environmental justice, sustainable development, corporate accountability, and the protection of vulnerable populations within coastal communities. These gaps and concerns therefore justify the need for further research examining the intersection between environmental degradation, industrial fisheries, and children's rights within The Gambia.

2.5 THEORETICAL AND CONCEPTUAL FRAMEWORK

2.5.1 Principles of Human Rights-Based Approach (HRBA)

According to UNICEF, 'The Human Rights-Based Approach (HRBA) is a conceptual framework for the process of human development that is normatively based on international human rights standards and operationally directed to promoting and protecting human rights. It states that, under the HRBA plans, policies and processes of development are anchored in a system of rights and corresponding obligations established by international law including all civil, cultural, economic, political and social rights, and the right to development [¹⁸⁹]. HRBA requires human rights principles like Universality, Indivisibility, Equality and Non-Discrimination, Participation, Accountability to guide United Nations development cooperation, and focus on developing the capacities of both 'duty-bearers' to meet their obligations, and 'rights-holders' to claim their rights [¹⁹⁰].

2.5.1.1 Participation

Participation is recognized as a fundamental human right and a core principle of the Human Rights-Based Approach (HRBA). According to the UNICEF Human Rights-Based Approach to Programming Manual and related United Nations human rights frameworks, participation

¹⁸⁹ Anton Hausen and Annika Launiala, © *Finnish Committee for UNICEF* [Www.Unicef.Fi/HRBA](http://www.Unicef.Fi/HRBA), n.d.

¹⁹⁰ "UNICEF HRBAP Executive Summary," n.d.; "UNDP Human_rights_based_approach_programming_toolkit," n.d.; Hausen and Launiala, © *Finnish Committee for UNICEF* [Www.Unicef.Fi/HRBA](http://www.Unicef.Fi/HRBA).

entitles individuals and communities to actively contribute to, and benefit from, social, economic, cultural, civil, and political development processes affecting their lives [¹⁹¹]. Within the HRBA framework, participation is regarded both as a means of achieving effective development outcomes and as a human rights objective in itself [¹⁹²].

The literature further emphasizes that participation must be active, free, meaningful, and inclusive in order to comply with international human rights standards. This requires more than symbolic consultation or passive involvement. Rather, affected individuals and communities must have genuine opportunities to influence decision-making processes, express concerns freely, and access relevant information necessary for informed engagement [¹⁹³]. Existing human rights frameworks further stress the importance of creating safe spaces for participation and removing barriers that may exclude vulnerable or marginalized groups such as women, children, persons with disabilities, and economically disadvantaged communities [¹⁹⁴]. Participation is also closely linked to transparency, accountability, and access to information, since meaningful public engagement depends on the availability of accurate and accessible information regarding proposed projects and their potential impacts [¹⁹⁵].

Within development programming, the participation principle requires the identification of both rights-holders and duty-bearers. Rights-holders refer to individuals and communities entitled to participate in decisions affecting them, while duty-bearers include state institutions, corporations, and other actors responsible for respecting, protecting, and facilitating those rights [¹⁹⁶]. The Human Rights-Based Approach therefore places obligations on governments and private actors

¹⁹¹ “UNDP Human_rights_based_approach_programming_toolkit,” n.d.; Hausen and Launiala, © *Finnish Committee for UNICEF* [Www.Unicef.Fi/HRBA](http://www.Unicef.Fi/HRBA); “UNICEF HRBAP Executive Summary.”

¹⁹² Hausen and Launiala, © *Finnish Committee for UNICEF* [Www.Unicef.Fi/HRBA](http://www.Unicef.Fi/HRBA); “UNICEF HRBAP Executive Summary”; “UNDP Human_rights_based_approach_programming_toolkit,” n.d.

¹⁹³ “UNDP Human_rights_based_approach_programming_toolkit,” n.d.; Hausen and Launiala, © *Finnish Committee for UNICEF* [Www.Unicef.Fi/HRBA](http://www.Unicef.Fi/HRBA).

¹⁹⁴ “UNDP Human_rights_based_approach_programming_toolkit,” n.d.; Hausen and Launiala, © *Finnish Committee for UNICEF* [Www.Unicef.Fi/HRBA](http://www.Unicef.Fi/HRBA).

¹⁹⁵ “UNICEF HRBAP Executive Summary”; “UNDP Human_rights_based_approach_programming_toolkit,” n.d.

¹⁹⁶ “UNICEF HRBAP Executive Summary”; “UNDP Human_rights_based_approach_programming_toolkit,” n.d.; Hausen and Launiala, © *Finnish Committee for UNICEF* [Www.Unicef.Fi/HRBA](http://www.Unicef.Fi/HRBA).

to ensure that affected communities are adequately consulted throughout all stages of project planning, implementation, monitoring, and evaluation [¹⁹⁷].

In the context of fishmeal factory operations (FMFO) in The Gambia, existing literature suggests that participation standards have often been inadequately implemented [¹⁹⁸]. Several studies report that coastal communities were insufficiently consulted prior to the establishment of industrial fishmeal factories and were frequently excluded from environmental decision-making processes concerning fisheries governance, pollution control, and resource management [¹⁹⁹]. Researchers further argue that Environmental Impact Assessment (EIA) processes associated with FMFO operations often lacked transparency and meaningful public engagement, while consultation processes frequently relied on selected local leaders rather than broader community participation [²⁰⁰]. As a result, vulnerable groups such as artisanal fishers, women fish processors, youth, and children were often unable to effectively express concerns relating to declining fish stocks, environmental pollution, livelihood insecurity, and public health risks associated with industrial fishmeal production [²⁰¹].

The participation principle is therefore highly relevant to this study because it provides an analytical framework for examining whether communities affected by fishmeal factory operations in The Gambia are meaningfully included in environmental governance and development decision-making processes. It further assists in assessing whether state institutions and corporate actors fulfil their obligations to ensure inclusive, transparent, and rights-based participation within coastal communities affected by industrial fisheries activities.

¹⁹⁷ “UNICEF HRBAP Executive Summary”; “UNDP Human rights based approach programming toolkit,” n.d.; Hausen and Launiala, © *Finnish Committee for UNICEF* www.unicef.fi/hrba.

¹⁹⁸ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “EU-The_gambia-Fishery_june_2020 REPORT.”

¹⁹⁹ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “EU-The_gambia-Fishery_june_2020 REPORT”; “A WASTE - Greenpeace 2019.”

²⁰⁰ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “EU-The_gambia-Fishery_june_2020 REPORT.”

²⁰¹ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “EU-The_gambia-Fishery_june_2020 REPORT.”

In the context of this study, participation also relates to children's right to be heard in matters affecting their lives, as recognized under Article 12 of the Convention on the Rights of the Child (CRC). Environmental decisions concerning fishmeal factory operations may affect children's health, education, recreation, and overall well-being. Therefore, meaningful consideration of children's perspectives is consistent with a Human Rights-Based Approach.

2.5.1.2 Accountability

Accountability is a central principle of the Human Rights-Based Approach (HRBA) and requires states, institutions, and non-state actors to be answerable for their actions and omissions in relation to human rights obligations [202]. Within the HRBA framework, accountability ensures that duty-bearers including governments, regulatory agencies, and private corporations are held responsible for respecting, protecting, and fulfilling the rights of affected individuals and communities [203]. The principle further requires the existence of effective laws, monitoring systems, remedies, and enforcement mechanisms capable of addressing human rights violations and environmental harms [204].

Existing human rights frameworks emphasize that accountability involves transparency, access to justice, public oversight, and mechanisms through which affected populations can seek remedies for violations of their rights [205]. According to the United Nations Guiding Principles on Business and Human Rights (UNGPs), states possess a duty to protect individuals and communities from business-related human rights abuses, while corporations have an independent responsibility to respect human rights and exercise due diligence regarding the impacts of their

²⁰² Ysaline Reid, "The Principle of Accountability in Human Rights-Based Approaches to Development: Towards a New Understanding," *Journal of Human Rights Practice* 16, no. 2 (2024): 533–53, <https://doi.org/10.1093/jhuman/huad068>.

²⁰³ Marlies Hesselman and Lottie Lane, "Disasters and Non-State Actors – Human Rights-Based Approaches," *Disaster Prevention and Management* 26, no. 5 (2017): 526–39, <https://doi.org/10.1108/DPM-07-2017-0174>.

²⁰⁴ Reid, "The Principle of Accountability in Human Rights-Based Approaches to Development."

²⁰⁵ Lorna McGregor et al., "INTERNATIONAL HUMAN RIGHTS LAW AS A FRAMEWORK FOR ALGORITHMIC ACCOUNTABILITY," *International and Comparative Law Quarterly* 68, no. 2 (2019): 309–43, <https://doi.org/10.1017/S0020589319000046>.

operations [²⁰⁶]. Accountability therefore extends beyond state institutions to include private actors whose activities may negatively affect environmental sustainability, livelihoods, public health, and children's rights [²⁰⁷].

Within the context of fishmeal factory operations (FMFO) in The Gambia, existing literature consistently highlights significant accountability challenges affecting environmental governance and fisheries regulation [²⁰⁸]. Several studies report weak enforcement of environmental laws, inadequate monitoring of industrial pollution, and limited regulatory oversight of factory operations [²⁰⁹]. Researchers further note that institutions responsible for fisheries management and environmental protection often operate with limited resources and weak monitoring capacities, thereby reducing their ability to effectively sanction environmental violations and unsustainable fishing practices [²¹⁰].

The literature additionally documents concerns relating to limited transparency and weak corporate accountability within the FMFO sector [²¹¹]. Fishmeal factories are frequently described as highly secretive entities that fail to disclose operational information concerning fish sourcing practices, production volumes, wastewater management, and Environmental Impact

²⁰⁶ Peter Muchlinski, "Implementing the New UN Corporate Human Rights Framework: Implications for Corporate Law, Governance, and Regulation," *Business Ethics Quarterly* 22, no. 1 (2012): 145–77, <https://doi.org/10.5840/beq20122218>.

²⁰⁷ Eric F. Lambin and Tannis Thorlakson, "Sustainability Standards: Interactions Between Private Actors, Civil Society, and Governments," *Annual Review of Environment and Resources* 43, no. 1 (2018): 369–93, <https://doi.org/10.1146/annurev-environ-102017-025931>.

²⁰⁸ "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; "EU-The_gambia-Fishery_june_2020 REPORT"; Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

²⁰⁹ "The-Gambia-National-Development-Plan-2018-2021"; "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.; "EU-The_gambia-Fishery_june_2020 REPORT"; *The State of World Fisheries and Aquaculture 2020*.

²¹⁰ Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia"; *The State of Food Security and Nutrition in the World 2025*; "Gambia Recovery Focus-NDP-2023-2027"; "EU-The_gambia-Fishery_june_2020 REPORT."

²¹¹ "Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia"; "EU-The_gambia-Fishery_june_2020 REPORT."

Assessment (EIA) processes [²¹²]. Existing studies further suggest that some factories continue operating despite repeated allegations of environmental pollution, wastewater discharge, and community health concerns [²¹³]. Although regulatory agencies such as the National Environment Agency (NEA) have occasionally imposed fines or temporary factory closures, researchers argue that weak enforcement mechanisms and political-economic interests often undermine sustained accountability and environmental remediation efforts [²¹⁴].

The accountability principle is therefore highly relevant to this study because it provides a framework for assessing whether state institutions and corporate actors fulfil their obligations to protect vulnerable coastal communities from environmental harm and human rights abuses associated with industrial fishmeal production. It further assists in examining the effectiveness of environmental governance systems, regulatory enforcement, and corporate responsibility mechanisms within the Gambian fisheries sector.

2.5.1.3 Non-Discrimination and Protection of Vulnerable Groups

Non-discrimination and the protection of vulnerable groups are central principles of the Human Rights-Based Approach (HRBA). The principle requires that development processes and policies ensure equal treatment, inclusion, and protection of marginalized populations, particularly those exposed to social, economic, and environmental inequalities. According to HRBA principles, special attention must be given to groups that are disproportionately affected by development activities, including women, children, low-income households, and small-scale fishing communities [²¹⁵].

