Breaking Barriers: Communication Strategies for Promoting Sustainable Aquaculture at Sea Eight

Rute dos Anjos Soares Silva
Master in Biological Aquatic Resources
Department of Biology
Faculty of Sciences of the University of Porto
2024/2025

Breaking Barriers: Communication Strategies for Promoting Sustainable Aquaculture at Sea Eight

Rute dos Anjos Soares Silva

Internship Report carried out as part of the Master in Biological Aquatic Resources
Department of Biology
2024/2025

Supervisor
Helena Peres, Assistant Professor, Faculty of Sciences of the University of Porto
Co-supervisor
Nicole Martins Pires, Researcher, Faculty of Sciences of the University of Porto

External Host Supervisor
Regina Fernández, Human Resources, Sea Eight

U.PORTO
FACULDADE DE CIÊNCIAS
UNIVERSIDADE DO PORTO

SEA EIGHT™

Agradecimentos

Primeiramente, quero agradecer a Deus, o meu Pai, que me deu força, sabedoria e orientação ao longo de todo este percurso académico e profissional, e a toda a minha família da fé, a Comunidade Cristã Ágape, por todo o apoio e orações.

Às minhas orientadoras da faculdade, Drª Helena Peres e Drª Nicole Martins Pires, pela dedicação, paciência e conhecimentos transmitidos durante a elaboração deste relatório. Ao Drº Aires Oliva Teles, diretor do mestrado, pela sua liderança e apoio institucional.

À empresa Sea Eight, pela oportunidade de realizar este estágio e por me ter proporcionado uma experiência enriquecedora no mundo profissional. Um agradecimento especial à minha orientadora Regina Fernández, pela sua disponibilidade, orientação e pelos conhecimentos práticos que me transmitiu, e a todos com quem trabalhei ao longo destes meses, contribuindo significativamente para o meu desenvolvimento profissional.

À minha família, em particular aos meus pais, por todo o amor, apoio incondicional e sacrifícios feitos para tornar possível a minha formação académica. À minha irmã e cunhado, pelo carinho e encorajamento constantes.

Ao meu namorado e à sua família, pelo amor, compreensão e motivação em todos os momentos.

Um agradecimento especial também à minha colega de faculdade, Tânia Nogueira, a primeira amizade que fiz na licenciatura e que se mantém até hoje, pelo apoio mútuo ao longo de todo este percurso académico.

A todos aqueles que, direta ou indiretamente, contribuíram para a realização deste trabalho e para a minha formação académica, deixo o meu mais sincero obrigado.

Acknowledgements

First of all, I would like to thank God, my Father, who has given me strength, wisdom and guidance throughout this academic and professional journey, and all my family of faith, the Ágape Christian Community, for all their support and prayers.

To my faculty advisors, Dra. Helena Peres and Dra. Nicole Martins Pires, for their dedication, patience and knowledge during the preparation of this report. To Dr. Aires Oliva Teles, director of the master's program, for his leadership and institutional support.

To the company Sea Eight, for the opportunity to do this internship and for giving me an enriching experience in the professional world. A special thanks to my supervisor Regina Fernández, for her availability, guidance and the practical knowledge she has passed on to me, and to everyone I have worked with over the months, contributing significantly to my professional development.

To my family, in particular my parents, for all the love, unconditional support and sacrifices made to make my academic education possible. To my sister and brother-in-law, for their constant affection and encouragement.

To my boyfriend and his family, for their love, understanding and motivation at all times.

Special thanks also go to my university classmate, Tânia Nogueira, the first friendship I made during my degree and which continues to this day, for the mutual support throughout this academic journey.

I would like to sincerely thank all those who, directly or indirectly, contributed to the completion of this work and to my academic formation.

Resumo

A aquacultura sustentável representa uma estratégia crucial para satisfazer a crescente prcura mundial de alimentos, promovendo simultaneamente sistemas de produção responsáveis do ponto de vista ambiental e socialmente equitativos. No entanto, a persistência de equívocos e mitos generalizados sobre a aquacultura cria frequentemente barreiras significativas à sua aceitação e implementação mais alargada. Estes desafios realçam a importância de estratégias de comunicação eficazes para melhorar a compreensão do público e promover a confiança na aquacultura sustentável.

Este projeto de estágio foi realizado na Sea Eight, uma empresa líder em aquacultura sustentável que opera em Portugal e Espanha. O objetivo principal era conceber e implementar iniciativas de divulgação orientadas para desmistificar a aquacultura e promover os benefícios das suas práticas sustentáveis. Como primeiro passo, foi realizado um levantamento das lacunas existentes na comunicação da empresa, permitindo uma abordagem mais alinhada com as suas necessidades reais. Ao abordar equívocos comuns, como o impacto ambiental, a utilização de recursos e a qualidade dos produtos, o projeto procurou promover um diálogo informado e reformular a perceção do público. A abordagem incluiu o desenvolvimento de materiais educativos baseados em dados concretos, o envolvimento com as principais partes interessadas e a utilização estratégica de plataformas digitais para chegar a diversos públicos.

O objetivo final era colmatar a lacuna entre o conhecimento científico e a consciência social, posicionando a aquacultura sustentável como uma componente essencial da segurança alimentar global e da gestão ambiental. A ênfase foi colocada em destacar os benefícios económicos, sociais e ecológicos das práticas de aquacultura sustentável para apoiar a sua aceitação e adoção mais ampla, garantindo um futuro mais saudável para as pessoas e para o planeta.

O projeto seguiu uma metodologia estruturada com base em três estratégias-chave: (i) reforçar a presença da Sea Eight nas redes sociais através da criação de conteúdos envolventes e informativos para abordar os equívocos relacionados com a aquacultura; (ii) desenvolver um relatório anual alinhado com a ESG (Environmental, Social, and Governance) para demonstrar o compromisso da empresa com a sustentabilidade e reforçar a sua liderança setorial; e (iii) assegurar a participação ativa em eventos e feiras do sector para promover o envolvimento direto das partes interessadas e partilhar as

práticas sustentáveis da Sea Eight. Foram utilizadas plataformas digitais e ferramentas de comunicação modernas para otimizar o alcance e a eficácia.

Os resultados esperados deste projeto incluem uma compreensão pública mais profunda dos princípios da aquacultura sustentável, uma maior aceitação das suas práticas e a promoção de um diálogo informado sobre o seu papel na abordagem dos desafios globais. Ao centrar-se nas abordagens inovadoras e no modelo de sustentabilidade estabelecido pela Sea Eight, este trabalho destacará o potencial da aquacultura para contribuir tanto para o bem-estar humano como para a preservação ambiental. Além disso, enfatiza o papel fundamental da comunicação estratégica e eficaz na reformulação da perceção pública e serve como base para estratégias replicáveis que podem ser aplicadas em todo o sector da aquacultura.

Palavras-chave: Aquacultura sustentável, Estratégias de comunicação, Mitos da aquacultura, Perceção pública, Sea Eight.

Abstract

Sustainable aquaculture represents a crucial strategy to meet the growing global demand for food while promoting environmentally responsible and socially equitable production systems. However, persistent widespread misconceptions and myths about aquaculture often create significant barriers to its acceptance and broader implementation. These challenges highlight the importance of effective communication strategies to enhance public understanding and foster trust in sustainable aquaculture.

This internship project was conducted at Sea Eight, a leading company in sustainable aquaculture operating in Portugal and Spain. The primary objective was to design and implement targeted outreach initiatives aimed at demystifying aquaculture and promoting the benefits of its sustainable practices. As a first step, a search was made for existing deficiencies in the company's communication, allowing for an approach more aligned with its true needs. By addressing common misconceptions, such as environmental impact, resource utilization, and product quality, the project sought to foster informed dialogue and reshape public perception. The approach included the development of evidence-based educational materials, engagement with key stakeholders, and strategic use of digital platforms to reach diverse audiences.

The ultimate goal was to bridge the gap between scientific knowledge and societal awareness, positioning sustainable aquaculture as an essential component of global food security and environmental stewardship. Emphasis was placed on highlighting the economic, social, and ecological benefits of sustainable aquaculture practice to support their broader acceptance and adoption, ensuring a healthier future for both people and the planet.

The project followed a structured methodology based on three key strategies: (i) enhancing Sea Eight’s social media presence through the creation of engaging and informative content to address aquaculture-related misconceptions; (ii) developing an ESG-aligned (Environmental, Social, and Governance) annual report to demonstrate the company’s commitment to sustainability and reinforce its sectoral leadership; and (iii) ensuring active participation in industry events and fairs to promote direct stakeholder engagement and share Sea Eight’s sustainable practices. Digital platforms and modern communication tools were employed throughout to optimize reach and effectiveness.

The expected outcomes of this project include a deeper public understanding of the principles of sustainable aquaculture, greater acceptance of its practices, and the promotion of informed dialogue about its role in addressing global challenges. By focusing on Sea Eight's innovative approaches and established sustainability model, this work will highlight the potential of aquaculture to contribute to both human well-being and environmental preservation. Moreover, it emphasizes the pivotal role of strategic and effective communication in reshaping public perception and serves as a foundation for replicable strategies that can be applied across the aquaculture sector.

Keywords: Aquaculture myths, Communication strategies, Public perception, Sea Eight, Sustainable aquaculture.

Table of Contents

List of Tables 10

List of Abbreviations 12

1. Introduction 13

1.1. The Role of Aquaculture in Global Food Security 13

1.2. Environmental and Socioeconomic Impacts of Aquaculture 13

1.3. Defining Sustainable Aquaculture: Principles and Importance 15

1.4. Innovations and Technologies Supporting Sustainable Practices 16

1.5. Sustainable aquaculture: myths, misinformation, and strategies 20

1.6. Aligning Aquaculture with Global Sustainability Goals 22

1.7. International Cooperation and Policy Frameworks 24

2. Sea Eight 25

2.1. Company: Origin, Vision, and Facilities 25

2.2. Production System and Market Strategy 26

2.3. Sustainability Commitments 27

2.4. Objectives 28

3. Improvement of the Communication Strategies for Sea Eight 29

3.1. Identification of the Sea Eight communication practices gaps 29

3.2. Enhance Digital and Social Media Presence 30

3.2.1. Goals and Benefits 30

3.2.2. Target Audience 31

3.2.3. Implementation Plan and Results 31

3.3. Develop an annual ESG (Environmental, Social, and Governance) - aligned report 33

3.3.1. Components and Benefits 34

3.3.2. Target Audience 34

3.3.3. Implementation Plan and Results 34

3.4. Participation in Industry Events and Fairs 36

3.4.1. Strategic Goals and Benefits 36
3.4.2. Implementation Plan and Results 36
3.5. Outcomes of the Strategies Developed.....39
Conclusion 41
References.....42

List of Tables

Table 1 - Sustainable Development Goals (SDGs) that aquaculture contributes to..... 23

List of Figures

Figure 1 - RAS System. Source: Marine Equipment. https://www.marineequipment.com.br/ras180/ 17
Figure 2 - Aquaponics system. Source: IGUi Ecologia. https://www.iguiecologia.com/aquaponia/ 18
Figure 3 - IMTA. Source: Astral Project. https://www.astral-project.eu/explaining-imta. 18
Figure 4 - BFT. Source: Lima, I. (2021, 27 de dezembro). https://portalamazonia.com/amazonia/bioflocos-conheca-a-substancia-que-permite-a-reutilizacao-da-agua-e-que-retira-impurezas-na-piscicultura/ 19
Figure 5 - Location of Sea Eight's facilities. 26
Figure 6 - Sustainability Pillars of Sea Eight 27
Figure 7 - Sea Eight's first publication. Source: Developed by the author 32
Figure 8 - Sea Eight ESG report 2024 cover and index. Source: Developed by the author. 33
Figure 9 - Example of an easy level question from the Sea Eight quiz. Source: Developed by the author 38
Figure 10 - Sea Eight water bottle with sustainable message. Source: Developed by the author 39
Figure 11 - Global summary of my intership at Sea Eight. Source: Developed by the author 40

List of Abbreviations

AI	ARTIFICIAL INTELLIGENCE
ASC	AQUACULTURE STEWARDSHIP COUNCIL
BFT	BIOFLOC TECHNOLOGY
CO_2	CARBON DIOXIDE
CV	CURRICULUM VITAE
ESG	ENVIRONMENTAL SOCIAL AND GOVERNANCE
FAO	FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
FCUP	FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DO PORTO
G.A.P.	GOOD AGRICULTURAL PRACTICES
IMTA	INTEGRATED MULTI-TROPHIC AQUACULTURE
KPI	KEY PERFORMANCE INDICATOR
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
O_2	OXYGEN
R&D	RESEARCH AND DEVELOPMENT
RAS	RECIRCULATING AQUACULTURE SYSTEM
SCP	SINGLE-CELL PROTEINS
SDG	SUSTAINABLE DEVELOPMENT GOAL
UN	UNITED NATIONS

1. Introduction

1.1. The Role of Aquaculture in Global Food Security

In 2022, global aquaculture seafood production surpassed wild capture production for the first time, accounting for approximately 51% of the total production of aquatic animals (FAO, 2022). This high aquaculture production highlights the pivotal importance of aquaculture in ensuring food security and the increased demand for high-quality animal protein. The growth of aquaculture is not only the result of the increase in global population but also of shifting consumer preferences toward healthier diets rich in aquatic products (Leal Filho et al., 2023). In recent years, sociopolitical disruptions—such as the war in Ukraine—have added pressure to global food systems by interrupting supply chains and driving up market instability. In this context, aquaculture has gained renewed attention for its potential to offer a steady, locally adaptable source of high-quality aquatic protein.

Aquaculture offers a reliable and sustainable source of aquatic protein, and so, nowadays, it plays a crucial role in addressing the increasing global demand for food. It provides a scalable and efficient method to meet nutritional needs while reducing the pressure on wild fish stocks and contributing to the resilience of food systems worldwide (Handy, 2024). However, a strong commitment to sustainability among the aquaculture sector is required to concretize this potential. Producers, policymakers, and other stakeholders must collaborate to adopt practices that protect ecosystems, promote animal welfare, and ensure long-term biosecurity and traceability. This commitment is essential to securing aquaculture's position as a responsible and dependable source of food for the future (Adu et al., 2024).

1.2. Environmental and Socioeconomic Impacts of Aquaculture

Sustainable aquaculture plays a crucial role in global food systems and provides diverse aquatic products to address food insecurity and environmental pressures. However, the increased Aquaculture production may also lead to negative impacts, affecting both ecosystems and communities.

Regarding the environmental benefits of aquaculture production, when practiced sustainably, it can have significant advantages. Aquatic species require less energy for

growth, so they have higher feed conversion efficiency than terrestrial animals, which leads to lower greenhouse gas emissions and limited land and freshwater resource use (Fry et al., 2018; MacLeod et al., 2020). Therefore, aquaculture is considered to have a lower ecological footprint of protein production when compared to the production of terrestrial animal protein. Moreover, aquaculture also contributes to reducing pressure on wild fish stocks. As the demand for global seafood continues to grow, aquaculture can help meet part of this demand, offering an alternative source of aquatic protein. Consequently, the pressure on overexploited marine ecosystems will be significantly reduced, promoting the opportunity for the overfished stocks to recover and the ecosystems to regain their balance (Troell et al., 2014).

From an economic and social approach, aquaculture provides employment for millions of people worldwide and offers an alternative to tackling unemployment and poverty by creating jobs in production, sales, and distribution (Cassou, 2018). As demand for subsistence production increases, at a local level, these positive effects are particularly evident in coastal regions. The cultivation and production of high-value commercial species provide an important income for local producers (FAO, 2020). Aquaculture is the primary economic activity in many rural communities, including indigenous groups (NOAA, 2023). This demonstrates the significant social and economic benefits that aquaculture can provide.

Despite these benefits, unsustainable practices of aquaculture may also be associated with some negative impacts, particularly environmental impacts. One of the major environmental concerns is the inadequate management of solid and liquid waste. Indeed, without an effective waste treatment, nutrient-rich effluents like nitrogen and phosphorus can accumulate in surrounding water bodies, leading to eutrophication. This will reduce oxygen levels in the water (hypoxia) and contribute to the degradation of aquatic ecosystems (Oliveira et al., 2022). Moreover, establishing aquaculture facilities may also lead to habitat degradation and biodiversity loss. This is the case, for example, of the extensive mangrove deforestation in tropical and subtropical coastal areas, mainly for shrimp production, resulting in habitat destruction and loss of ecosystem services (Friess et al., 2019). It is crucial that the spatial planning and regulation of such establishments are carefully studied to prevent these consequences.

Preserving biodiversity also remains a critical issue, particularly when non-native species are cultivated within production systems. Introducing these exotic species can lead to biological invasions, resulting in competition for resources with local species and

potentially threatening their survival (Naylor et al., 2000). In Portugal, for example, the cultivation of exotic species is prohibited to prevent such adverse effects on local biodiversity (Decreto-Lei nº 92/2019, 2019).

However, the implementation of sustainable aquaculture practices requires financial investments. Efficient technologies are often economically expensive, with high initial costs, along with the pursuit of alternative feeds and ongoing investment in research, making these sustainable practices less accessible to small-scale producers. The disparity in financial capacity between large companies and local producers can also lead to greater socioeconomic inequality, presenting a challenge to the sector (Hatch et al., 2019).

Overall, aquaculture production is expected to be even more important in global food security in the near future. However, due to the potential risks associated with it, it is of utmost importance to reduce the associated negative impacts. These adverse effects can be reduced through the adoption of sustainable practices that address environmental, social, and economic dimensions.

1.3. Defining Sustainable Aquaculture: Principles and Importance

In 2030, the global population is expected to increase by 30 to 40%. Aquaculture is projected to play an increasingly central role in meeting the nutritional needs of this expanding population. It is estimated that by that time, nearly 70% of the fish consumed by humans will originate from aquaculture systems (FAO, 2020). In this context, aquaculture is gaining importance as a primary source of aquatic protein, reinforcing the urgency of investing in sustainable production methods (Naylor et al., 2021).

Sustainable aquaculture seeks to address the challenges and opportunities previously discussed. While unsustainable practices may lead to eutrophication, habitat and biodiversity loss, responsible production offers environmental and socioeconomic gains. Sustainable aquaculture involves the production of aquatic organisms through technologies that optimize efficient resource management, mitigating these negative impacts. Sustainable aquaculture production aims to balance the production needs with

the protection of species and their ecosystems, guaranteeing long-term ecological, social, and economic benefits (Boyd et al., 2020).

The principles of sustainable aquaculture focus on minimizing the ecological footprint of production, ensuring the well-being of farmed species, and contributing positively to local communities (Troell et al., 2023). This holistic approach is grounded in key values, such as resource efficiency, minimal environmental degradation, social responsibility, and ethical management of aquatic organisms. By adopting sustainable practices, aquaculture can increase productivity without sacrificing environmental integrity or social benefits.

Moreover, sustainable aquaculture must align with the Sustainable Development Goals (SDGs) outlined in the United Nations (UN) 2030 Agenda. This alignment fosters social equity, economic growth, and environmental stewardship for all aquaculture production and consumption stakeholders. By addressing these priorities, sustainable aquaculture can continue to play a central role in advancing global food security and maintaining ecological balance.