²¹² “EU-The_gambia-Fishery_june_2020 REPORT”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “A WASTE - Greenpeace 2019”; Urquhart, *National Climate Change Policy of The Gambia*.

²¹³ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “EU-The_gambia-Fishery_june_2020 REPORT.”

²¹⁴ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “EU-The_gambia-Fishery_june_2020 REPORT.”

²¹⁵ Morten Broberg and Hans-Otto Sano, “Strengths and Weaknesses in a Human Rights-Based Approach to International Development – an Analysis of a Rights-Based Approach to Development Assistance Based on Practical Experiences,” *The International Journal of Human Rights* 22, no. 5 (2018): 664–80,

In the context of fisheries and Fishmeal and Factory Operations (FMFO) industries in West Africa, existing literature demonstrates that vulnerable coastal populations often bear disproportionate social and economic burdens associated with industrial fishing and fishmeal production. Studies show that small pelagic fisheries are essential sources of food, nutrition, and income for poor coastal households, yet industrial exploitation increasingly redirects these resources toward export-oriented fishmeal production, thereby disadvantaging local communities [216].

Food insecurity emerges as a major concern within the literature, hence the diversion of small pelagic fish to fishmeal factories places pressure on nutritional security in countries such as Senegal and The Gambia, while simultaneously threatening the livelihoods of women fish processors who depend on these species for artisanal processing [217]. Similarly, the industrial reduction in fishing contribute to declining fish consumption in West Africa, thereby worsening food insecurity among impoverished populations [218].

The literature also highlights the gendered dimensions of discrimination and exclusion within fisheries governance. Women play critical roles in post-harvest fisheries activities and local fish value chains, yet they frequently experience marginalization in decision-making and limited access to fisheries resources [219]. Also, women involved in shellfish harvesting in West Africa

<https://doi.org/10.1080/13642987.2017.1408591>; “Global Consultation on the Right to Development as a Human Right Report by the Secretary-General Pursuant to Commission on Human Rights Resolution 198945,” n.d.; Wouter Vandenhoe and Paul Gready, “Failures and Successes of Human Rights-Based Approaches to Development: Towards a Change Perspective,” *Nordic Journal of Human Rights* 32, no. 4 (2014): 291–311, <https://doi.org/10.1080/18918131.2015.957458>; Hesselman and Lane, “Disasters and Non-State Actors – Human Rights-Based Approaches.”

²¹⁶ Dème et al., “Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa”; Patricia Majluf et al., “A Review of the Global Use of Fishmeal and Fish Oil and the Fish In:Fish Out Metric,” *Science Advances* 10, no. 42 (2024): eadn5650, <https://doi.org/10.1126/sciadv.adn5650>.

²¹⁷ Dème et al., “Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa.”

²¹⁸ Majluf et al., “A Review of the Global Use of Fishmeal and Fish Oil and the Fish In.”

²¹⁹ “EU-The_gambia-Fishery_june_2020 REPORT”; Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; Finkbeiner et al., “A Call for Protection of Women’s Rights and Economic, Social, Cultural (ESC) Rights in Seafood Value Chains.”

often operate within informal systems lacking legal recognition and institutional support [²²⁰]. In addition, cultural practices and discriminatory social norms continue to restrict women's access to fisheries resources despite existing human rights commitments [²²¹].

Environmental injustice is another recurring issue associated with FMFO's. There are identify concerns regarding pollution, health risks, and inadequate environmental regulation surrounding fishmeal factories in coastal communities [²²²]. Likewise, pollution and unpleasant emissions from fishmeal factories negatively affect the quality of life of nearby populations, many of whom are economically vulnerable [²²³]. These findings suggest that environmental harms associated with industrial fisheries are not distributed equally but disproportionately affect poorer coastal communities with limited capacity to respond.

The reviewed literature therefore demonstrates that vulnerable groups within coastal fishing communities face intersecting forms of inequality related to food insecurity, environmental degradation, exclusion from decision-making, and restricted access to livelihoods. From an HRBA perspective, addressing these inequalities requires inclusive governance, protection of socio-economic rights, gender-sensitive fisheries policies, and stronger accountability mechanisms to safeguard the rights and welfare of affected populations.

Children from low-income fishing households may experience disproportionate impacts from environmental degradation and declining fish resources. HRBA therefore requires particular attention to vulnerable groups of children who may be at greater risk of exclusion or harm.

2.5.1.4 Transparency and Access to Information

Transparency and access to information are fundamental principles of the Human Rights-Based Approach (HRBA), as they enable rights-holders to participate effectively in decision-making

²²⁰ "A WASTE - Greenpeace 2019"; *The State of World Fisheries and Aquaculture 2020*.

²²¹ "EU-The_gambia-Fishery_june_2020 REPORT"; Finkbeiner et al., "A Call for Protection of Women's Rights and Economic, Social, Cultural (ESC) Rights in Seafood Value Chains"; "The-Gambia-National-Development-Plan-2018-2021."

²²² *The State of Food Security and Nutrition in the World 2025*.

²²³ Majluf et al., "A Review of the Global Use of Fishmeal and Fish Oil and the Fish In."

processes and hold duty-bearers accountable for their actions [²²⁴]. Transparency refers to the openness of governance processes and the availability of information concerning decisions, policies, and activities that affect individuals and communities. The literature distinguishes between passive transparency, where public institutions respond to requests for information, and active transparency, where authorities proactively disclose information of public interest [²²⁵]. Access to information is similarly regarded as a fundamental right that allows citizens to obtain information held by public institutions and other entities operating in areas of public concern [²²⁶].

Within an HRBA, transparency is considered a necessary condition for accountability and meaningful participation [²²⁷]. Rights-holders can only claim and defend their rights when relevant information is accessible, timely, and understandable. Transparency therefore strengthens accountability by making governance processes visible and subject to public scrutiny, while also enabling citizens to participate more effectively in decisions that affect their rights and livelihoods [²²⁸]. In this regard, access to information serves as an important mechanism through which communities can monitor government actions, evaluate development outcomes, and advocate for their interests.

Access to environmental information is particularly important in communities that depend directly on natural resources for their livelihoods. International human rights standards recognize that the right to seek and receive information extends to environmental matters, including information relating to pollution, environmental risks, and resource management [²²⁹].

The literature further emphasizes that the public has a right to know, while public authorities have a corresponding duty to provide information in a timely and intelligible manner [²³⁰].

²²⁴ “UNDP Human_rights_based_approach_programming_toolkit,” n.d.

²²⁵ Didier Yangonzela Liambomba, “The Right of Access to Public Information: Human Rights Issues, Transparency and Good Governance,” *Constitutionale* 4, no. 1 (2023): 1–28, <https://doi.org/10.25041/constitutionale.v4i1.2601>.

²²⁶ Liambomba, “The Right of Access to Public Information.”

²²⁷ Hausen and Launiala, © *Finnish Committee for UNICEF* www.unicef.fi/hrba.

²²⁸ “UNDP Human_rights_based_approach_programming_toolkit,” n.d.

²²⁹ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²³⁰ Liambomba, “The Right of Access to Public Information.”

Access to such information enables communities to understand environmental risks, monitor compliance with environmental regulations, and advocate for the protection of their rights. Without adequate information, affected populations may be unable to assess the implications of industrial activities on their health, livelihoods, and surrounding ecosystems.

Transparency is also critical for effective fisheries and environmental governance. The literature highlights concern regarding transparency within The Gambia's fishmeal industry, noting that fishmeal factories have often been described as "notoriously secretive" and reluctant to disclose operational data [²³¹]. Significant information gaps reportedly exist regarding factory ownership, production volumes, environmental impacts, licensing arrangements, and fisheries-related data [²³²]. Such opacity creates information asymmetries between government agencies, companies, and local communities, thereby limiting public participation and weakening accountability mechanisms. The absence of accessible information may also hinder efforts to assess the sustainability of fishmeal production and its implications for fisheries resources and environmental protection.

The consequences of inadequate transparency are often most severe for vulnerable groups, including small-scale fishers, women fish processors, and low-income coastal households [²³³]. These groups rely heavily on fisheries resources for food security and income generation but frequently lack access to information concerning industrial activities that directly affect those resources. As a result, information asymmetries can contribute to marginalization and reduce the ability of local stakeholders to influence decisions affecting their communities. Weak disclosure practices may also generate mistrust between communities, companies, and government institutions, particularly where consultation processes are perceived as limited or exclusionary [²³⁴].

²³¹ "EU-The_gambia-Fishery_june_2020 REPORT."

²³² "A WASTE - Greenpeace 2019."

²³³ "EU-The_gambia-Fishery_june_2020 REPORT."

²³⁴ Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia"; "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d..

The importance of transparency and access to information is reinforced by several international frameworks. Article 19 of the International Covenant on Civil and Political Rights (ICCPR) recognizes the right to seek and receive information, while Rio Declaration Principle 10 emphasizes access to information, public participation, and access to justice in environmental matters [²³⁵]. Similarly, the UN Guiding Principles on Business and Human Rights underscore the importance of corporate transparency and meaningful stakeholder engagement, while the Fisheries Transparency Initiative (FiTI) promotes openness in fisheries governance as a means of strengthening accountability and sustainable resource management [²³⁶].

In the context of fishmeal factory operations in Kombo South, transparency and access to information are particularly important because communities require reliable information regarding environmental impacts, licensing processes, and resource use in order to effectively participate in decision-making and protect their rights [²³⁷]. From an HRBA perspective, strengthening transparency is therefore essential for promoting accountability, participation, environmental justice, and the protection of human rights in fisheries-dependent communities. Access to information is essential for protecting children because parents and communities require accurate information about environmental risks, pollution levels, and health implications associated with fishmeal factory activities.

2.5.1.5 Empowerment

Empowerment is a core principle of the Human Rights-Based Approach (HRBA) that seeks to enhance the ability of individuals and communities to understand, claim, and exercise their rights [²³⁸]. Rather than viewing people as passive beneficiaries of development interventions, HRBA regards them as active rights-holders capable of influencing decisions that affect their lives [²³⁹].

²³⁵ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²³⁶ “EU-The_gambia-Fishery_june_2020 REPORT”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.,” n.d.

²³⁷ “EU-The_gambia-Fishery_june_2020 REPORT.”

²³⁸ “UNDP Human_rights_based_approach_programming_toolkit,” n.d.; Hausen and Launiala, © *Finnish Committee for UNICEF* www.Unicef.Fi/HRBA.

²³⁹ Hausen and Launiala, © *Finnish Committee for UNICEF* www.Unicef.Fi/HRBA; “UNDP Human_rights_based_approach_programming_toolkit,” n.d.

Empowerment is therefore both a process and an outcome through which individuals and communities gain greater control over decisions, resources, and institutions that shape their social, economic, and environmental well-being [²⁴⁰].

Within the HRBA framework, empowerment is closely linked to the strengthening of rights-holders while simultaneously enhancing the capacity of duty-bearers to fulfil their obligations. The approach seeks to equip individuals with the knowledge, skills, and opportunities necessary to participate effectively in governance processes and demand accountability where rights are threatened or violated [²⁴¹]. As such, empowerment is considered essential for transforming participation from a symbolic exercise into meaningful engagement in decision-making processes [²⁴²].

In environmental and fisheries governance, empowerment contributes to more inclusive and legitimate decision-making. The literature suggests that resource users are more likely to support and comply with management measures when they are actively involved in defining and implementing them [²⁴³]. Empowered communities are better positioned to organize collectively, represent their interests, and engage with state institutions and private actors on issues affecting their livelihoods and natural resources [²⁴⁴]. This is particularly important for small-scale fishers and coastal communities, whose voices are often overshadowed by more powerful economic and political interests [²⁴⁵].

Empowerment is also closely associated with access to justice and accountability. Rights-holders require access to information, complaint mechanisms, and avenues for redress in order to challenge discrimination, environmental harm, or other violations of their rights [²⁴⁶]. The literature further emphasizes that communities should possess the capacity to monitor

²⁴⁰ Finkbeiner et al., “A Call for Protection of Women’s Rights and Economic, Social, Cultural (ESC) Rights in Seafood Value Chains.”

²⁴¹ “UNDP Human_rights_based_approach_programming_toolkit,” n.d.