1.4. Innovations and Technologies Supporting Sustainable Practices

In recent years, advancements in aquaculture production systems aimed at enhancing sustainability have been continuous, and this trend is expected to persist, further shaping the future of sustainable aquaculture. These technologies are essential tools to meet the sustainability standards set by governments and the United Nations 2030 Agenda. Several of these innovations are already widely adopted, with the most significant, due to their strong impact on sustainable production, being Recirculating Aquaculture Systems (RAS), aquaponics systems, Integrated Multi-Trophic Aquaculture (IMTA), Biofloc Technology (BFT), use of Artificial intelligence (AI), genetic improvements and alternative feed innovations have proven particularly impactful.

Adopting innovative and sustainable technologies, such as Recirculating Aquaculture Systems (RAS) (Figure 1), improves the environmental performance of aquaculture. RAS is an eco-friendly, productive, intensive farming system that offers precise control over water management and quality, the most critical resource in aquaculture. As a

closed-loop system, it ensures high biosecurity and limits the discharge of nutrient-rich eflluents into surrounding ecosystems, contributing to the reduction of aquatic pollution like eutrophication (Vera et al., 2021). By continuously filtering and reusing water, RAS minimizes the need for large volumes of fresh water and controls key parameters such as dissolved oxygen, ammonia, and pH, creating optimal conditions for fish production. This technology significantly reduces the environmental footprint of aquaculture and plays a crucial role in advancing sustainable practices (Ahmed et al., 2021).

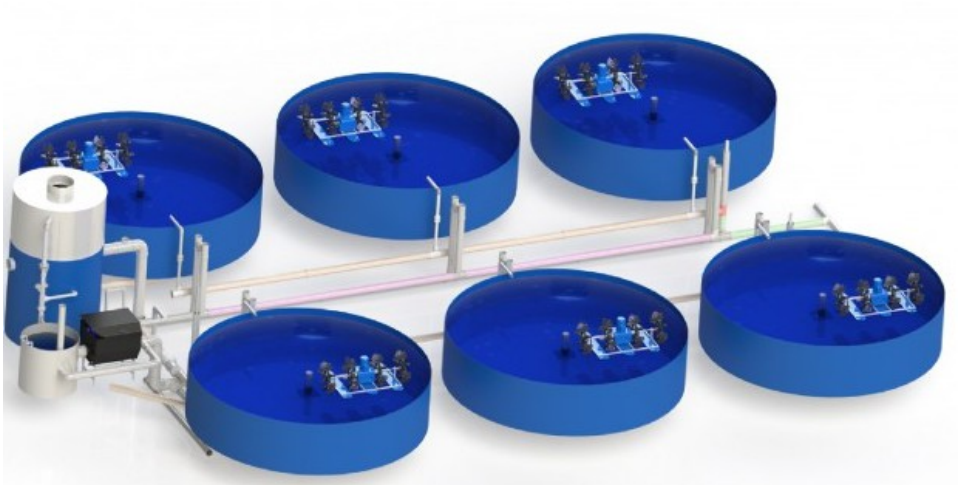


Figure 1 - RAS System. Source: Marine Equipment. https://www.marineequipment.com.br/ras180/.

Another notable sustainable technology is aquaponics (Figure 2), a production system that integrates aquaculture with hydroponics, creating a closed-loop system where fish waste serves as a natural fertilizer for plants, while the plants help purify the water. This synergy maximizes resource efficiency by reducing water consumption and nutrient loss (Mekonnen & Hoekstra, 2023). Aquaponics systems are especially suitable for urban farming and small-scale operations, enabling fresh fish and vegetables to be produced in the same system. This dual-purpose strategy reduces environmental impacts and supports local food security (Okomoda & Onunkwo 2022).

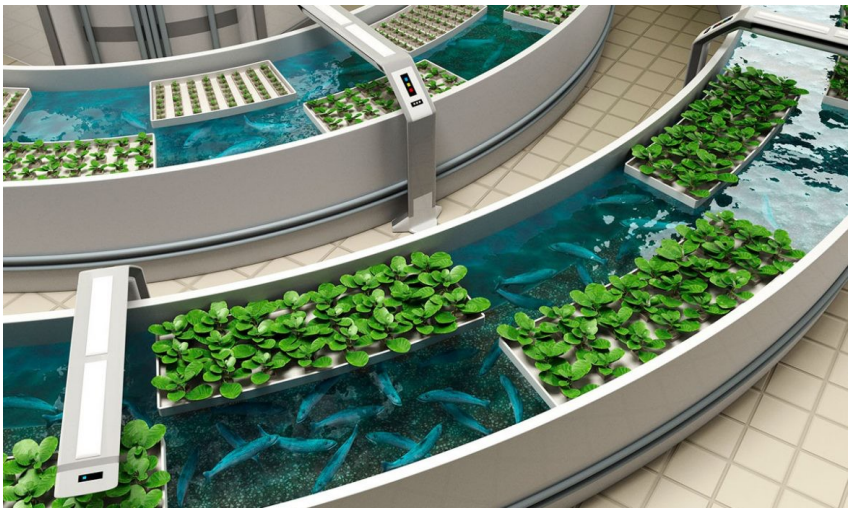


Figure 2 - Aquaponics system. Source: IGUi Ecologia. https://www.iguiecologia.com/aquaponia/.

Integrated Multi-Trophic Aquaculture (IMTA) (Figure 3) is another innovative and sustainable approach. This method cultivates multiple aquatic organisms from different trophic levels in only one system. Integrating different species like shellfish, seaweeds, mussels, and fish into a single system, IMTA can recycle nutrients, reducing nutrient pollution and improving water quality (Zahedi & Mohammadi, 2022). This approach is significantly sustainable, since it reduces waste and enhances resource efficiency, contributing to the principles of the circular economy (El-kassas et al., 2023).

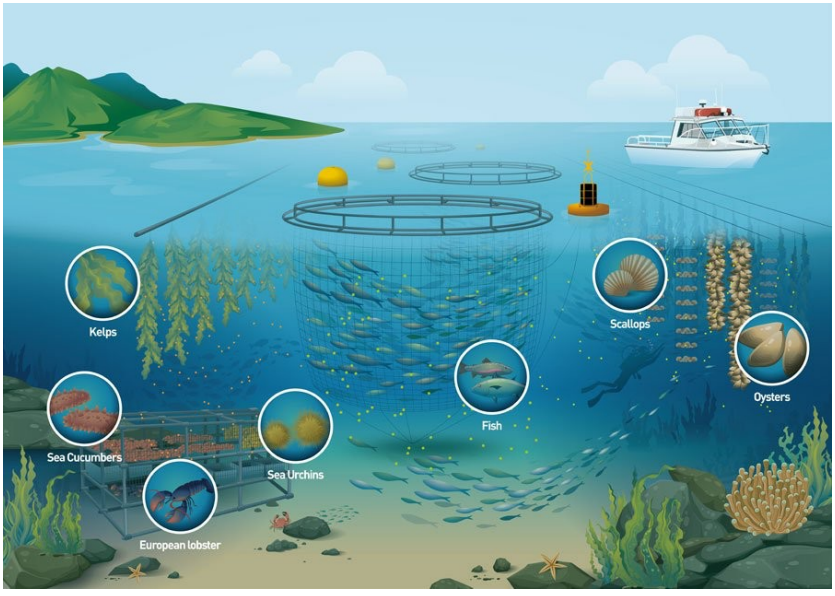


Figure 3 - IMTA. Source: Astral Project. https://www.astral-project.eu/explaining-imta.

Biofloc technology (BFT) (Figure 4) is one of the latest sustainable practices in the aquaculture sector. This technology is based on the formation and maintenance of aggregates (bioflocs) of beneficial microorganisms, such as bacteria, algae, fungi, and protozoa, that grow directly in the water of aquaculture ponds. These bioflocs provide a dual benefit: they act as a biological treatment system and serve as an additional protein-rich food source for cultured species such as fish and shrimp, thereby reducing feed costs (Yu et al., 2023). The BFT also decreases the need for water exchange, as the microbial community efficiently removes toxic nitrogenous compounds, particularly ammonia, thus minimizing waste and environmental pollution. Furthermore, the microbial diversity within bioflocs prevents diseases naturally, reducing dependence on antibiotics and other chemical treatments(Yu et al., 2023).



Figure 4 - BFT. Source: Lima, I. (2021, 27 de dezembro). https://portalamazonia.com/amazonia/bioflocos-conheca-a-substancia-que-permite-a-reutilizacao-da-agua-e-que-retira-impurezas-na-piscicultura/.

Another notable innovation in sustainable aquaculture is the application of advanced technologies for animal monitoring, including the use of Artificial Intelligence (AI). Introducing smart sensors capable of detecting environmental conditions and fish health status in real time fosters more efficient and sustainable aquaculture (Cai et al., 2021). These technologies optimize feed supply, reduce costs, detect problems before they become critical, and enhance the management of environmental conditions such as temperature, pH, oxygen levels, and other variables essential for fish development and well-being (Cai et al., 2021). Together, these technologies represent a significant step forward in making aquaculture more efficient and environmentally sustainable.

Genetic improvements also present promising opportunities in sustainable aquaculture. Through genetic techniques, the resilience of fish to adverse conditions, such as temperature changes and diseases, can be improved, while enhancing their ability to

utilize feed efficiently (Afewerki, 2024). Biotechnology facilitates the selection and breeding of organisms with superior traits, increasing aquaculture productivity (Afewerki, 2024). This approach also produces fish that are more resistant to the disease, reducing the need for antibiotics and other chemical products and promoting a healthier environment (Moran et al., 2024). While these technologies hold significant potential for fostering more sustainable production, their application must be carefully studied and regulated to prevent biodiversity loss (Robinson et al., 2023).