²⁴² “UNDP Human_rights_based_approach_programming_toolkit,” n.d.

²⁴³ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²⁴⁴ FAO, *Meeting the Sustainable Development Goals*.

²⁴⁵ “EU-The_gambia-Fishery_june_2020 REPORT”; *The State of World Fisheries and Aquaculture 2020*.

²⁴⁶ “UNDP Human_rights_based_approach_programming_toolkit,” n.d.

governance processes and hold institutions accountable for their actions [²⁴⁷]. Without such capacities, participation may remain limited and ineffective.

The absence of empowerment can have significant consequences for vulnerable groups. In coastal communities, women fish processors, fish vendors, and small-scale fishers often experience marginalization within decision-making processes despite their dependence on fisheries resources for their livelihoods [²⁴⁸]. Information asymmetries, limited representation, and inadequate consultation can reduce their ability to influence policies and decisions that directly affect their well-being [²⁴⁹]. In addition, environmental degradation and resource depletion may further undermine the adaptive capacity of communities that rely heavily on fisheries resources [²⁵⁰].

Capacity building, awareness raising, and rights education are therefore important components of empowerment [²⁵¹]. The literature highlights the importance of ensuring that communities understand their rights and possess the skills necessary to engage effectively with governance institutions [²⁵²]. Particular attention is required for women and other marginalized groups, whose participation may be constrained by limited educational opportunities, low literacy levels, or exclusion from decision-making structures [²⁵³].

In the context of fishmeal factory operations in Kombo South, empowerment is essential for enabling affected communities to participate meaningfully in decisions relating to fisheries resources, environmental protection, and local development [²⁵⁴]. From an HRBA perspective, empowering local residents, particularly small-scale fishers and women engaged in fisheries-related livelihoods, can strengthen their ability to advocate for their rights, demand accountability from duty-bearers, and contribute to more equitable and sustainable governance outcomes [²⁵⁵].

²⁴⁷ “The-Gambia-National-Development-Plan-2018-2021.”

²⁴⁸ Finkbeiner et al., “A Call for Protection of Women’s Rights and Economic, Social, Cultural (ESC) Rights in Seafood Value Chains.”

²⁴⁹ “EU-The_gambia-Fishery_june_2020 REPORT.”

²⁵⁰ “A WASTE - Greenpeace 2019”; FAO, *Meeting the Sustainable Development Goals*.

²⁵¹ *Guidance on Addressing Child Labour in Fisheries and Aquaculture*.

²⁵² “The-Gambia-National-Development-Plan-2018-2021.”

²⁵³ Hausen and Launiala, © Finnish Committee for UNICEF *Wwww.Unicef.Fi/HRBA*.

²⁵⁴ “Fisheries-and-Aquaculture-Policy-of-The-Gambia-2018.”

²⁵⁵ FAO, *Meeting the Sustainable Development Goals*.

Within this study, empowerment includes strengthening the ability of children, families, and communities to understand environmental risks, claim their rights, and participate in decisions affecting their welfare and future development.

2.5.1.7 Best Interest of the Child

The Best Interests of the Child is a fundamental principle within the Human Rights-Based Approach (HRBA), requiring that the welfare and well-being of children be a primary consideration in all actions and decisions affecting them. The principle is established under Article 3 of the United Nations Convention on the Rights of the Child (CRC), which recognizes children as rights holders entitled to protection, development, participation, and dignity [²⁵⁶]. Within environmental and development contexts, the principle emphasizes that economic activities and governance decisions should not undermine children's health, education, survival, or future opportunities. It is closely linked to the concept of sustainable development, which seeks to meet present needs without compromising the ability of future generations to meet their own needs [²⁵⁷].

The principle is particularly relevant in coastal and fisheries-dependent communities where children's well-being is closely connected to environmental quality and household livelihoods. Environmental degradation, pollution, and the depletion of natural resources can negatively affect children's access to adequate nutrition, health, education, and a safe living environment [²⁵⁸].

Children are widely recognized as being more vulnerable to environmental hazards than adults because their bodies and immune systems are still developing. Exposure to polluted air, contaminated water, and other environmental risks may therefore have long-term consequences for their physical and cognitive development. In the context of fishmeal factory operations,

²⁵⁶ *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; Hausen and Launiala, © Finnish Committee for UNICEF www.Unicef.Fi/HRBA.

²⁵⁷ Theresa E. de Silva, *Principles in International Development: Sustainable Livelihoods and Human Rights Based Approaches*, n.d.; Hausen and Launiala, © Finnish Committee for UNICEF www.Unicef.Fi/HRBA.

²⁵⁸ *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d..

concerns have been raised regarding air pollution, wastewater discharge, and the depletion of fish resources that support local food security and livelihoods [²⁵⁹].

The principle also highlights the indirect impacts of environmental and economic pressures on children. Declining household incomes, reduced fish availability, and livelihood insecurity may contribute to school absenteeism, poor nutrition, and increased vulnerability among children in fishing communities. Such impacts demonstrate that the consequences of industrial activities extend beyond environmental concerns to broader child rights issues [²⁶⁰].

In relation to this study, the Best Interests of the Child principle provides an important framework for assessing whether fishmeal factory operations in Kombo South support or undermine children's rights and well-being. It shifts attention beyond economic benefits to consider how environmental and social impacts affect children's health, development, food security, and future opportunities [²⁶¹].

2.5.1.8 Relevance of the Human Rights-Based Approach (HRBA) to the Study

The Human Rights-Based Approach (HRBA) provides the principal analytical framework for this study because it enables an examination of how the activities of fishmeal factories affect the rights, well-being, and living conditions of children in Kombo South, The Gambia. Unlike approaches that focus primarily on economic growth or environmental management, HRBA emphasizes the protection and fulfilment of human rights, particularly for vulnerable groups whose voices are often underrepresented in development processes.

The relevance of HRBA to this study lies in its focus on the relationship between industrial activities and the rights of children. Fishmeal factories operating in coastal communities may generate environmental impacts such as air pollution, unpleasant odors, waste discharge, pressure on marine resources, and changes in local livelihoods. These impacts may directly or indirectly affect children's rights to health, food, education, development, and a safe

²⁵⁹ Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²⁶⁰ *Guidance on Addressing Child Labour in Fisheries and Aquaculture*; “EU-The_gambia-Fishery_june_2020 REPORT.”

²⁶¹ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; *Guidance on Addressing Child Labour in Fisheries and Aquaculture*.

environment. HRBA provides a framework for examining these impacts from the perspective of rights holders rather than merely as environmental or economic issues.

The approach is also relevant because it highlights the importance of participation, accountability, transparency, non-discrimination, and empowerment in governance processes.

Through these principles, the study can assess whether communities affected by fishmeal factory operations have access to information, opportunities to participate in decision-making, and mechanisms through which concerns regarding children's welfare can be addressed. HRBA therefore facilitates an assessment of whether existing governance arrangements adequately protect children's interests and ensure accountability among state institutions and private actors. Furthermore, HRBA recognizes children as rights holders who require special protection because of their vulnerability and dependence on environmental and social conditions within their communities. Environmental degradation, declining fish availability, livelihood disruptions, and community health risks may disproportionately affect children through reduced nutrition, increased exposure to pollution, and limitations on educational and developmental opportunities. Applying HRBA allows these impacts to be analyzed within a broader framework of social justice and human dignity.

The study also draws on international human rights instruments that recognize and protect children's rights. These include the Universal Declaration of Human Rights (UDHR), the United Nations Convention on the Rights of the Child (CRC), the International Covenant on Economic, Social and Cultural Rights (ICESCR), and other frameworks that emphasize children's rights to health, adequate food, education, development, and protection from harmful environmental conditions. These instruments provide important normative standards against which the impacts of fishmeal factory operations can be considered.

Additionally, while the Human Rights-Based Approach remains the primary theoretical framework, insights from the Business and Human Rights perspective are acknowledged because fishmeal factories are private commercial actors whose activities may influence the enjoyment of human rights. The United Nations Guiding Principles on Business and Human Rights (UNGPs) emphasize that businesses have a responsibility to respect human rights and avoid causing or

contributing to adverse impacts on affected populations. This perspective complements HRBA by highlighting the role of private industry in protecting community welfare and children's rights.

Overall, HRBA is relevant to this study because it provides a comprehensive framework for examining how environmental and socio-economic changes associated with fishmeal factory operations affect children in Kombo South. It enables an assessment of both substantive rights and governance processes, thereby contributing to a deeper understanding of the relationship between industrial development, environmental sustainability, and children's well-being.

2.6 CONCEPTUAL FRAMEWORK

This study is guided by a Human Rights-Based Approach (HRBA) to examine the relationship between fishmeal factory operations and their environmental and human rights impacts on children in Kombo South, The Gambia. The framework is based on the assumption that industrial fishmeal production generates environmental and socio-economic effects that directly and indirectly influence the well-being and rights of children living in affected coastal communities.

The independent variable in the study is the operation of foreign fishmeal factories. These activities include the processing of small pelagic fish into fishmeal and fish oil, industrial emissions, wastewater discharge, increased pressure on marine resources, and other associated industrial practices.

These activities may produce environmental impacts such as air pollution, water contamination, coastal ecosystem degradation, unpleasant odors, and the depletion of fish stocks. At the same time, they may generate socio-economic impacts including reduced household incomes, declining fish availability, food insecurity, livelihood disruptions, and increased vulnerability among fishing-dependent households.

The study argues that these environmental and socio-economic impacts affect children both directly and indirectly. Direct impacts may include exposure to pollution, health risks, and reduced environmental quality. Indirect impacts may occur through declining household

livelihoods, reduced access to nutritious food, interruptions to education, and increased social vulnerability.

The Human Rights-Based Approach serves as the analytical lens through which these impacts are assessed. The study applies the principles of participation, accountability, transparency and access to information, non-discrimination, empowerment, and the best interests of the child to evaluate whether existing governance arrangements adequately protect children and uphold their rights.

The dependent variable is the realization of children's rights and well-being in Kombo South. This includes children's rights to health, food, education, development, participation, and a safe, clean, healthy, and sustainable environment. The framework therefore enables the study to examine how fishmeal factory operations influence children lived experiences and whether governance responses align with human rights standards.

The conceptual framework illustrates the relationship between fishmeal factory operations and children's rights in Kombo South, The Gambia (see Appendix A, Figure A7). It assumes that the activities of fishmeal factories generate environmental impacts such as pollution, waste discharge, ecosystem degradation, and pressure on fish resources. These environmental effects contribute to socio-economic consequences including food insecurity, livelihood disruptions, reduced household income, and community health challenges. Together, these impacts influence the enjoyment of children's rights, particularly their rights to health, food, education, development, and a healthy environment. The Human Rights-Based Approach (HRBA), through the principles of participation, accountability, transparency, non-discrimination, and empowerment, serves as the analytical lens for assessing these relationships and understanding the extent to which children's rights are protected or affected by fishmeal factory operations.

2.7 Research Gap / Critical Review

Although a growing body of literature has examined the environmental and socio-economic impacts of fishmeal factory industries in West Africa, important gaps remain in current scholarship. Existing studies have largely focused on issues such as overexploitation of small

pelagic fish stocks, environmental pollution, fisheries governance, and livelihood impacts on fishing communities. While these studies provide valuable insights into the broader consequences of fishmeal production, limited attention has been given to the specific implications for children living in communities affected by fishmeal factory operations. Furthermore, much of the existing literature examines environmental degradation and economic outcomes without explicitly adopting a Human Rights-Based Approach (HRBA). Consequently, issues such as children's rights, participation, protection, non-discrimination, accountability, transparency, and the best interests of the child are often treated indirectly or remain insufficiently explored within discussions of fisheries governance and industrial development.

Another significant gap concerns the limited availability of child-centered analyses within the fishmeal industry literature. Although studies acknowledge that environmental pollution, declining fish availability, food insecurity, and livelihood disruptions affect households and communities, few have specifically investigated how these impacts influence children's health, nutrition, education, development, and overall well-being. The experiences of children are therefore frequently overlooked despite their heightened vulnerability to environmental hazards and socio-economic shocks.

In the Gambian context, research on fishmeal factories has primarily focused on environmental concerns, fisheries resource depletion, and community livelihoods. There remains limited empirical and conceptual work examining the human rights implications of fishmeal factory operations for children in affected coastal communities such as Sanyang, Gunjur, and other settlements within Kombo South. As a result, there is insufficient understanding of how industrial fisheries activities intersect with child rights and environmental justice concerns at the local level.

Additionally, while international human rights instruments such as the Convention on the Rights of the Child (CRC) emphasize the protection of children's rights and the principle of the best interests of the child, these frameworks have rarely been applied in analyses of fishmeal factory operations and their impacts on coastal communities. Similarly, the growing Business and Human Rights discourse, which highlights the responsibility of businesses to respect human

rights and avoid adverse impacts on vulnerable groups, has received limited attention in relation to fishmeal industries in The Gambia.

This study seeks to address these gaps by examining the human rights and environmental impacts of fishmeal factories operations (FMFO) on children in Kombo South, The Gambia, through the lens of the Human Rights-Based Approach. By focusing specifically on children as rights holders, the study contributes to existing knowledge by linking environmental governance, child rights, and industrial fisheries development within a single analytical framework. It also provides insight into how fishmeal factory operations may affect children's health, nutrition, education, development, and overall well-being, thereby contributing to discussions on rights-based and sustainable approaches to fisheries governance.

2.8 Chapter Summary

This chapter reviewed the relevant literature on the human rights and environmental impacts of fishmeal factories, with particular emphasis on their implications for children in coastal communities. The chapter examined key concepts relating to human rights, environmental governance, children's rights, and fishmeal production, providing the conceptual foundation for the study.

The chapter further adopted the Human Rights-Based Approach (HRBA) as the principal theoretical framework. The discussion highlighted the core HRBA principles of participation, accountability, transparency and access to information, non-discrimination, empowerment, and the best interests of the child. These principles provide an appropriate lens for analyzing how fishmeal factory activities affect children and other vulnerable groups in Kombo South.

The empirical review revealed that while existing studies have documented environmental pollution, depletion of fish resources, livelihood challenges, and governance concerns associated with fishmeal industries in West Africa, limited attention has been given to the specific implications for children's rights and well-being. The review also showed that few studies have applied a human rights-based framework to examine fishmeal factory operations in The Gambia.

Based on the identified gaps, the study developed a conceptual framework illustrating the relationship between fishmeal factory activities, environmental and socio-economic impacts, children's rights, and HRBA principles. The chapter therefore provides the theoretical and empirical foundation for the study and informs the methodology adopted in the next chapter.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology adopted for the study. It describes the research design, research approach, sources of data, methods of data collection, data analysis procedures, ethical considerations, limitations of the study, and measures taken to ensure credibility. The methodology is designed to support the study's objective of exploring the human rights and environmental impacts of foreign fishmeal factory operations on children in Kombo South, The Gambia.

3.2 Research Approach

The study adopted a qualitative research design. Qualitative research is appropriate for exploring social issues, experiences, governance processes, and human rights concerns in depth. The design enables the researcher to examine existing evidence on the environmental and human rights implications of fishmeal factory operations and to interpret these impacts from a Human Rights-Based Approach (HRBA) perspective.

A qualitative design was considered suitable because the study seeks to understand and interpret documented experiences, policy debates, environmental concerns, and child rights issues rather than measure variables quantitatively.

3.3 Research Design

The study employed a desk-based documentary research approach. Documentary research involves the systematic review and analysis of existing documents and published materials relevant to the research topic.

The approach allows the researcher to draw insights from a wide range of sources concerning fishmeal factory operations, environmental governance, child rights, and human rights issues in The Gambia and similar contexts.

The documentary approach was particularly appropriate because of the availability of substantial secondary data on fishmeal industries, environmental impacts, fisheries governance, and children's rights.

3.4 Sources of Data

The study relied exclusively on secondary data and were obtained from; Peer-reviewed academic journal articles, Books and book chapters, Government reports and policy documents, Reports from international organizations, NGO publications, Fisheries and environmental assessment reports, Human rights reports, and international conventions and legal instruments. Particular attention was given to sources addressing fishmeal factories in The Gambia, fisheries and environmental governance, child rights, and Human Rights-Based Approaches.

3.5 Data Collection Procedure

Data were collected through a systematic review of relevant literature and documentary sources. The collection process involved;

- Identification of relevant literature.
- Selection of credible and authoritative sources.
- Review of documents relating to fishmeal production and environmental impacts.
- Review of human rights and child rights literature.
- Extraction of relevant information aligned with the study objectives.

3.6 Data Analysis

The study employed thematic analysis to analyze the collected data.

Thematic analysis involves identifying, organizing, and interpreting recurring themes within textual data. Information gathered from the reviewed documents was examined and grouped according to major themes related to the study objectives. The themes included;

- Environmental impacts of fishmeal factories
- Human rights implications
- Children's rights and well-being
- Participation and access to information
- Accountability and governance
- Food security and livelihoods
- Best interests of the child.

The identified themes were interpreted through the Human Rights-Based Approach (HRBA), which served as the analytical framework for the study.

3.7 Theoretical and Analytical Framework

The study was guided by the Human Rights-Based Approach (HRBA). HRBA provides a framework for examining how development activities, environmental governance, and industrial operations affect the rights of individuals and communities. The study specifically applies HRBA principles of participation, accountability, transparency and access to information, non-discrimination, empowerment, and the best interests of the child. These principles were used to assess the extent to which fishmeal factory activities affect children's rights and environmental well-being in Kombo South.

The study also draws on insights from the Business and Human Rights perspective, particularly regarding the responsibility of private actors to respect human rights and avoid adverse impacts on communities and vulnerable groups.

3.8 Use of Artificial Intelligence Tools

In accordance with the European Master Program in Human Rights and Democratization (EMA) Policy on Artificial Intelligence (2024–2025), artificial intelligence (AI) tools were used in a

limited and supportive capacity during the preparation of this thesis. Specifically, ChatGPT (OpenAI) and NotebookLM (Google) were used to assist with organizing the literature, generating preliminary summaries to facilitate understanding of academic sources, improving grammar and sentence structure, enhancing the clarity of expression, and formatting references. AI tools were not used to formulate the research questions, develop the research methodology, construct the conceptual framework, conduct the critical analysis, interpret the findings, or generate the conclusions of this study. All information obtained through AI tools was independently verified against the original sources before being incorporated into the thesis. The author retains full responsibility for the content, analysis, interpretation, and originality of this research.

3.9 Ethical Considerations

The study relied solely on publicly available secondary sources and did not involve direct interaction with human participants. Nevertheless, ethical standards were maintained through;

- Proper citation and referencing of all sources.
- Accurate representation of findings.
- Avoidance of plagiarism.
- Use of credible and verifiable information.
- Respect for intellectual property rights.

All materials used in the study were acknowledged appropriately in accordance with academic standards.

3.9 Limitations of the Study

This study was subject to several limitations. First, the research relied exclusively on secondary data sources, including academic journal articles, books, policy documents, government reports, NGO publications, and other relevant documentary materials. As a result, the study was unable to capture firsthand experiences and perspectives from children, community members, government officials, or representatives of fishmeal factories operating in Kombo South.

Second, there is limited scholarly literature specifically examining the human rights and environmental impacts of fishmeal factories on children in The Gambia. Consequently, the study drew upon broader literature relating to fisheries governance, environmental justice, child rights, and coastal communities in West Africa and other comparable contexts.

Third, available data often focus on general community impacts rather than providing child-specific or disaggregated information. This limited the ability of the study to comprehensively assess the unique experiences and long-term effects of fishmeal factory operations on children.

Finally, some relevant institutional documents, environmental assessment reports, and corporate information relating to fishmeal factory activities were not publicly accessible. This may have restricted the scope of available evidence considered in the study.

Despite these limitations, the use of diverse and credible secondary sources enabled the study to generate meaningful insights into the human rights and environmental implications of fishmeal factory operations on children in Kombo South, The Gambia.

3.10 Chapter Summary

This chapter explained the methodology adopted for the study. The study employed a qualitative documentary research design based entirely on secondary data sources. Data were collected from academic literature, policy documents, reports, and international legal instruments and analysed using thematic analysis. The Human Rights-Based Approach served as the principal analytical framework guiding the interpretation of findings. Ethical considerations and limitations of the study were also discussed. The next chapter presents and analyses the findings of the study.

Chapter 4: Data Presentation, Analysis and Discussion of Findings

4.1 Introduction

This chapter presents, analyses, and discusses the findings of the study on the human rights and environmental impacts of foreign fishmeal factories operations (FMFO) on children in Kombo South, The Gambia. The analysis is based on qualitative secondary data obtained from academic

literature, government documents, policy reports, publications of non-governmental organisations, media reports, and international agency report relevant to fisheries governance, environmental protection, child rights, and fishmeal production.

The chapter examines the environmental impacts associated with fishmeal factory operations, including pollution, pressure on marine resources, and effects on coastal ecosystems. It further explores how these environmental changes affect the rights and well-being of children living in affected communities, particularly in relation to health, food security, education, and access to a safe and healthy environment.

The findings are analysed through the Human Rights-Based Approach (HRBA), which serves as the study's analytical framework. Particular attention is given to the principles of participation, accountability, transparency and access to information, non-discrimination, and empowerment. Through this approach, the chapter seeks to assess the extent to which the activities of fishmeal factories and the governance structures surrounding them align with human rights standards and child-centred environmental justice principles.

The chapter is organised into six main sections. It begins with an overview of fishmeal factory operations in Kombo South, followed by an examination of the environmental impacts of these factories. The chapter then analyses the human rights implications for children before assessing the findings through the lens of HRBA principles. The final sections discuss the findings in relation to existing literature and provide a summary of the chapter.

4.2. Overview of Fishmeal Factory Operations in Kombo South

The fishmeal factory operation (FMFO) industry has emerged as a significant component of The Gambia's fisheries sector over the last decade. The establishment of industrial fishmeal factories in Kombo South has transformed local fisheries by creating a direct link between artisanal fish catches and global aquaculture feed markets. The industry is concentrated in three coastal communities, namely Gunjur, Kartong, and Sanyang, where foreign-owned factories process large quantities of small pelagic fish into fishmeal and fish oil for export [²⁶²].

²⁶² “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “A WASTE - Greenpeace 2019”; “NHRC 2024 Human Rights Report.”

The first fishmeal factory, Golden Lead Import and Export Trade Company, commenced operations in Gunjur in 2016. This was followed by JXYG Aquatic Products Limited in Kartong in 2017 and Nessim Fishing and Fish Processing Company in Sanyang in 2018. Their locations along the Atlantic coastline provide easy access to fish landing sites and facilitate the transportation of raw materials and finished products [²⁶³] (see Appendix A, Figure A4).

Fishmeal production involves the processing of whole fish into fishmeal and fish oil through a reduction process consisting of cooking, pressing, centrifugation, and drying. The factories primarily rely on small pelagic fish species such as bonga (*Ethmalosa fimbriata*), round sardinella (*Sardinella aurita*), and flat sardinella (*Sardinella maderensis*), which are also important sources of food and nutrition for local communities. The production process is highly resource intensive, requiring several kilograms of fresh fish to produce a much smaller quantity of fishmeal and fish oil [²⁶⁴]. The industry is largely driven by foreign investment and export demand. The three factories operating in Kombo South are foreign-owned and produce primarily for international markets, including Asia, Europe, and other regions where fishmeal is used in aquaculture and livestock feed production. Government policies promoting investment in the fisheries sector have facilitated the establishment and expansion of these factories through various investment incentives [²⁶⁵].

Fishmeal factories depend almost entirely on artisanal fisheries for their supply of raw materials. Rather than operating their own fishing fleets, the factories purchase fish from artisanal fishers and commercial fishing units operating along the Gambian coast. This relationship has intensified competition for small pelagic fish resources, as factories are often able to purchase fish in large

²⁶³ “NHRC 2024 Human Rights Report”; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²⁶⁴ “NHRC 2024 Human Rights Report”; “A WASTE - Greenpeace 2019.”