Nutrition also plays a critical role in advancing sustainable aquaculture. The feed sector remains one of the most critical and challenging aquaculture sectors, representing 50% to 70% of total production costs (FAO, 2018). Thus, innovations in alternative feed sources have gained substantial focus, aiming to reduce reliance on traditional fishmeal and fish oil, which contribute to the depletion of wild fish stocks, and crops that compete with human consumption, and represent a significant portion of production costs in aquaculture (Hossain et al., 2023). Sustainable alternatives to traditional aquafeeds include animal by-products, plant-based by-products, algae-derived ingredients, insect-based proteins, agro-industrial residues, and single-cell proteins (SCP) (European Parliament, 2024; El-Sayed & Tacon, 2024). These innovative feed sources align aquaculture practices with global efforts to preserve marine biodiversity and potentially lower production costs in the long term (Spencer Roberts et al., 2024). In addition to feed composition, precise feeding strategies also play a decisive role in reducing feed waste. The use of automatic feeders and real-time adjustment of feed intake based on water quality and fish appetite can minimise the environmental impact of this sector (Pratiwy & Haetami, 2023). Together, sustainable alternative feed ingredients and precision feeding strategies are key to the progress of sustainable aquaculture.

1.5. Sustainable aquaculture: myths, misinformation, and strategies

Despite the global growth of aquaculture in recent years, the lack of accurate information about sustainabçle aquacultutre production among the public remains a significant challenge. Misinformation about aquaculture, particularly sustainable aquaculture, can lead to myths and misconceptions, potentially limiting its growth and acceptance. Therefore, it is crucial to address and demystify these misunderstandings.

One central myth is that aquaculture invariably degrades the environment and harms local biodiversity. While this can occur when unsustainable practices are used, aquaculture increasingly demonstrates the opposite. Adopting responsible practices allows avoiding adverse environmental impacts, including water pollution and ecosystem destruction. Innovative technologies, such as the RAS mentioned above, not only drastically reduce adverse environmental effects but also recycle water nearly 100%. By implementing strict measures and responsible practices, aquaculture can protect biodiversity, reduce pressure on wild fish stocks, and ensure healthy integration of aquaculture into local ecosystems (Tacon & Metian, 2015).

Another prevalent myth is that farmed fish are unhealthy for human consumption. Many people mistakenly believe farmed fish have lower nutritional quality and are more likely to contain contaminants than wild-caught fish. Regarding nutritional composition, farmed fish can have the same or even superior quality as wild fish. The feed is formulated to efficiently meet nutritional needs, balancing omega-3 fatty acids (essential for human health) and other desirable nutrient levels (Tocher, 2015). As for contaminants, wild fish are not subject to treatment or verification regarding contaminants. They are exposed to environmental pollutants, such as mercury and pesticides, which accumulate in their tissues, making their exposure levels unpredictable. In contrast, farmed fish are constantly monitored, keeping their environment clean and free of pollutants (Tacon & Metian, 2004).

Another central myth is that aquaculture is often seen as a threat to fisheries, as it is believed to compete directly for resources. This perception, particularly among local fishing communities, does not reflect the reality of sustainable aquaculture. In the past, aquaculture relied on fishery resources to formulate feed, mainly containing fish oil and fishmeal. However, there has been a significant reduction in the use of these components, with an increasing focus on more sustainable alternatives, such as plant-based products (Tacon & Metian, 2008). In 2021, fish oil and fishmeal production stabilized, while aquaculture production continued to rise. This data confirms that the dependency of aquaculture on the fishing sector is gradually declining (Naylor et al., 2021).

Some strategies in aquaculture companies are already being implemented to combat these myths. The first primary strategy is to educate the public by teaching both theoretical and practical knowledge about aquaculture production. Awareness campaigns, participation in fairs, and events highlighting the advantages and benefits of

this type of production are the key to gradually changing the public's mindset (FAO, 2020). An effective way to foster this change is to focus on children, who are more receptive to new information than adults and are the society of tomorrow. Conducting school campaigns is essential to teach children about sustainable aquaculture and how it is safe, beneficial, and controlled.

With approximately 62% of the global population actively using social media in 2024 (Kemp, 2024), these platforms provide a powerful tool to reach billions of people worldwide. Social media can be used to promote aquaculture, dispel myths about it, and establish a direct relationship with consumers, addressing their concerns and questions. This strategy enables aquaculture to gain more visibility and credibility in the food sector (Naylor et al., 2021).

Another essential strategy is for aquaculture businesses to acquire certifications. Gaining consumer trust is crucial, and certifications bring the necessary security, transparency, and sincerity to ensure that customers not only purchase good and healthy products but also feel they are contributing to a more sustainable environment. Certifications such as the Aquaculture Stewardship Council (ASC) and Global G.A.P. are among the most effective in communicating to consumers that they are making purchases that support responsible aquaculture practices (Bush et al., 2010).

Lastly, forming partnerships and collaborations with reputable food brands and luxury restaurants can significantly increase the visibility of aquaculture products and enhance consumer trust. These collaborations offer a platform to showcase sustainable aquaculture and create associations with high-quality and trustworthy food brands (Boyd et al., 2010).

By employing these strategies, it is possible to foster a broader understanding of the importance of sustainable aquaculture and its positive impact on food security and the environment.

1.6. Aligning Aquaculture with Global Sustainability Goals

Demonstrating the broader value of sustainable aquaculture within a global context is crucial to improving communication and transparency in this sector. Achieving sustainability in aquaculture requires a comprehensive approach that balances

environmental stewardship, social responsibility, and economic viability. The objectives of integrating aquaculture with global sustainability agendas are diverse, including adopting environmentally friendly technologies, promoting fair labor practices, and enhancing food security.

Sustainable aquaculture contributes significantly to several Sustainable Development Goals (SDGs) outlined in the United Nations 2030 Agenda, particularly those focused on food security, responsible consumption and production, and the protection of marine life (Table 1).

Table 1 - Sustainable Development Goals (SDGs) that aquaculture contributes to.

	Aquaculture combats poverty by creating job opportunities and providing economic means to sustain local communities. It serves as a significant source of income, particularly in developing countries.
	Aquaculture provides high-quality, safe food, helping to combat hunger and address the growing global population's nutritional needs. It supplies nutritionally rich products that enhance food security.
	Sustainable aquaculture fosters healthy diets and food security, improving overall health and well-being. Aquaculture products are rich in omega-3 fatty acids, vitamins, and minerals essential for cognitive development, immune health, and cardiovascular function. Controlled farming environments minimize exposure to contaminants, enhancing food safety for consumers.
	Innovative technologies like RAS, Aquaponic, and BFT enable sustainable water management by significantly reducing water use and minimizing aquatic pollution, since most production occurs in salt water rather than fresh water.
	Many aquaculture enterprises adopt renewable energy sources, such as solar and wind power, to lower energy costs for water pumps and filtration systems, especially in continuous-operation recirculation systems. This shift contributes to reducing carbon reliance and advancing clean energy use.
	Aquaculture's steady growth generates millions of jobs annually. The sector boosts incomes, especially in coastal and rural communities, strengthening local economies and promoting social inclusion.
	Aquaculture stands out as a more sustainable option than terrestrial animal protein source production. It uses fewer resources, emits less greenhouse gas, and

	supports innovative systems like aquaponics, which recycle nutrients and minimize food waste.
	Aquaculture plays a vital role in combating climate change. It emits fewer greenhouse gases than livestock farming, and certain aquaculture practices, such as algae production, contribute to carbon sequestration, reducing climate change impacts.
	Aquaculture alleviates the overexploitation of wild fish stocks, fostering marine biodiversity and ecosystem recovery. Production of some species, e.g., mollusks and algae, further reduces environmental impacts while supporting aquatic ecosystem health.
	Unlike traditional agriculture, aquaculture reduces the need for land-intensive farming, thereby avoiding terrestrial ecosystem destruction and preserving biodiversity.

1.7. International Cooperation and Policy Frameworks

For sustainable aquaculture practices to progress globally, it is essential to establish agreements between sector industry stakeholders and policymakers, promote collaboration in technology development, and facilitate the dissemination of research findings in the field (Martins et al., 2010). This cooperation is crucial to ensure the effective operation of aquaculture worldwide, addressing challenges and minimizing negative environmental, economic, and social impacts (Troell et al., 2014).

However, the diversification of policies among different countries and the lack of fiscal incentives, especially for local producers, create disparities that hinder cooperation between producers within the same sector (FAO, 2020). Administrative requirements, such as environmental licensing or effluent monitoring in aquaculture systems, are also cited as financial barriers (Gentry et al., 2017). Legal approval is required for certain efficient and innovative technologies to be implemented in aquaculture systems, particularly for open-system aquaculture. Delays in regulatory approvals not only impede the adoption of sustainable practices but also discourage producers from investing in new technologies (Boyd et al., 2010).

Despite these challenges, some international initiatives are being made worldwide and demonstrate the potential of international cooperation. Programs like the FAO's (Food

and Agriculture Organization of the United Nations) Blue Growth discussed harmonizing regulations and shared some goals to accelerate sustainable aquaculture practices (FAO, 2021). Promoting dialogue between regulatory bodies, producers, and researchers is essential to overcoming disparities and can foster innovation. Expanding access to financial support and simplifying approval processes can help level the playing field, especially for small-scale producers in developing countries (Troell et al., 2014).

2. Sea Eight

2.1. Company: Origin, Vision, and Facilities

Sea Eight is an aquaculture company that produces Senegalese sole and was founded in 2012 with the acquisition of two aquaculture production facilities: Aquacria Piscícolas and Safiestela. In 2017, the company secured licenses to acquire Aquacria Arousa and is currently constructing a new facility, Aquacria Lafigal. The name “Sea Eight” is inspired by the legend of the seven seas surrounding the Earth. With the growing global population and a corresponding increase in food demand, the company positions itself as the "eighth sea", offering a new solution - aquaculture. Committed to ensuring future generations' access to more sustainable protein sources, Sea Eight’s mission is to contribute to the health of as many people as possible and the ecosystem surrounding them. Between 2012 and 2015, Sea Eight developed and invested in its primary production technology, the RAS, to enhance sustainability and efficiency. Nowadays, it operates with Europe’s most advanced equipment for sole aquaculture in the RAS system, supporting over 100 production cycles. The Sea Eight group, consisting of the four facilities mentioned above, manages the complete lifecycle of *Solea senegalensis*, from breeding and egg production to fattening, harvesting, and commercialization. The group has one hatchery (Safiestela) and three fattening facilities (Aquacria Arousa, Aquacria Piscícolas, and Aquacria Lafigal), collectively capable of producing 1150 tons of sole annually.

The group’s facilities are geographically distributed across Portugal and Spain. Safiestela (Figure 5, nº1), located in Póvoa de Varzim, Portugal, was established in January 2011 and can produce the complete lifecycle of sole, with a capacity for 5 million juveniles per year. Aquacria Piscícolas (Figura 5, nº2), also in Portugal, is located further south in Torreira. Established in 1989, it has a production capacity of approximately 250

tons per year and is dedicated to fattening. Aquacria Arousa (Figure 5, nº3), located in Cambados, Spain, was founded in 1997 and produces 450 tons of sole annually, also focusing on fattening. Aquacria Lafigal in Asturias, Spain, is the company's most recent acquisition (Figure 5, nº4). Established in February 2021, it is projected to begin operations in September 2025, with a production capacity of 450 tons per year.

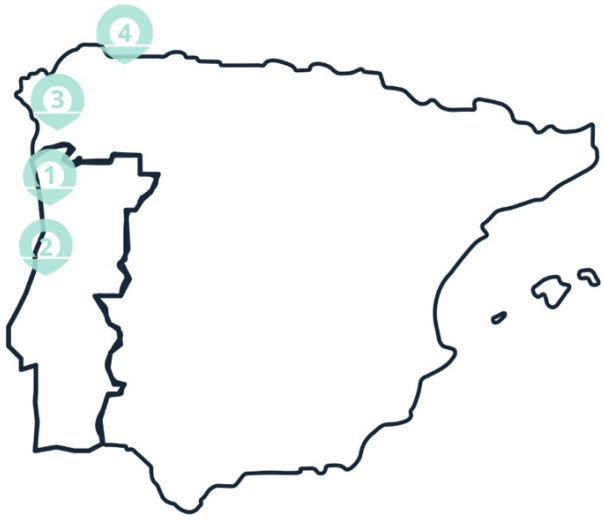


Figure 5 - Location of Sea Eight's facilities.

2.2. Production System and Market Strategy

Throughout production, the sole undergoes various stages tailored to its lifecycle. From the larval process to market size, the entire process takes approximately 1.5 years. From day 0 to day 250, the sole remains in the hatchery (Safiestela), undergoing reproduction, larval, nursery, and pre-fattening stages. After day 250, the fish are transported to fattening facilities (Aquacria Arousa, Aquacria Piscícolas, and Aquacria Lafigal) until day 690. Once the fish reach commercial size (>350g), they are harvested in containers with water and ice, then classified by weight and packed in styrofoam boxes by the company "San Juan", under optimal preservation conditions. The final stage involves commercialization and sale.

As the leading producer of *Solea senegalensis*, the company distributes its products through major supermarket chains (e.g., Mercadona, Pingo Doce), foodservice industries (e.g., Makro, Recheio), and wholesale markets (e.g., Mercamadrid, Mercabarna, and the Lisbon Wholesale Market). Its main customers are located across

various European countries, including Portugal, Spain, France, Switzerland, the Netherlands, Germany, Italy, and Greece, as well as internationally in the United States.

2.3. Sustainability Commitments

Sea Eight aims to lead aquaculture production based on sustainable technology, focusing on producing high-value sole. The company has developed a sustainability plan based on six pillars (Figure 6), which are align with the UN's Sustainable Development Goals (SDGs).

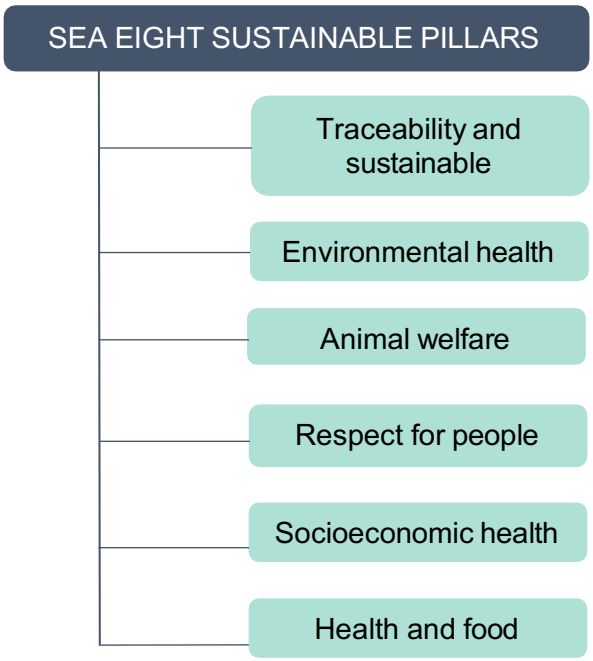


Figure 6 - Sustainability Pillars of Sea Eight.

Sea Eight also has an active Quality Department responsible for ensuring 100% compliance with quality standards set by the government and other relevant organizations. The production team continuously monitors the health and welfare of fish 24/7 throughout the year, ensuring physical and psychological well-being in line with ethical principles. Additionally, the company has implemented a Veterinary Health Program that tracks animal health and welfare indices monthly. Innovation is central to achieving sustainability standards in aquaculture. Sea Eight's R&D (Research and

Development) department is dedicated to improving production processes and animal welfare.

The company recycles approximately 98% of its water by implementing the RAS system. This system enables seawater land-based production while maintaining ecological balance by recycling water through mechanical filtration systems. Consequently, water entering and leaving the facilities is treated to ensure it returns to the sea free of organic load. Compared to traditional aquaculture systems, which consume vast amounts of water and energy, the RAS system offers greater sustainability, process control, and food safety.

Regarding certifications, Sea Eight holds internationally recognized certifications, including Global G.A.P. (Good Agricultural Practices) and Aquaculture Stewardship Council (ASC), which guarantee transparency, food safety, and environmental responsibility. These measures help to minimize environmental impact, promote animal welfare, ensure consumer health and safety, and support sustainable production.

As a result, Sea Eight contributes to 12 SDGs, specifically Goals 2, 3, 4, 5, 7, 8, 9, 11, 12, 13, 14, and 15 (Table 1), reaffirming its long-term commitment to sustainability.

2.4. Objectives

This report was developed following an internship at Sea Eight and reviews how the company integrates sustainability into its communication strategy. By highlighting its commitment to producing high-quality fish in sustainable conditions, Sea Eight aims to enhance its image and increase the product's visibility on the market.

The two main objectives of this internship were:

1. Identify key communication barriers that hinder the promotion of sustainable aquaculture: This objective involved assessing Sea Eight’s existing communication practices to identify gaps, challenges, and opportunities for improvement in promoting the company and its sustainability efforts;

2. Develop and implement targeted communication strategies to support Sea Eight’s outreach efforts: This objective focused on creating and executing

communication tools, such as an active social media presence, an ESG report, and participation in public events, to raise awareness, educate stakeholders, and reinforce the company's sustainable mission.

3. Improvement of the Communication Strategies for Sea Eight

3.1. Identification of the Sea Eight communication practices gaps

This internship focused on identifying the deficiencies of Sea Eight communication practices as a basis for developing and implementing communication strategies aimed at improving public awareness and education about sustainable aquaculture, with a particular focus on the practices and goals of Sea Eight.

The first task of this internship was to diagnose Sea Eight's communication practices to identify the potential limitations that prevent the promotion of the company and sustainable aquaculture. This assessment involved a review of the company's existing communication channels, including its social networks, as well as available institutional materials such as internal reports, press releases, and previous content posted on social networks. Informal interviews were also conducted with commercial operations, finances, and human resources department team members to obtain information on their perceptions of current communication efforts and priority areas for improvement.

This process revealed several gaps and barriers, namely:

- Inconsistent posting frequency on LinkedIn and X and lack of long-term planning in social media communication;
- Absence of presence on platforms with an extensive public reach, such as Instagram and Facebook;
- Limited presence at aquaculture events and public awareness activities, which could improve direct communication and trust with wider audiences;
- The failure to provide clear and accessible messages about the company's sustainable practices and values.

This evaluation aimed to provide a basis for developing the following three strategies implemented throughout the internship and to understand how effective communication can influence the growth of sustainable aquaculture.

3.2. Enhance Digital and Social Media Presence

A key strategy to strengthen Sea Eight's communication efforts was to increase the company's social media presence. Nowadays, social media play a crucial role in expanding ideas and communicating company efforts. Before this internship, the company had only profiles on LinkedIn and X (formerly Twitter), but these platforms were underutilized due to irregular posting. To strengthen the company's digital and social media presence and show the general public that Sea Eight produces high-quality fish in a sustainable way, regular publications have been started and two new social media accounts, Instagram and Facebook, have been created. The aim is to use this sustainable production as a selling point to promote the fish, increase sales, and raise awareness about sustainable aquaculture.