²⁶⁵ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*; “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.; “NHRC 2024 Human Rights Report.”

quantities and offer immediate cash payments. Consequently, concerns have emerged regarding the availability of fish for local consumption and traditional fish processing activities [²⁶⁶].

Although the industry has been presented as a source of employment and economic growth, findings from the reviewed literature suggest that its overall contribution to the national economy remains limited relative to the volume of fish resources consumed. At the same time, local communities have raised concerns regarding environmental pollution, declining fish availability, rising fish prices, and limited local benefits from factory operations [²⁶⁷].

Several studies and reports further indicate that fishmeal factory activities have generated tensions between local communities, factory operators, and government authorities. Complaints relating to air pollution, wastewater discharge, unpleasant odors, and lack of transparency in factory operations have been documented in communities such as Gunjur and Sanyang, a practice documented by independent investigation report [²⁶⁸]. These concerns have contributed to community protests and broader debates regarding the sustainability of industrial fishmeal production and its implications for fisheries governance, environmental protection, and human rights in The Gambia [²⁶⁹]. This is equally supported by an investigation

The overview demonstrates that fishmeal factories have become important actors within the fisheries sector of Kombo South. However, their operations have also generated significant environmental and social concerns. The following sections examine these impacts in greater detail, with particular attention to their implications for communities and children living in Kombo South.

4.2.1 Development of Fishmeal Factories in The Gambia

²⁶⁶ “NHRC 2024 Human Rights Report.”

²⁶⁷ “NHRC 2024 Human Rights Report”; Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal”; “EU-The_gambia-Fishery_june_2020 REPORT.”

²⁶⁸ “NHRC 2024 Human Rights Report”; “EU-The_gambia-Fishery_june_2020 REPORT.”

²⁶⁹ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia”; “NHRC 2024 Human Rights Report.”

The development of the fishmeal factory operation in The Gambia represents a shift from small-scale fish processing to industrial production targeting international markets. While artisanal fish-based feed production existed before 2016, the establishment of industrial fishmeal factories marked a new phase in the commercial exploitation of marine resources [²⁷⁰].

The expansion of the industry coincided with growing global demand for fishmeal and fish oil, particularly from the aquaculture sector. The first industrial fishmeal factory, Golden Lead Import and Export Trade Company, began operations in Gunjur in 2016, followed by JXYG Aquatic Products Limited in Kartong in 2017 and Nessim Fishing and Fish Processing Company in Sanyang in 2018 [²⁷¹].

These factories were strategically located near major fish landing sites, enabling access to raw materials from artisanal fisheries and facilitating integration into international fishmeal supply chains. Their establishment was supported by increasing global demand, foreign investment, and government policies promoting industrialization and investment within the fisheries sector [²⁷²].

Proponents argue that fishmeal factories contribute to employment creation, export earnings, and economic growth. Government authorities have also justified the industry as a means of utilizing fish resources considered underutilized or surplus within domestic markets [²⁷³].

Despite these perceived benefits, the industry has generated significant controversy among coastal communities and civil society organizations. Residents of communities such as Gunjur and Sanyang have reported concerns relating to air pollution, odor emissions, industrial waste disposal, and growing competition for fisheries resources. These concerns have contributed to protests, legal disputes, and broader debates regarding environmental governance and resource management [²⁷⁴]. Critics further argue that the diversion of food-grade fish to fishmeal production threatens local livelihoods and food security while raising questions about transparency, accountability, and community participation in decision-making processes [²⁷⁵].

²⁷⁰ "A WASTE - Greenpeace 2019."

²⁷¹ "Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d..

²⁷² Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

²⁷³ "NHRC 2024 Human Rights Report."

²⁷⁴ Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

²⁷⁵ "A WASTE - Greenpeace 2019."

4.2.2 Foreign Investment and the Expansion of Fishmeal Production

Foreign investment has played a central role in the expansion of the fishmeal factories in The Gambia. The growth of industrial fishmeal production has largely been driven by foreign direct investment (FDI), particularly from Chinese and Mauritanian investors, whose capital and technical expertise facilitated the establishment of large-scale processing facilities along the Gambian coast [²⁷⁶].

The ownership structure of the industry reflects this foreign influence. Golden Lead Import and Export Trade Company, established in Gunjur in 2016, is wholly Chinese-owned, while JXYG Aquatic Products Limited and Nessim Fishing and Fish Processing Company operate as foreign-funded enterprises with Chinese and Mauritanian involvement. These companies dominate industrial fishmeal production in The Gambia, while Gambian workers are primarily employed in lower-skilled positions [²⁷⁷].

Government policies have also encouraged foreign investment. Through the Gambia Investment and Export Promotion Agency (GIEPA) Act 2015, fisheries were designated as a priority sector, with investors benefiting from tax concessions, customs exemptions, and incentives for export-oriented enterprises [²⁷⁸].

The expansion of fishmeal production is closely linked to growing international demand for fishmeal and fish oil, particularly from the aquaculture sector. China has emerged as a major destination for Gambian fishmeal exports, alongside markets in Asia, Europe, and Latin America [²⁷⁹]. These export opportunities have provided strong incentives for continued investment and production growth. Supporters of foreign investment argue that the industry contributes to export earnings, employment creation, and economic growth. However, critics contend that the expansion of foreign-owned fishmeal factories has increased pressure on fisheries resources and contributed to food security challenges by diverting food-grade fish from local consumption to export market [²⁸⁰]. Concerns have also been raised regarding the impacts on local livelihoods, particularly

²⁷⁶ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

²⁷⁷ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²⁷⁸ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²⁷⁹ “NHRC 2024 Human Rights Report.”

²⁸⁰ “A WASTE - Greenpeace 2019.”

among women fish processors and traders who face increasing competition for access to small pelagic fish. In addition, civil society organizations have questioned the adequacy of environmental regulation, transparency, and oversight within the sector [²⁸¹].

4.2.3 Fishmeal Production and Dependence on Small Pelagic Fisheries.

The fishmeal and fish oil (FMFO) industry in The Gambia depends heavily on small pelagic fish species, particularly bonga (*Ethmalosa fimbriata*), round sardinella (*Sardinella aurita*), and flat sardinella (*Sardinella maderensis*). Unlike earlier artisanal fish-feed production, which mainly relied on processing waste, industrial fishmeal production requires large quantities of whole, food-grade fish [²⁸²].

These species are vital to food security and livelihoods in The Gambia. Fish remains a major source of animal protein, with more than eighty per cent of the population depending on small pelagic species as an affordable and accessible source of nutrition [²⁸³].

The expansion of fishmeal production has increased competition for these resources between industrial processors and local consumers. Fishmeal factories purchase fish in large quantities and often offer higher prices than traditional markets, encouraging fishers to sell directly to industrial buyers. Consequently, increasing volumes of fish are diverted from local consumption to industrial processing and export markets, contributing to rising prices and reduced availability in local markets [²⁸⁴]. This competition has also affected women involved in fish processing and trading, many of whom struggle to compete with industrial buyers for access to raw materials. As a result, concerns have emerged regarding the implications of fishmeal production for livelihoods, household incomes, and food security [²⁸⁵]. The growing demand for small pelagic fish has further intensified pressure on stocks already considered vulnerable. Scientific assessments identify key species such as bonga and sardinella as being subject to significant fishing pressure and, in some cases, overexploitation. Researchers have also raised concerns regarding the harvesting of juvenile

²⁸¹ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²⁸² “NHRC 2024 Human Rights Report.”

²⁸³ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²⁸⁴ “EU-The_gambia-Fishery_june_2020 REPORT.”

²⁸⁵ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

fish and other unsustainable fishing practices that may undermine stock replenishment and long-term sustainability [²⁸⁶]. Debate continues regarding the government's position that fishmeal production utilizes surplus fish resources. While supporters view the industry as a productive use of excess catches, critics argue that available evidence points to increasing pressure on already vulnerable fish stocks [²⁸⁷].

4.3 Environmental Impacts of Fishmeal Factories on Communities in Kombo South

4.3.1 Air Pollution and Odour Emissions

Evidence from the reviewed literature identifies air pollution and odor emissions as some of the most visible environmental impacts of fishmeal factory operations in Kombo South. Communities in Sanyang and Gunjur have consistently reported concerns regarding smoke emissions and persistent unpleasant odors associated with fish processing activities [²⁸⁸].

Factory emissions are commonly described as thick smoke accompanied by strong and offensive odors that spread across neighboring communities, particularly during periods of intensive production. Reports suggest that odor problems become more severe when spoiled fish is used as raw material. These emissions have been linked to a range of public health concerns. Community reports and existing studies associate prolonged exposure to smoke and noxious odors with respiratory conditions such as asthma, rhinitis, persistent coughing, and breathing difficulties. Residents living near factory sites frequently report discomfort and reduced quality of life due to poor air quality [²⁸⁹].

Children are particularly vulnerable to these impacts because their respiratory and immune systems are still developing. Their higher rate of air intake relative to body weight increases exposure to airborne pollutants, while long-term health consequences may persist into adulthood [²⁹⁰].

²⁸⁶ “A WASTE - Greenpeace 2019.”

²⁸⁷ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

²⁸⁸ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

²⁸⁹ Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal.”

²⁹⁰ “UNICEF- Clear_the_Air_for_Children_Executive_summary_ENG.”

The effects of air pollution extend beyond health concerns. In Sanyang, poor air quality and persistent odors reportedly contributed to the temporary closure of schools, disrupting educational activities and raising concerns about the suitability of the surrounding environment for learning. Residents have also reported daily discomfort caused by persistent odor emissions [²⁹¹].

Local economic activities have similarly been affected. Tourism operators report that unpleasant smells discourage visitors and negatively impact businesses, while some accommodation providers have experienced shortened tourist stays and cancellations. Women engaged in gardening activities have also linked factory operations and fish waste management practices to declining crop productivity and increased pest infestations [²⁹²].

Concerns have further been raised regarding environmental governance and pollution control. Although Environmental Impact Assessment Studies (EIAS) are required, limited public access to these documents has restricted community oversight of mitigation measures [²⁹³]. Researchers note that many fishmeal factories in West Africa utilize technologies that generate significant smoke and odor emissions, while pollution-control measures are often inadequate or poorly maintained [²⁹⁴].

4.3.2 Water Pollution and Waste Disposal Practices

Evidence from the literature indicates that wastewater discharge and improper waste disposal are among the most significant environmental impacts associated with fishmeal factory operations in Kombo South. Communities in Sanyang and Gunjur have repeatedly raised concerns regarding the disposal of untreated industrial waste into surrounding environments, linking these practices to environmental degradation, livelihood losses, and public health risks [²⁹⁵] (see Appendix A, Figure A5). Studies of fishmeal factory effluents have identified elevated concentrations of pollutants, including phosphates, arsenic, suspended solids, chemical oxygen demand (COD), and biochemical oxygen demand (BOD). These substances pose significant environmental risks when

²⁹¹ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

²⁹² “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²⁹³ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

²⁹⁴ “EU-The_gambia-Fishery_june_2020 REPORT.”

²⁹⁵ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

wastewater is discharged without adequate treatment [²⁹⁶]. Concerns have been intensified by reports of inadequate wastewater treatment infrastructure. Evidence suggests that some factories operated without fully functional treatment systems, resulting in the release of untreated waste into surrounding areas. In Sanyang, wastewater was reportedly discharged onto public roads and nearby vegetable gardens, prompting intervention by the National Environment Agency (NEA). Similar concerns have been raised regarding wastewater disposal systems that allegedly failed to meet environmental standards [²⁹⁷]. The impacts of pollution have been particularly evident in community gardening areas. Women gardeners have reported declining crop yields and damage to vegetables such as tomatoes and eggplants due to wastewater contamination and poor environmental conditions. Community members have also associated fish waste and processing residues with increased pest infestations that further affect agricultural productivity and household income [²⁹⁸]. Wastewater pollution also poses risks to coastal and marine ecosystems. The discharge of nutrient-rich effluents may contribute to eutrophication, reducing oxygen availability and threatening aquatic biodiversity and fisheries productivity. Reports of fish mortality and the disposal of fish waste into coastal waters have further raised concerns regarding the health of marine ecosystems and declining fisheries resources [²⁹⁹]. The consequences extend beyond environmental degradation to affect livelihoods and food security. Coastal communities depend heavily on healthy ecosystems for fishing, agriculture, and tourism. Consequently, environmental pollution undermines income-generating activities and disproportionately affects vulnerable groups, including women gardeners and artisanal fishers [³⁰⁰]. The literature also highlights weaknesses in environmental governance. Although fishmeal factories are required to conduct Environmental Impact Assessment Studies (EIAS) and implement mitigation measures, stakeholders frequently report limited access to compliance and monitoring information. This lack of transparency has contributed to perceptions of weak accountability in the management of

²⁹⁶ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

²⁹⁷ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

²⁹⁸ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

²⁹⁹ Moulay Ely et al., “Assessment of the Environmental Impact of Discharges from Fishmeal Factories Located in Levrier Bay, Nouadhibou-Mauritania.”

³⁰⁰ “NHRC 2024 Human Rights Report.”

industrial pollution [³⁰¹]. Community frustration over pollution and waste disposal practices has contributed to protests and tensions between residents, factory operators, and government institutions. Critics argue that inadequate enforcement of environmental regulations has weakened public confidence in the state's ability to protect environmental resources and community interests [³⁰²].

4.3.3 Marine Ecosystem Degradation

The findings indicate that fishmeal factory operations contribute to marine ecosystem degradation in The Gambia and the wider West African region through pollution, increased fishing pressure, and disruption of ecological processes that support biodiversity and fisheries sustainability [³⁰³]. One major concern relates to the discharge of industrial waste into coastal waters. Studies have identified pollutants such as phosphates, arsenic, and other contaminants in fishmeal factory wastewater [³⁰⁴]. When released without adequate treatment, these substances can reduce water quality and harm marine ecosystems. High nutrient concentrations, particularly phosphates, may contribute to eutrophication, leading to excessive algal growth, oxygen depletion, and habitat degradation. Research further indicates that fishmeal factory effluents often contain elevated levels of chemical oxygen demand (COD), biochemical oxygen demand (BOD), and suspended solids. These pollutants increase the organic load of coastal waters and may have long-term consequences for marine biodiversity and ecosystem health [³⁰⁵]. The literature also highlights the ecological importance of small pelagic species such as bonga and sardinella. These fish play a critical role in marine food webs by transferring energy to larger predatory fish, marine mammals, and seabirds. Intensive harvesting for fishmeal production may therefore disrupt ecological relationships and

³⁰¹ “EU-The_gambia-Fishery_june_2020 REPORT.”

³⁰² Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

³⁰³ Moulay Ely et al., “Assessment of the Environmental Impact of Discharges from Fishmeal Factories Located in Levrier Bay, Nouadhibou-Mauritania.”

³⁰⁴ Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

³⁰⁵ “A WASTE - Greenpeace 2019.”

reduce prey availability for higher trophic-level species [³⁰⁶]. Marine ecosystem degradation is further reflected in reports of fish mortality and the disposal of fish waste into coastal waters. Community members in Sanyang and Gunjur have reported incidents of dead fish washing ashore, which have been linked to pollution, poor waste management, and improper disposal practices. Such events have increased public concern regarding the environmental impacts of fishmeal production [³⁰⁷].

4.3.4 Depletion of Small Pelagic Fish Stocks

The findings indicate that the expansion of the fishmeal factories has increased pressure on small pelagic fish stocks in The Gambia and the wider West African region. Species such as bonga (*Ethmalosa fimbriata*), round sardinella (*Sardinella aurita*), and flat sardinella (*Sardinella maderensis*) serve as the primary raw materials for fishmeal production while also constituting important sources of food for local populations [³⁰⁸]. Scientific assessments consistently classify several small pelagic stocks as overexploited, raising concerns regarding their long-term sustainability [³⁰⁹]. The growth of fishmeal production has intensified demand for these species. Fishmeal factories require approximately 4.5–5 kilograms of fresh fish to produce one kilogram of fishmeal, increasing fishing effort and pressure on already stressed fish stocks. Studies suggest that growing industrial demand has reduced the capacity of fish populations to recover naturally, raising concerns about the long-term sustainability of fisheries resources [³¹⁰]. A further concern relates to the harvesting of juvenile fish. The expansion of fishmeal production has created incentives to capture fish regardless of size or age, while the use of illegal small-mesh nets has been reported in some cases. Such practices reduce stock replenishment and increase the risk of long-term population decline [³¹¹] (see Appendix A, Figure A6). The depletion of small pelagic

³⁰⁶ Cashion et al., “Most Fish Destined for Fishmeal Production Are Food-grade Fish.”

³⁰⁷ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

³⁰⁸ “A WASTE - Greenpeace 2019.”

³⁰⁹ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

³¹⁰ “A WASTE - Greenpeace 2019.”

³¹¹ Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal.”

stocks has significant implications for food security. More than eighty per cent of Gambians depend on species such as bonga and sardinella as affordable sources of animal protein. Declining fish availability and increased competition between industrial processors and local consumers have therefore raised concerns regarding access to nutritious food [³¹²]. The diversion of fish to fishmeal factories has also contributed to rising market prices. As industrial buyers offer higher prices and purchase larger quantities, local consumers, processors, and traders face increasing difficulty accessing fish supplies. Women engaged in fish processing and marketing have been particularly affected because many rely on small pelagic fisheries as their primary source of income [³¹³]. The literature further highlights governance challenges, including weaknesses in fisheries data collection, reporting, and monitoring systems. Allegations of under-reporting catches and limited disclosure of production data make it difficult to accurately assess stock depletion and industrial fishing pressure. These information gaps complicate sustainable fisheries management and resource conservation efforts [³¹⁴]. Given the migratory nature of small pelagic species, the impacts of overfishing extend beyond national boundaries. Fish stocks move across the waters of The Gambia and neighboring West African states, making regional cooperation essential for sustainable management [³¹⁵].

4.3.5 Impacts on Community Livelihoods and Coastal Resources

The findings indicate that fishmeal factories operations have generated significant socio-economic impacts on coastal communities in Kombo South. The expansion of industrial fishmeal production has intensified competition for fisheries resources, disrupted traditional livelihood systems, and reduced access to resources that support household income, food security, and wellbeing [³¹⁶].

One of the most significant impacts has been increased competition for small pelagic fish. Fishmeal factories purchase fish in large quantities and often offer higher prices than local markets, encouraging fishers to sell to industrial buyers. As a result, fish that were previously available for

³¹² “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

³¹³ “NHRC 2024 Human Rights Report.”

³¹⁴ “EU-The_gambia-Fishery_june_2020 REPORT.”

³¹⁵ “A WASTE - Greenpeace 2019.”

³¹⁶ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

local consumption and small-scale processing are increasingly diverted to export-oriented production. This has contributed to rising fish prices and reduced access to affordable fish for local communities [³¹⁷].

Women involved in fish processing and trading have been particularly affected. As factories establish direct purchasing arrangements with fishers, many women struggle to compete with industrial buyers offering immediate cash payments and bulk purchases. The literature describes this as a form of livelihood displacement, reducing women's income opportunities and economic independence. Some women have reportedly shifted from independent fish-processing activities to lower-paid factory-related work [³¹⁸].

Artisanal fishers have experienced mixed outcomes. While some benefit from higher fish prices, increased demand has intensified fishing effort and competition. Declining fish availability has forced some fishers to travel farther and spend more time at sea, increasing costs and safety risks. Conflicts with industrial fishing vessels over fishing grounds and damaged gear have also been reported [³¹⁹].

The expansion of fishmeal production has important implications for food security. Small pelagic species such as bonga and sardinella are key sources of affordable protein for Gambian households. Rising prices and declining local supplies have reduced access to nutritious food, increasing vulnerability to food insecurity among low-income households [³²⁰]. Beyond fisheries, fishmeal factory operations have affected tourism and agriculture. Tourism businesses have reported declines in visitor numbers due to persistent odors and environmental pollution associated with factory activities. Women gardeners in communities such as Sanyang and Gunjur have also reported reduced crop yields linked to wastewater pollution, pest infestations, and environmental degradation. These impacts have weakened household incomes and increased economic vulnerability [³²¹]. The establishment of fishmeal factories has further generated concerns regarding access to land and coastal resources. Community members have reported inadequate

³¹⁷ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

³¹⁸ "EU-The_gambia-Fishery_june_2020 REPORT."

³¹⁹ Dème et al., "Contribution of Small-Scale Migrant Fishing to the Emergence of the Fishmeal Industry in West Africa."

³²⁰ "A WASTE - Greenpeace 2019."

³²¹ "NHRC 2024 Human Rights Report."

consultation, limited compensation, and restrictions on access to areas traditionally used for agriculture and fish processing [³²²]. These challenges have contributed to tensions between communities, factory operators, and government institutions. Many residents perceive that the benefits of fishmeal production are concentrated among investors, while the environmental and social costs are largely borne by coastal communities [³²³].

4.4 Human Rights Impacts of Fishmeal Factories on Children

4.4.1 Impacts on Children's Right to Health

The findings indicate that fishmeal factories operations in Kombo South affect children's right to the highest attainable standard of health under Article 24 of the United Nations Convention on the Rights of the Child (UNCRC). Evidence suggests that environmental pollution associated with fishmeal production exposes children to a range of health risks [³²⁴]. Children are particularly vulnerable to environmental hazards because their respiratory, immune, and physiological systems are still developing. As a result, they are more susceptible to pollutants and toxic substances than adults [³²⁵]. A major concern is air pollution generated by fishmeal factories. Communities in Sanyang, Gunjur, and Kartong have reported persistent smoke emissions and unpleasant odors from factory operations. These conditions have been associated with respiratory illnesses such as asthma, chronic cough, and rhinitis among children living near affected areas. Long-term exposure may increase the risk of chronic respiratory and cardiovascular problems [³²⁶]. The findings also highlight concerns regarding wastewater disposal and environmental contamination. Reports indicate that untreated industrial effluents containing substances such as phosphates and traces of arsenic have been discharged into surrounding environments. Such practices may expose children

³²² Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia*.

³²³ Sambou, "An In-Depth Analysis of Natural Resource Conflict in the Gambia."

³²⁴ Thiao et al., "Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal."

³²⁵ "UNICEF- Clear the Air for Children Executive summary ENG."

³²⁶ Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023," n.d.

to health risks through contaminated food sources and environmental pollution [³²⁷]. Children's health is further affected by declining food security. The diversion of small pelagic fish such as bonga and sardinella to fishmeal production has reduced local availability and increased prices. Reduced access to nutritious food increases the risk of malnutrition, stunted growth, and impaired cognitive development [³²⁸]. In addition, declining household incomes may increase children's involvement in fishing and fish-processing activities, exposing them to hazardous labor conditions and occupational risks [³²⁹].

4.4.2 Impacts on Children's Right to Food and Nutrition

The findings indicate that fishmeal factory operations in Kombo South affects children's right to adequate food and nutrition as recognized under the UNCRC. Evidence suggests that the increasing diversion of small pelagic fish to fishmeal production has reduced access to an important source of affordable nutrition within local communities [³³⁰]. Small pelagic species such as bonga and sardinella are central to food security in The Gambia, providing animal protein and essential nutrients necessary for children's growth and cognitive development. Their affordability has traditionally made them accessible to low-income households [³³¹]. The expansion of industrial fishmeal production has diverted substantial quantities of food-grade fish from local consumption to international aquaculture and livestock feed markets. As factories purchase fish in large volumes, competition for resources has intensified, reducing local availability and contributing to higher market prices. This has limited access to affordable fish for vulnerable households [³³²]. These developments have contributed to growing food insecurity in some fishing communities. Reduced fish availability and rising prices make it increasingly difficult for families to meet their nutritional needs, particularly where fish remains the primary source of protein [³³³]. The

³²⁷ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

³²⁸ “EU-The_gambia-Fishery_june_2020 REPORT.”

³²⁹ *Guidance on Addressing Child Labour in Fisheries and Aquaculture.*

³³⁰ “NHRC 2024 Human Rights Report.”

³³¹ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

³³² “Changing Markets Foundation -2019-Until the Seas Run Dry.”