3.2.1. Goals and Benefits

The overarching goal is to use these platforms as a dynamic tool to achieve several benefits:

- Increasing visibility: by maintaining a consistent posting schedule, Sea Eight can keep its audience informed and make the company more visible to a wider range of stakeholders, including industry professionals, potential partners, and consumers;
- Attracting collaborators: sharing updates on researching projects, the company product, and innovative practices can attract the attention of professionals looking for collaboration or job opportunities;
- Educating the public about aquaculture: dispel myths about sustainable aquaculture and emphasize its importance, promote greater knowledge about this sector among the general public, and create greater acceptance and understanding of it;

- Promote sustainable practices: Sea Eight's commitment to sustainability can be highlighted through social media posts. Sharing the eco-friendly farming practices and research initiatives can position the company as an environmentally friendly aquaculture;
- Updating followers about events: social media is an important channel for publicizing company events such as fairs and community initiatives, generating more awareness and participation;
- Highlighting Senegalese sole: visually appealing posts about sole, Sea Eight's product, its nutritional benefits, and its journey from farm to table can captivate audiences and attract buyers.

3.2.2. Target Audience

Through an active presence on social networks, Sea Eight can reach different audiences, such as:

- Industry professionals and students: updates on research, events, innovative practices, job and internship opportunities at the company will inform and engage these audiences;
- Environmental defenders: content focused on sustainability and eco-friendly practices will appeal to individuals and groups who are committed to preserving natural resources;
- General public: educational posts about sustainable aquaculture and the benefits of its products help raise awareness, appreciation for this sector and promote the consumption of farmed fish.

This strategy increases Sea Eight's visibility and strengthens the company's reputation as a leader in sustainable aquaculture by establishing links with various stakeholders.

3.2.3. Implementation Plan and Results

The first step was to create a content calendar to ensure regular publishing and a balance between different content types. The first publication took place on 31 January 2025 with the title "Who are we?" (Figure 7), in order to introduce the company, its history, mission, and values. In the remaining months, from February to May, eleven more original

publications were made, giving an average of almost three publications per month (one per week).



Figure 7 - Sea Eight's first publication. Source: Developed by the author.

During this intership, I have created posts and videos to cover the different topics proposed, such as the company's sustainable practices, its product and how it is beneficial to health, myths and truths about sustainable aquaculture, as well as sharing the events and fairs that Sea Eight has participated in, the FCUP (Faculty of Sciences of the University of Porto) Job Fair and Expo Seafood in Barcelona. Positive news about the company has also been shared, such as the increase in production at Aquacría Arousa, the progress of the new facility in Spain, Aquacría Lafigal, and an interview in the Hiper Super newspaper about the company and its role in the growth of the aquaculture sector in Portugal.

On Instagram, the account saw significant growth with 82 new followers and a total of 6600 views from March to May, with around 73.1% of these views coming from users who were not following the account. Two thousand three hundred thirty-eight accounts were reached in the same period, showing good organic reach. The two publications with the most significant impact were the videos about the FCUP Job Fair and an event in Safiestela, in collaboration with the Póvoa de Varzim City Council, to promote planting trees along the pathway company's pathway. These videos achieved greater engagement, most likely because they presented more captivating and relevant content to the community. The FCUP Job Fair video attracted attention due to its direct relevance to students and job-seekers, providing valuable information and opportunities. Meanwhile, the Safiestela event video had good repercussions because it highlighted a local environmental initiative that involved collaboration with a trusted local authority, which increased credibility and interest. In addition, the dynamic and visually compelling video format helped capture viewers' attention more effectively than static posts, encouraging shares and interactions.

On Facebook, the growth rate was more modest, with 11 new followers. This platform served mainly as a secondary channel for reinforcing communication and publishing job offers in specific groups.

On LinkedIn, the strategy of reactivating the account resulted in an increase of 2952 cumulative views since the first publication made during the internship, which indicates a good performance with a more institutional and professional audience. We gained 332 new followers since the first publication till the end of my internship, 26816 new impressions (an increase of 26.5 %), 794 reactions (up 108 %), and an average of 9 shares per post (up 80 %), in each case compared to the previous 5-month period.

These results demonstrate the importance of using social media as a platform to increase the company's visibility, but also demonstrate more of the reality of this sector and the innovations that have been implemented in aquaculture.

3.3. Develop an annual ESG (Environmental, Social, and Governance) - aligned report

During the internship, one of the main objectives was to communicate and document Sea Eight's commitment to sustainability by contributing to the development of the company's first comprehensive annual ESG report (Figure 8). By adhering to ESG principles, Sea Eight strengthens its commitment to transparency and accountability in the three fundamental ESG pillars — Environmental, Social, and Governance. It is aligned with the United Nations Sustainable Development Goals (SDGs) and has been produced in both Spanish and English to ensure wider accessibility and comprehension.

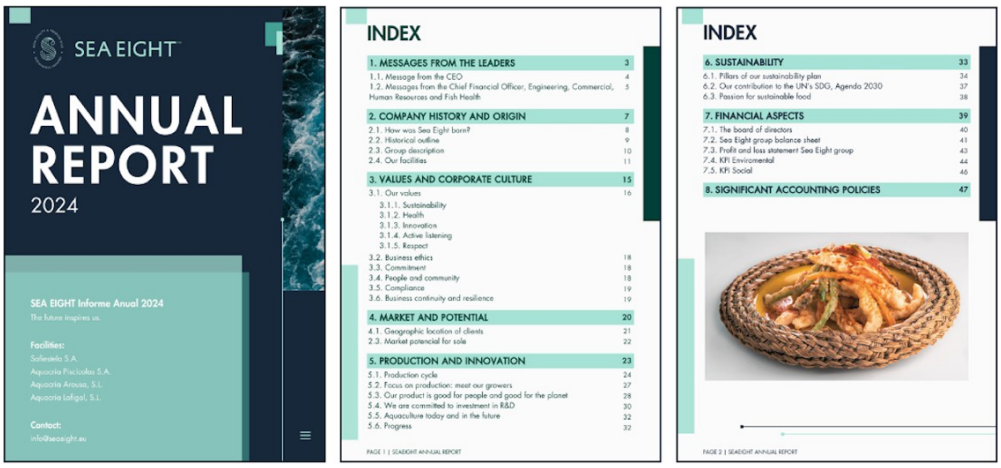


Figure 8 - Sea Eight ESG report 2024 cover and index. Source: Developed by the author.

3.3.1. Components and Benefits

The ESG report has to address its three dimensions – environmental, social, and governance. The report presents the company's sustainable practices in the environmental sector, like efficient resource use, water recycling systems, and renewable energy integration. On a social level, the report highlights Sea Eight's employment opportunities, consumer education about the benefits of aquaculture and consuming fish, especially sole, and the commitment to safe work conditions. Finally, in the governance area, the company shares its ethical standards and informs Key Performance Indicators (KPI's).

The development of this ESG report offers Sea Eight several advantages:

- Building consumer confidence: a transparent and honest account of the company's activities reassures consumers that the company is committed to ethical and sustainable practices and builds brand loyalty;
- Enhancing reputation: a well-crafted ESG report highlights Sea Eight's leadership in addressing global challenges such as climate change and food security and enhances the company's reputation in the aquaculture industry and beyond;
- Highlighting positive impacts: by quantifying its contributions to the environment and society, Sea Eight can demonstrate its value not only as a business but also as a responsible corporate citizen.

3.3.2. Target Audience

Sea Eight's ESG report is directed at different audiences, with messages adapted to their interests. To consumers, it seeks to highlight the company's sustainable practices and ethical commitment. For investors and partners, the aim is to highlight Sea Eight's long-term growth potential, as well as its alignment with global sustainability objectives. In the case of regulators and industry bodies, the company aims to demonstrate not only compliance with industry standards but also a proactive attitude in responding to environmental and social issues.

3.3.3. Implementation Plan and Results

In order to produce this report, it is first necessary to collect all of Sea Eight's quantitative and qualitative data regarding the three areas mentioned above. Once all the information

has been collected, it is crucial to create an appealing design that presents this data in detail, as well as the company's values and sustainable objectives.

Regarding its environmental performance, Sea Eight uses RAS (Recirculating Aquaculture System) technology, which enables the reuse of up to 98% of the water used in production, minimizing environmental impact and water waste, aligning with SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action). In addition, the company is reducing its carbon footprint by limiting the need for transport through local production on-site. Sea Eight is also actively investing in sustainability research and development, including genetic improvement programmes and digital conversions to optimize resource use and support long-term environmental performance and efficiency.

Socially, Sea Eight has a strong culture of social responsibility and promotes diversity, equality, and inclusion in the workplace. The company operates under a Code of Conduct that prohibits all forms of discrimination and promotes equal opportunities, thereby supporting SDG 5 (Gender Equality) and SDG 8 (Decent Work and Economic Growth). A robust fish welfare program is implemented in all facilities, based on ethical guidelines and monthly monitoring of the animal welfare index. Animal welfare is treated as a central component of product quality and sustainability. Lastly, the company creates jobs in coastal regions and rural areas and offers employment opportunities in the areas of production, technology, research, and logistics — a positive contribution to local socioeconomic development.

In governance standards, Sea Eight’s Quality Department ensures full compliance with national and international aquaculture standards through regular audits and traceability systems, thereby strengthening consumer trust and brand transparency. Additionally, Sea Eight practices active listening, seeking feedback from both internal and external stakeholders to guide its decision-making processes. This participative approach strengthens the company’s ability to remain adaptable, responsible, and aligned with ESG best practices, in line with SDG 17 (Partnerships for the Goals).