³³³ “EU-The_gambia-Fishery_june_2020 REPORT.”

implications are especially serious for children because adequate nutrition is essential during early childhood. Nutritional deficiencies may contribute to stunting, weakened immunity, impaired cognitive development, and poorer educational outcomes, with effects that can persist into adulthood [³³⁴]. The findings also suggest that nutritional challenges are linked to broader livelihood pressures. Women involved in fish processing and trading have experienced reduced access to fish supplies due to competition from factories, resulting in declining household incomes in some communities. Reduced purchasing power may further increase children's vulnerability to food insecurity and malnutrition [³³⁵].

4.4.3 Impacts on Children's Right to Education

The findings indicate that fishmeal factory operations in Kombo South affect children's right to education through environmental disruption, economic hardship, and increased risks of child labor [³³⁶]. Although Articles 28 and 29 of the United Nations Convention on the Rights of the Child (UNCRC) guarantee access to education, evidence suggests that conditions associated with fishmeal production have created barriers to educational participation and achievement.

One direct impact is environmental pollution. Communities in Sanyang reported persistent smoke emissions and unpleasant odors from fishmeal factory operations, which contributed to the temporary closure of nearby schools. Such disruptions interfere with attendance and the learning environment [³³⁷]. Pollution also affects education indirectly through its impact on children's health. Exposure to poor air quality has been associated with respiratory illnesses, including asthma, chronic cough, and rhinitis, which may increase absenteeism and reduce academic performance [³³⁸]. Economic pressures linked to declining fish stocks, rising fish prices, and reduced household incomes have further affected educational opportunities. Some families struggle to meet school-related expenses, increasing the risk of interrupted schooling or withdrawal

³³⁴ “UNICEF Gambia Annual Report 2022 - Malnutrition.”

³³⁵ “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

³³⁶ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

³³⁷ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

³³⁸ Thiao et al., “Need for Adaptive Solutions to Food Vulnerability Induced by Fish Scarcity and Unaffordability in Senegal.”

from education [³³⁹]. The findings also suggest that children may become involved in fishing, fish processing, or other income-generating activities to support household livelihoods. Such responsibilities reduce time available for schooling and may increase absenteeism and school dropout [³⁴⁰]. Food insecurity associated with reduced access to affordable fish may further undermine educational outcomes through poor nutrition, fatigue, and impaired cognitive development [³⁴¹].

4.4.4 Impacts on Children's Right to a Safe, Clean and Healthy Environment

The findings indicate that fishmeal factory operations in Kombo South have significant implications for children's right to a safe, clean, and healthy environment [³⁴²]. Although the United Nations Convention on the Rights of the Child (UNCRC) does not explicitly recognize this right, Article 24 requires states to protect children from environmental conditions that threaten their health and well-being. Children are particularly vulnerable to environmental degradation because their bodies and immune systems are still developing. Their higher intake of air, food, and water relative to body weight increases exposure to pollutants and environmental hazards, making environmental contamination especially harmful [³⁴³]. One of the most visible concerns is air pollution associated with fishmeal factory operations. Communities in Sanyang, Gunjur, and Kartong have reported persistent smoke emissions and strong odors from factory activities. These emissions reduce air quality and create unhealthy living conditions, with prolonged exposure linked to respiratory illnesses and other health risks among children [³⁴⁴]. The findings further indicate that wastewater discharge and poor waste disposal practices pose additional environmental threats. Reports of untreated industrial effluents entering coastal waters, community gardens, and surrounding environments raise concerns regarding contamination of water, soil, and food sources relied upon by local households [³⁴⁵]. Evidence also suggests that fishmeal production

³³⁹ “EU-The_gambia-Fishery_june_2020 REPORT.”

³⁴⁰ *Guidance on Addressing Child Labour in Fisheries and Aquaculture.*

³⁴¹ “A WASTE - Greenpeace 2019.”

³⁴² “Amnesty Fisheries Report 2023; The Human Cost of overfishing; How the overuse of Fisheries Resources in Sanyang threatens Human Rights 2023,” n.d.

³⁴³ “UNICEF-Climate-Crisis-Child-Rights-Crisis.”

³⁴⁴ Jobe, *Fishmeal Production and the Dispossession of Women in The Gambia.*

³⁴⁵ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

contributes to marine ecosystem degradation through pollution and the overexploitation of small pelagic fish stocks. The depletion of species such as bonga and sardinella threatens biodiversity, food security, and the sustainability of environmental resources upon which present and future generations depend [³⁴⁶]. Environmental degradation also affects children's daily lives by reducing opportunities for safe recreation and healthy community living. In some cases, pollution associated with factory operations has disrupted educational activities, including the temporary closure of schools in affected communities [³⁴⁷]. Furthermore, continued environmental degradation raises concerns regarding intergenerational equity. Unsustainable exploitation of natural resources may limit future generations' ability to enjoy the same environmental benefits and livelihood opportunities available today [³⁴⁸].

4.5 Analysis of Findings Using the Human Rights-Based Approach (HRBA)

The HRBA distinguishes between rights-holders and duty-bearers. In this study, children and other members of coastal communities constitute the primary rights-holders, while government institutions, regulatory agencies, and fishmeal companies act as duty-bearers responsible for protecting rights relating to health, food, education, and a healthy environment. The findings are therefore analysed through the principles of participation, accountability, transparency, non-discrimination, and empowerment.

4.5.1 Participation

The findings suggest that participation was limited during the establishment and operation of fishmeal factories. Although some consultation processes occurred through local authorities and village structures, many community members reported inadequate involvement in decision-making. Community protests and resistance may therefore be interpreted as evidence of dissatisfaction with participatory mechanisms. From an HRBA perspective, development initiatives should ensure meaningful participation of affected populations throughout planning, implementation, and monitoring processes.

³⁴⁶ “EU-The_gambia-Fishery_june_2020 REPORT.”

³⁴⁷ Sambou, “An In-Depth Analysis of Natural Resource Conflict in the Gambia.”

³⁴⁸ “NHRC 2024 Human Rights Report.”

4.5.2 Accountability

Accountability requires duty-bearers to answer for actions that affect human rights and environmental wellbeing. The findings suggest weaknesses in accountability mechanisms relating to environmental monitoring, enforcement, and remediation. Although regulatory agencies intervened in certain cases, recurring community complaints indicate that affected populations often perceived responses as inadequate. These findings suggest limitations in access to effective remedies and enforcement mechanisms.

4.5.3 Transparency and Access to Information

Transparency is essential for informed participation and public oversight. The findings indicate limited public access to Environmental Impact Assessment reports, compliance information, and data relating to factory operations. Such information gaps reduce the ability of communities to assess risks, participate meaningfully in governance processes, and hold duty-bearers accountable.

4.5.4 Non-Discrimination and Equality

The findings indicate that the burdens associated with fishmeal production are not distributed equally. Women fish processors, low-income households, and children experience disproportionate exposure to environmental and socio-economic impacts. From an HRBA perspective, this raises concerns regarding substantive equality and the protection of vulnerable groups.

4.5.5 Empowerment

Empowerment involves strengthening the capacity of rights-holders to understand and claim their rights. The findings suggest that limited access to information, reduced livelihood security, and unequal power relations between communities, investors, and state institutions may constrain the ability of affected populations to influence decisions affecting their welfare.

4.6 DISCUSSION OF FINDINGS

4.6.1 Right to Health and Environmental Pollution

The findings demonstrate a strong relationship between fishmeal production and threats to children's health. Exposure to air pollution and environmental contamination has been associated with respiratory illnesses and other health risks in affected communities.

Given children's heightened vulnerability to environmental hazards, these impacts represent not only environmental concerns but also potential violations of children's right to health under Article 24 of the UNCRC.

4.6.2 Right to Food and Nutrition

Fishmeal production contributes to food insecurity through the diversion of food-grade fish from local markets to export-oriented production. Reduced availability and higher prices limit access to affordable protein for many households.

Because fish is a key source of nutrition in The Gambia, these developments raise serious concerns regarding children's nutritional rights and long-term development.

4.6.3 Right to Education

The findings indicate that fishmeal factory operations affect education through environmental disruption, declining household incomes, and child labor risks. Pollution-related school closures and worsening economic conditions reduce educational access and attainment.

These findings demonstrate that environmental degradation can have broader social consequences that undermine children's educational opportunities.

4.6.4 Right to a Safe, Clean, Healthy and Sustainable Environment

The findings show that fishmeal production contributes to pollution, ecosystem degradation, and fish stock depletion. These impacts affect children's health, food security, recreation, and future livelihood opportunities. From a rights-based perspective, environmental protection is essential for safeguarding children's present and future wellbeing.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the study findings, conclusions, recommendations, and areas for further research. It highlights the environmental and human rights impacts of foreign-owned fishmeal factory operations on children in Kombo South, The Gambia, and outlines policy implications arising from the study.

5.2 Summary of Findings

This study examined the environmental and human rights impacts of foreign-owned fishmeal factory operations on children in Kombo South, The Gambia, using the Human Rights-Based Approach (HRBA) as the analytical framework. The findings reveal that the expansion of the fishmeal industry has generated significant environmental, social, and human rights concerns despite its contribution to export earnings and industrial development.

The study found that fishmeal factory operations contribute to environmental degradation through air pollution, wastewater discharge, marine ecosystem degradation, and increasing pressure on small pelagic fish stocks. Communities in Sanyang, Gunjur, and Kartong reported persistent smoke emissions, unpleasant odors, and concerns regarding wastewater disposal practices. Evidence further suggests that industrial pollution and unsustainable resource use have negatively affected coastal ecosystems, agricultural activities, and fisheries resources upon which local communities depend for their livelihoods and wellbeing.

The findings also indicate that fishmeal production relies heavily on small pelagic fish species such as bonga and sardinella, which are essential for household nutrition and food security in The Gambia. Increasing industrial demand for these species has intensified competition between fishmeal factories and local consumers, contributing to rising fish prices, declining availability of fish in local markets, and growing concerns regarding food security and fisheries sustainability. From a human rights perspective, the study found that fishmeal factory operations have implications for several rights recognized under the United Nations Convention on the Rights of

the Child (UNCRC). Environmental pollution exposes children to health risks associated with poor air quality and environmental contamination, thereby affecting their right to health. The diversion of food-grade fish from local consumption to fishmeal production threatens children's right to adequate food and nutrition by reducing access to affordable sources of protein. The study further found that environmental pollution, declining household livelihoods, and economic hardship create barriers to children's education and may increase vulnerability to child labor. In addition, pollution, ecosystem degradation, and declining fisheries resources undermine children's right to a safe, clean, healthy, and sustainable environment.

The application of the Human Rights-Based Approach revealed weaknesses in participation, accountability, transparency, non-discrimination, and empowerment. Communities frequently reported limited involvement in decision-making processes relating to fishmeal factory operations. Access to environmental information was often restricted, while concerns regarding pollution and fisheries management highlighted perceived weaknesses in accountability and regulatory enforcement. The findings further demonstrated that women, children, low-income households, and other vulnerable groups bear a disproportionate share of the environmental and socio-economic burdens associated with fishmeal production.

Overall, the study finds that the expansion of the fishmeal industry has created a tension between export-oriented industrial development and the protection of children's rights, food security, environmental sustainability, and community livelihoods in Kombo South. While the industry contributes to economic activity, its environmental and social consequences raise important questions regarding the extent to which current fisheries development policies are compatible with human rights principles and sustainable development objectives.

5.3 Conclusion

This study examined the environmental and human rights impacts of foreign-owned fishmeal factory operations on children in Kombo South, The Gambia. The findings demonstrate that while the fishmeal industry contributes to economic activity and export earnings, it has also generated significant environmental degradation and adverse consequences for children's rights. Air

pollution, wastewater discharge, declining fish stocks, and increasing food insecurity have undermined children's rights to health, food, education, and a healthy environment.

The application of the Human Rights-Based Approach revealed weaknesses in participation, accountability, transparency, empowerment, non-discrimination, and regulatory enforcement. The findings further suggest that current patterns of industrial fisheries development in Kombo South are insufficiently aligned with the Best Interests of the Child and require stronger rights-based governance mechanisms.