The document reinforced Sea Eight’s reputation as a pioneer in transparency in the aquaculture sector and supported the company's efforts to attract ESG-focused investment opportunities.

3.4. Participation in Industry Events and Fairs

Participating in industry and public events is another strategic approach for Sea Eight to enhance its visibility, strengthen its network, and promote its commitment to sustainable aquaculture. By actively engaging in events and fairs, the company can connect with a wide array of stakeholders, including industry professionals, students, and the general public, while showcasing its innovative practices and premium product, the Senegalese sole.

3.4.1. Strategic Goals and Benefits

Events and fairs provide an ideal platform for the company to communicate its dedication to environmentally responsible aquaculture. In these events, networking opportunities are created since they bring together industry leaders, experts, and potential collaborators, offering valuable opportunities for partnerships and knowledge sharing. Another benefit is to engage with young future talent, as we saw at the FCUP Job Fair. Participating in these events enables Sea Eight to connect with talented individuals, recruit potential employees, and present itself as an attractive workplace. Finally, through these events, we have the opportunity to educate attendees about the benefits of aquaculture and sustainable seafood production, addressing misconceptions and building public trust.

By strategically engaging in events and fairs, Sea Eight will not only strengthen its industry presence but also foster meaningful connections with diverse audiences, furthering its mission of promoting sustainable aquaculture.

3.4.2. Implementation Plan and Results

At an initial stage, the most suitable events that align with the company's vision and can add value to its strategy were identified. Priority was given to fairs and exhibitions linked to aquaculture and the seafood industry, such as the FCUP Job Fair and Expo Seafood, as they are ideal opportunities for establishing professional contacts, presenting innovations, and attracting young talent. In this context, it was essential to develop promotional materials that clearly and appealingly convey Sea Eight's message, as well as its commitment to sustainable practices. These materials were essential for reinforcing the company's image and consolidating its presence in the sector. During my internship, I also had the opportunity to be part of the team responsible for creating the

company's new institutional video. To do this, I developed a script conveying the company's values, mission, and innovations to position it as a leader in the aquaculture industry. The video was launched for the first time at the Seafood Expo in Barcelona in May. Subsequently, it will be launched on social media for greater reach and visibility.

Sea Eight's strategic participation in industry events and trade fairs has significantly improved the company's visibility and networking opportunities and has brought considerable benefits in many respects.

FCUP Job Fair:

Sea Eight's participation in the Job Fair organized by the Faculty of Sciences of the University of Porto proved highly successful in attracting talent and raising awareness of the brand among young professionals. The company's stand attracted over 50 students throughout the event, collecting 6 Curriculum Vitae from potential candidates from various disciplines such as biology, marine science, and engineering.

During the FCUP Job Fair, we organized an interactive quiz game on sustainable aquaculture. The quiz contained general questions about sustainable aquaculture practices, categorized into three difficulty levels: easy, medium, and hard. Each difficulty level corresponded to a different prize level - participants who answered the easy questions correctly received a pen, those who successfully answered the medium level questions received a notebook, and participants who mastered the difficult questions were rewarded with a bottle of water. This playful approach not only captivated visitors but also served as an educational tool to raise awareness of sustainable aquaculture practices while promoting our company's presence at the event.

Expo Seafood Barcelona:

Sea Eight's presence at the Expo Seafood Barcelona was an important milestone in the company's international marketing strategy. The professionally designed stand showcased the company's premium Senegalese sole and sustainable production methods to an international audience of professionals, retailers, and potential partners. Around 300 people visited the Sea Eight stand, including authorities from the regional government of Asturias and the port of Gijón.

The launch of Sea Eight's new institutional video at Expo Seafood attracted much interest and helped increase the number of visitors to the company's stand. The video, which played continuously throughout the event, captivated visitors by showcasing Sea Eight’s sustainable aquaculture practices and commitment to delivering a premium product from

farm to fork. The powerful imagery and compelling message emphasised the company's position as a responsible seafood production leader.

Development of event materials:

The creation of high-quality promotional materials for the events, including interactive displays, a quiz on sustainable aquaculture (Figure 9), and branded items such as thermal water bottles with the sustainable message 'Care in each drop' (Figure 10), created a consistent visual identity that reinforced Sea Eight's professional image.

The comprehensive event strategy has successfully positioned Sea Eight as an innovative leader in sustainable aquaculture, opening up new avenues for growth while strengthening the company's commitment to education and transparency in the sector.

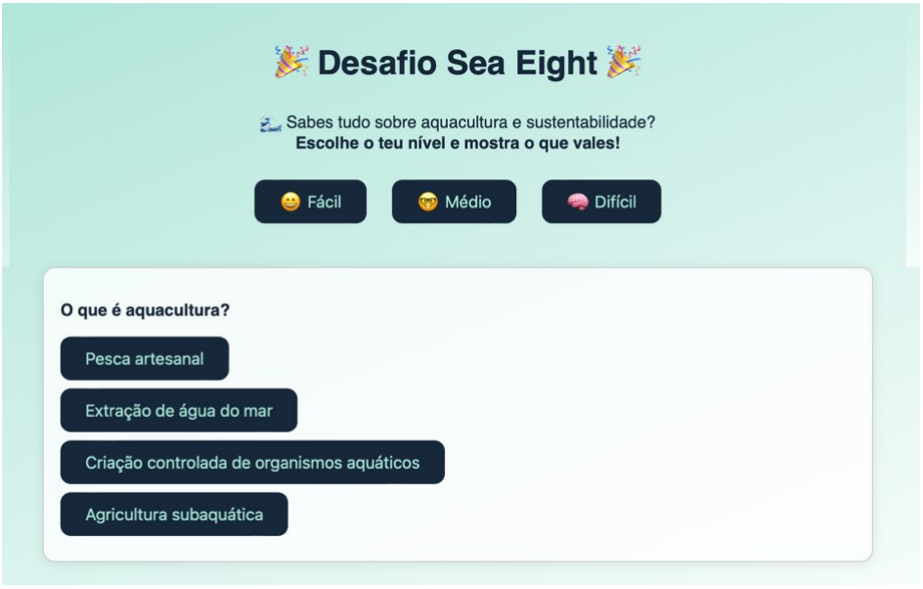


Figure 9 - Example of an easy level question from the Sea Eight quiz. Source: Developed by the author.



Figure 10 - Sea Eight water bottle with sustainable message. Source: Developed by the author.

3.5. Outcomes of the Strategies Developed

Throughout my internship, several strategies were developed to reinforce Sea Eight's communication approach and image (Figure 11). Even without a formal evaluation, it was still possible to see some achievements from the communication work performed. Visual content had the most significant impact, particularly the institutional and short event videos, which helped better showcase the company's values and mission. These formats seem to engage people more effectively, combining narration with captivating images, making complex topics more accessible.

During the events, many visitors expressed that they did not know much about aquaculture and were surprised by the sustainability practices involved. Several people said they left with a more positive impression; some even asked questions or looked up more about the company on the Internet and social media.

The ESG report also played an important role during this process. It helped structure the company's goals and environmental efforts and gathered reliable data from the company in several areas, providing an analysis of what is working properly and what needs improvement.



Figure 11 - Global summary of my intership at Sea Eight. Source: Developed by the author.

Conclusion

This internship at Sea Eight was a valuable opportunity to apply theoretical knowledge in a real context and significantly contribute to the company's communication strategy in sustainable aquaculture. The two main objectives - identify key communication barriers hindering sustainable aquaculture promotion, and develop and implement targeted communication strategies to support Sea Eight’s outreach efforts - were fully achieved.

Through launching and managing social media platforms, developing Sea Eight's first ESG-focused report, and participating in important events such as FCUP's Job Fair, the project effectively increased visibility, boosted consumer confidence, and promoted an informed dialogue about sustainable practices. These initiatives helped demystify aquaculture and highlight its environmental, social, and economic benefits.

On a personal level, this experience strengthened my communication, project management, and problem-solving skills while deepening my understanding of sustainability challenges in the aquaculture sector. I also had the opportunity to develop content in several languages - Portuguese, English, and Spanish - and to adapt messages to different audiences and contexts.

Overall, the internship fulfilled its objectives and created a solid foundation for future communication efforts at Sea Eight, serving as a model for upcoming projects. However, this report is based on practical application and informal review. A more structured assessment of public perception - using surveys or interviews - could further support the analysis of the effectiveness of sustainable aquaculture communication. Future communication initiatives at Sea Eight could benefit from more data-based information to improve message targeting and impact evaluation.

References

Afewerki, S. (2024). Genetics and biotechnology in aquaculture: Revolutionizing seafood production. *Fish Aqua Journal, 15*, 366.

Ahmed, N., Thompson, S., & Turchini, G. M. (2020). *Organic aquaculture productivity, environmental sustainability, and food security: Insights from organic agriculture*. Food Security, 12(6), 1253–1267.

Astral Project. (n.d.). *Explaining IMTA*. https://www.astral-project.eu/explaining-imta

Boyd, C. E., & McNevin, A. A. (2010). Searching for solutions in aquaculture: Charting a sustainable course. *Aquaculture, 308*(1–2), 1–7.

Boyd, C. E., McNevin, A. A., & Li, M. (2020). Aquaculture sustainability and the need for metrics. *Journal of the World Aquaculture Society, 51*(3), 513–528.

Bush, S. R., Belton, B., Little, D. C., & Pham, T. L. (2010). Aquaculture and the global food system: Reexamining the balance between production and sustainability. *Aquaculture Economics & Management, 14*(1), 1–19.