The study concludes that the expansion of the fishmeal industry in Kombo South reflects a broader tension between export-oriented industrial development and the protection of children's rights, food security, environmental sustainability, and community livelihoods. Sustainable fisheries development in The Gambia will therefore depend on the extent to which environmental protection, children's rights, and community wellbeing are integrated into development planning, fisheries management, and resource governance.

5.4 RECOMMENDATIONS

5.4.1 Recommendations for Government and Regulatory Authorities

The Government of The Gambia, the National Environment Agency (NEA), and the Department of Fisheries and Water Resources should strengthen the regulation and monitoring of fishmeal factory operations to ensure that economic development does not undermine children's rights and environmental sustainability. Environmental and fisheries policies should explicitly incorporate children's rights considerations, particularly the Best Interests of the Child principle.

Environmental Impact Assessment reports should be made publicly accessible to promote transparency and strengthen public participation. Regulatory agencies should conduct regular inspections, enforce environmental standards, improve monitoring of fish supplied to fishmeal factories, and strengthen measures aimed at protecting small pelagic fish stocks, particularly bonga and sardinella. Greater efforts should also be made to prevent the capture of juvenile fish and improve compliance with fisheries regulations.

5.4.2 Recommendations for Fishmeal Factories

Fishmeal factory operators should adopt environmentally responsible production practices by investing in effective wastewater treatment systems, emission-control technologies, and proper waste-management facilities. Companies should also implement human rights due diligence measures consistent with the United Nations Guiding Principles on Business and Human Rights. In addition, factory operators should engage more openly with affected communities and establish accessible grievance mechanisms to address concerns relating to pollution, livelihoods, and children's wellbeing.

5.4.3 Recommendations for Civil Society and Community Organizations

Civil society organizations, Village Development Committees (VDCs), and other community-based organizations should continue promoting environmental awareness and advocacy within affected communities. These organizations can play an important role in monitoring environmental impacts, supporting community participation in decision-making processes, and raising awareness of children's environmental rights.

Community engagement initiatives should encourage collaboration among residents, government institutions, and factory operators to strengthen accountability and improve environmental governance.

5.4.4 Recommendations for the Protection of Children's Rights

Policymakers and relevant institutions should adopt child-sensitive approaches to industrial fisheries development. Environmental and social impact assessments should specifically evaluate potential impacts on children's health, nutrition, education, and overall wellbeing. Children's rights considerations should be integrated into environmental governance processes to ensure that development activities remain consistent with the Best Interests of the Child principle and obligations under the United Nations Convention on the Rights of the Child.

5.4.5 Recommendations for Regional Fisheries Governance

Given the migratory nature of small pelagic fish stocks, regional cooperation among West African states should be strengthened to improve fisheries management and reduce overexploitation. Collaborative monitoring, information sharing, and enforcement efforts can contribute to the long-

term sustainability of shared fish resources while supporting food security and the rights of future generations.

5.5 Areas for Further Research

Future research could employ primary data collection methods to examine the lived experiences of children and communities affected by fishmeal factory operations in Kombo South. Comparative studies involving other West African countries would also provide a broader understanding of the environmental and human rights impacts of the fishmeal industry.

Further research is needed on the long-term health effects of industrial pollution on children and on the effectiveness of environmental governance mechanisms in protecting children's rights within coastal fishing communities.

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APPENDIX A

Appendix A: Figures

Figure A1. Wastewater from a Fishmeal Factory Discharging into a Lagoon in Sanyang.



*Source: Changing Markets Foundation (2019), *Until the Seas Run Dry: How Industrial Aquaculture Is Plundering the Oceans*.*

Figure A2. Excess Fish Dumped on the Beach in Sanyang.



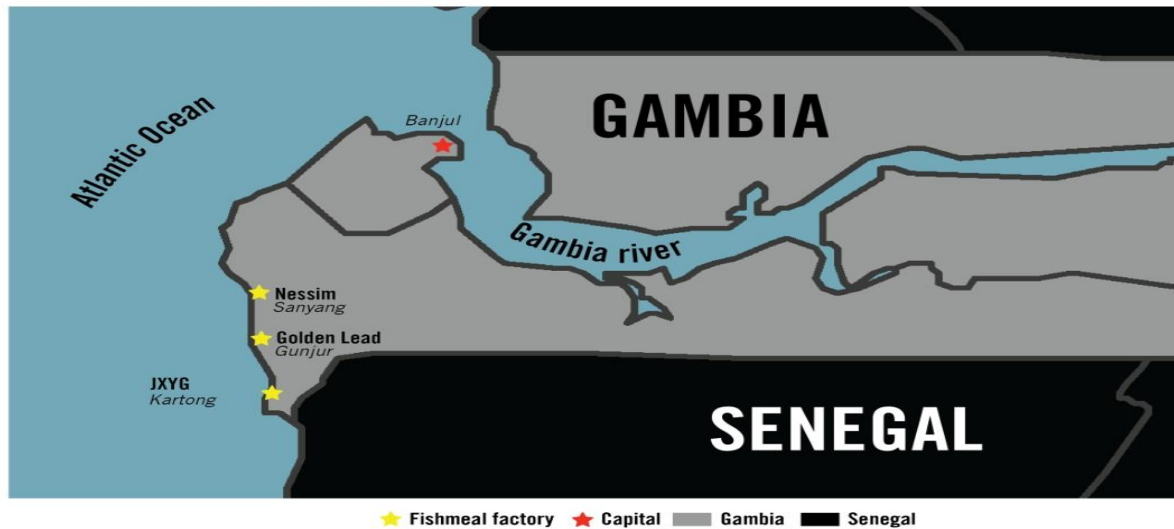
*Source: Hunt, Louise. (2019), *Dialogue Earth*, "Fishmeal Factories Threaten Food Security in the Gambia."*

Figure A3. Small Pelagic Fish Caught by an Illegal Trawler Operating in a Protected Area off the Gambian Coast.



Source: Photograph by Leon Greiner for Sea Shepherd.

Figure A4. Locations of the Fishmeal factories in Kombo south, The Gambia.



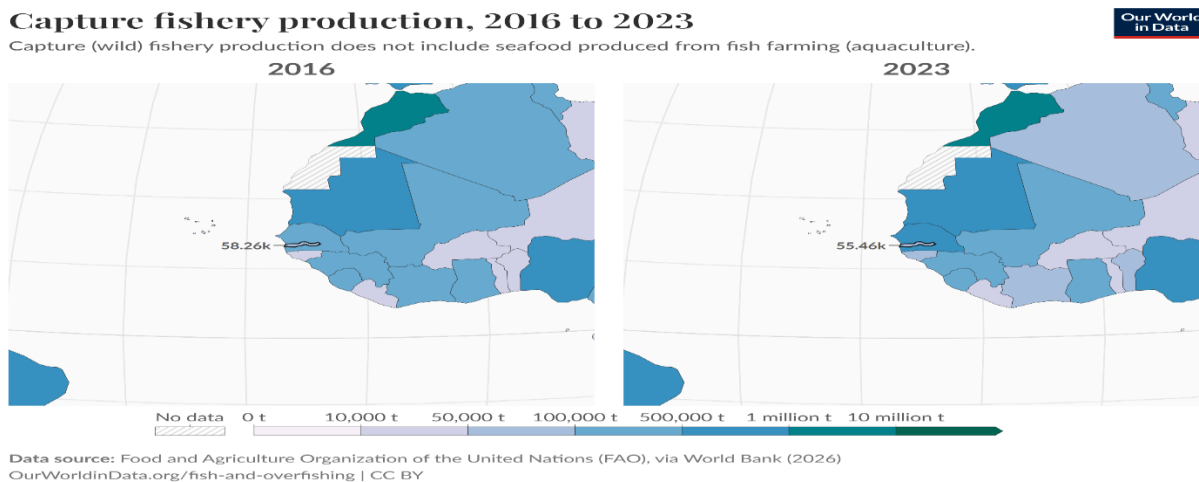
Source: Amnesty International (2023), *The Human Cost of Overfishing: How the Overuse of Fisheries Resources in Sanyang Threatens Human Rights*.

Figure A5. Waste Discharge Pipe from the Golden Lead Fishmeal Factory into the Sea.



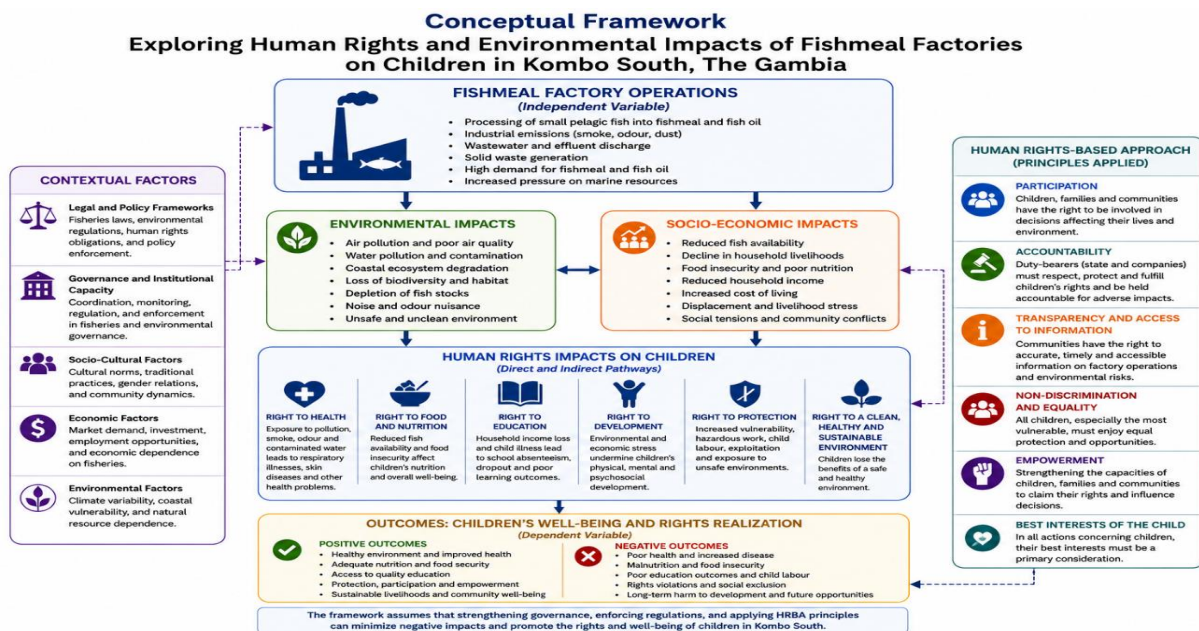
Source: Photograph by Dr. Scattred Janneh, published in *The Republic Investigation* (2024), "How Exporting Fish Meal Starves Source Countries for Global Profit Despite Attendant Risks to Environment."

Figure A6. Capture Fishery Production in The Gambia (2016–2023).



Source: Food and Agriculture Organization of the United Nations (FAO), reproduced from *Our World in Data* (2026), "Fish and Overfishing."

Figure A7. Conceptual Framework: Human Rights-Based Approach to Assessing the Human Rights and Environmental Impacts of Foreign Fishmeal Factory Operations on Children in Kombo South, The Gambia.



Source: Author's construction (2026).

Appendix B: Use of Artificial Intelligence Tools

During the preparation of this thesis, the author used artificial intelligence (AI) tools, specifically ChatGPT (OpenAI) and NotebookLM (Google), in a limited and supportive capacity.

These tools were used to assist with the organization of literature, the generation of preliminary summaries to facilitate understanding of academic materials, the formatting of references, and the improvement of grammar, sentence structure, and overall clarity of expression.

No AI tool was used to formulate the research questions, develop the methodology, conduct the critical analysis, interpret the findings, or generate the conclusions of this study. All information obtained through AI tools was independently reviewed and verified against original sources before being incorporated into the thesis.

The author retains full responsibility for the content, analysis, interpretations, and conclusions presented in this thesis and confirms that the use of AI complied with the European Master Program in Human Rights and Democratization (EMA) Policy on Artificial Intelligence (2024–2025).