Cai, W., Zhang, Y., Liu, H., Chen, D., & Wang, X. (2021). Application of machine learning in intelligent fish aquaculture: A review. *Aquaculture*, 540, 736724.

Cassou, E. (2018). *Aquaculture*. World Bank. https://hdl.handle.net/10986/29508

El-Kassas, H. T., Ibrahim, M. A., & Omar, W. M. (2023). Impact of aquaculture effluents on aquatic ecosystems: Pollution and mitigation strategies. *Science of the Total Environment, 810*, 152207.

El-Sayed, A.-F. M., & Tacon, A. G. J. (2024). Sustainable aquafeed ingredients: Challenges and opportunities. *Veterinary and Animal Science, 29*, 100381.

European Parliament (2024). *Alternative sources of protein for animal feed*. European Parliamentary Research Service. https://www.europarl.europa.eu/RegData/etudes/STUD/2024/757806/EPRS_STU(2024)757806_EN.pdf

Food and Agriculture Organization of the United Nations (FAO). (2018). *The state of world fisheries and aquaculture 2018 – Meeting the sustainable development goals*. FAO. https://www.fao.org/3/i9540en/I9540EN.pdf

Food and Agriculture Organization of the United Nations (FAO). (2020). *The state of food and agriculture 2020: Overcoming water challenges in agriculture*. FAO. https://www.fao.org/3/cb1447en/cb1447en.pdf

Food and Agriculture Organization of the United Nations (FAO). (2021). *Blue transformation: Roadmap 2022–2030*. FAO. https://www.fao.org/publications/card/en/c/CB7800EN/

Food and Agriculture Organization of the United Nations (FAO). (2022). *The state of world fisheries and aquaculture 2022: Towards blue transformation*. FAO. https://www.fao.org/state-of-fisheries-aquaculture

Friess, D. A., Rogers, K., Lovelock, C. E., Krauss, K. W., Hamilton, S. E., Lee, S. Y., & Primavera, J. H. (2019). The state of the world's mangrove forests: Past, present, and future. *Annual Review of Environment and Resources, 44*, 89–115.

Adu, O. K., Quagrainie, K., Kassah, J. E., & Von Ahnen, M. (2024). Editorial: Sustainable aquaculture production for improved food security. *Frontiers in Sustainable Food Systems, 8*, 1485956.

Fry, J. P., Love, D. C., MacDonald, G. K., West, P. C., Engstrom, P. M., Nachman, K. E., & Lawrence, R. S. (2018). Feed conversion efficiency in aquaculture: Do we measure it correctly? *Environmental Research Letters, 13*(2), 024017.

Gentry, R. R., Froehlich, H. E., Grimm, D., Kareiva, P., Parke, M., Rust, M., Gaines, S. D., & Halpern, B. S. (2017). Aquaculture: A global perspective on its role in food security and its environmental impacts. *Nature Ecology & Evolution, 1*(5), 1–7.

Governo de Portugal (2019). *Decreto-Lei n.º 92/2019, de 10 de julho: Estabelece o regime jurídico da prevenção e controlo das espécies exóticas invasoras*. Diário da República, 136, Série I.

Handy, M. (2024). Aquaculture as a key pillar for sustainable global seafood production and development. *Fisheries and Aquaculture Journal*, 15(2), 1–2.

Hatch, A., Alimentos Ventures, Aqua-Spark, & Coastal Enterprises, Inc. (CEI). (2019). *Financing the aquaculture revolution*. Conservation Finance Network. https://www.conservationfinancenetwork.org/2019/04/15/financing-the-aquaculture-revolution.

Hoekstra, A. Y., & Mekonnen, M. M. (2023). Towards fair water footprints: Global water footprint analysis. *Proceedings of the National Academy of Sciences*, *120*(38), e1203809109.

Hossain, M. D., Rahman, M. M., Uddin, M. N., Sarker, M. R., & Islam, M. S. (2023). Effects of aquaculture effluents on water quality and aquatic organisms: A review. *Environmental Sciences, 11*(2), 155–170.

IGUi Ecologia. (n.d.). *Aquaponia: Uma solução sustentável para produção de alimentos*. https://www.iguiecologia.com/aquaponia/

Kemp, S. (2024). *Digital 2024: Global overview report*. DataReportal. https://datareportal.com/reports/digital-2024-global-overview-report

Leal Filho, W., Fedoruk, M., Paulino Pires Eustachio, J. H., Barbir, J., Lisovska, T., Lingos, A., & Baars, C. (2023). How the war in Ukraine affects food security. *Foods*, *12*(21), 3996.

Lima, I. (2021). Bioflocos: Conheça a substância que permite a reutilização da água e que retira impurezas na piscicultura. *Portal Amazônia*. https://portalamazonia.com/amazonia/bioflocos-conheca-a-substancia-que-permite-a-reutilizacao-da-agua-e-que-retira-impurezas-na-piscicultura/

MacLeod, M. J., Hasan, M. R., Robb, D. H. F., & Mamun-Ur-Rashid, M. (2020). Quantifying greenhouse gas emissions from global aquaculture. *Scientific Reports, 10*, 11679.

Marine Equipment. (n.d.). *RAS 180*. https://www.marineequipment.com.br/ras180/

Martins, C. I. M., Eding, E. H., Verdegem, M. C. J., Heinsbroek, L. T. N., Schneider, O., Blancheton, J. P., d'Orbcastel, E. R., & Verreth, J. A. J. (2010). New developments in recirculating aquaculture systems in Europe: A perspective on environmental sustainability. *Aquaculture, 308*(1–2), 42–57.

Moran, M. N., Jones, D. B., Jensen, S. A., Marcoli, R., & Jerry, D. R. (2024). Optimising commercial traits through gene editing in aquaculture: Strategies for accelerating genetic improvement. *Reviews in Aquaculture*, *16*(3), 1127–1159.

Naylor, R. L., Goldburg, R. J., Primavera, J. H., Kautsky, N., Beveridge, M. C., Clay, J., Folke, C., Lubchenco, J., Mooney, H., & Troell, M. (2000). Effect of aquaculture on world fish supplies. *Nature, 405*(6790), 1017–1024.

Naylor, R. L., Hardy, R. W., Buschmann, A. H., Bush, S. R., Cao, L., Klinger, D. H., Little, D. C., Lubchenco, J., Shumway, S. E., & Troell, M. (2021). A 20-year retrospective review of global aquaculture. *Environmental Science & Technology, 55*(6), 3665–3672.

National Oceanic and Atmospheric Administration (NOAA). (2023). *Global climate report – December 2023*. NOAA National Centers for Environmental Information. https://www.ncei.noaa.gov/

Okomoda, V. T., & Onunkwo, G. C. (2022). The effect of water renewal on growth of *Clarias gariepinus* fingerlings. *Aquaculture Research, 53*(5), 1594–1603.

Oliveira, M. A. M., Silva, A. M. S., Lima, J. A. S., de Sousa, F. R., Santos, L. C., & Barros, C. C. (2022). The farming and husbandry of *Colossoma macropomum*: From Amazonian waters to sustainable production. *Aquaculture Reports, 22*, 100956.

Robinson, N. A., Østbye, T.-K. K., Kettunen, A. H., Coates, A., Barrett, L. T., Robledo, D., & Dempster, T. D. (2023). A guide to assess the use of gene editing in aquaculture. *Reviews in Aquaculture*, 16(2), 775–784.

Spencer Roberts, J., Martínez-Porchas, M., Hernández-Vergara, M. P., & Velasco-Santamaría, Y. M. (2024). Sustainable aquaculture practices for food security: Pathways and challenges. *Science Advances, 10*(5), eadn9698.

Pratiwy, D., & Haetami, K. (2023). Precision aquaculture: Application of smart feeding systems to optimize fish growth and reduce environmental impact. *Aquaculture and Fisheries Studies, 6*(2), 89–97.

Tacon, A. G. J., & Metian, M. (2004). Fishmeal and fish oil in the global aquaculture industry: A review of the supply, demand, and environmental implications. *Aquaculture Research, 35*(7), 689–704.

Tacon, A. G. J., & Metian, M. (2008). A review of the fishmeal and fish oil production: The outlook for 2025. *Science of The Total Environment, 400*(1), 14–22.

Tacon, A. G. J., & Metian, M. (2015). Revisit fishmeal usage and associated consequences in Chinese aquaculture. *Science, 347*(6229), 593–594.

Tocher, D. R. (2015). Omega-3 long-chain polyunsaturated fatty acids and aquaculture in perspective. *Aquaculture, 449*, 94–107.

Troell, M., Kautsky, N., Beveridge, M., Henriksson, P., Primavera, J. H., & Hall, S. (2014). Does aquaculture add resilience to the global food system? *Proceedings of the National Academy of Sciences, 111*(37), 13257–13263.

Troell, M., Chopin, T., Reid, G. K., Knowler, D., Robinson, S. M. C., Neori, A., ... & Halling, C. (2023). The role of integrated multi-trophic aquaculture (IMTA) in sustainable aquaculture systems. *Journal of the World Aquaculture Society, 54*(5), 1169–1184.

Vera, A., Badiola, M., Piedrahita, R. H., & Timmons, M. B. (2021). Recirculating aquaculture systems (RAS): Environmental solution and climate change adaptation. *Journal of Cleaner Production, 297*, 126604.

Yu, Y.-B., Choi, J.-H., Lee, J.-H., Jo, A.-H., Lee, K. M., & Kim, J.-H. (2023). Biofloc technology in fish aquaculture: A review. *Antioxidants, 12*(2), 398.

Zahedi, M., & Mohammadi, M. (2022). Sustainable aquaculture: Opportunities and challenges in global food systems. *Science of The Total Environment, 799*, 149367.