fish watch

2026 | 3rd EDITION

Tilapia, value and welfare: pathways to a new conversation with the sector



alianima | observatório animal

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SUMMARY

1. ABOUT ALIANIMA 4

2. ABOUT ANIMAL WATCH 4

2.1 ABOUT FISH WATCH 5

3. WHY START THIS CONVERSATION NOW? 6

4. WHAT DOES SCIENCE ALREADY TELL US ABOUT TILAPIA PRODUCTION AND WELFARE? 10

5. IS FISH WELFARE WORTH THE INVESTMENT? 15

6. WHAT HAS THE SECTOR ALREADY BEGUN TO RECOGNIZE? 18

7. POSSIBLE PATHWAYS FOR THE TILAPIA SUPPLY CHAIN 22

8. THE WINDOW OF OPPORTUNITY IS OPEN 26

9. REFERENCES 27

10. CONTACT 28



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1. ABOUT ALIANIMA

Alianima is a non-profit organization that works in close collaboration with leaders in the food industry to identify and address the main challenges faced by the animal production chain. We offer partnerships, free consultancy, and technical support to companies committed to improving animals' living conditions and assisting in the implementation of sustainable and animal welfare practices.

Our team is highly specialized, and all our actions and materials are grounded in technical and scientific data. Our goal is to foster an industry that is more attentive to and concerned about animal suffering, as well as consumers who are better informed about the origin of their food, encouraging critical and conscious consumption.

Learn more about our work at alianima.org

alianima

2. ABOUT ANIMAL WATCH

Animal Watch is a platform developed and managed by Alianima to increase transparency regarding public animal welfare commitments made by the food industry in Brazil, facilitating their monitoring by different stakeholders, including the production sector, consumers, research institutions, and government agencies.

Four reports are currently published annually — Pig Watch, Egg Watch, Broiler Watch, and Fish Watch — addressing animal categories that are strongly affected by the production systems in which they are raised. These supply chains are particularly relevant both because of the large number of sentient individuals involved and because of the low levels of animal welfare associated with certain routine farming practices. Among these supply chains, broilers and fish sectors still require greater awareness among stakeholders to encourage the adoption of well-structured public animal welfare commitments in Brazil.

Animal Watch also brings together information and news about our work and the reality of the food production chain, highlighting the role of the industry in implementing significant changes in the way animals are treated. The initiative seeks to increase transparency, strengthen corporate responsibility, and encourage concrete advances in animal welfare in Brazil.

Access: observatorioanimal.com.br

observatório animal

2.1 ABOUT FISH WATCH

Fish Watch is an initiative of Alianima created to increase transparency and foster debate on fish welfare in Brazil's industry. Since its first edition, the project has brought together scientific evidence, technical information, and strategic analyses, with the aim of contributing to increasingly responsible aquaculture production aligned with societal expectations.

In recent years, interest in fish welfare has been growing in different parts of the world. Advances in scientific research, certification schemes, regulatory discussions, and changing consumer and corporate expectations have contributed to greater attention to the living conditions of these animals throughout the supply chain. In Brazil, this agenda is still taking shape, but it has been gaining ground as aquaculture becomes more established and faces new challenges.

In this third edition, Fish Watch focuses on tilapia farming and explores how animal welfare relates to strategic issues for the supply chain, such as operational efficiency, transparency, losses throughout production, final product quality, competitiveness, and perceived value.

By bringing together scientific evidence, market trends, strategic analyses, and perspectives from different stakeholders across the supply chain, this report seeks to contribute to a more informed debate on possible pathways for advancing tilapia welfare in Brazilian aquaculture, encouraging an agenda based on knowledge, dialogue, and collective action.

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fish watch



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3. WHY START THIS CONVERSATION NOW?

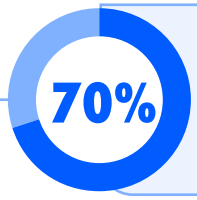
TILAPIA HAS REACHED A NEW LEVEL



Brazilian fish farming is experiencing a period of steady growth. In 2025, national production reached **the historic mark of 1,011,540 tons.**

It represents a **4.41% increase** compared with the previous year (2024) (1).

With this performance, Brazil consolidated its position as **the leading fish farming country in the Americas** (1).

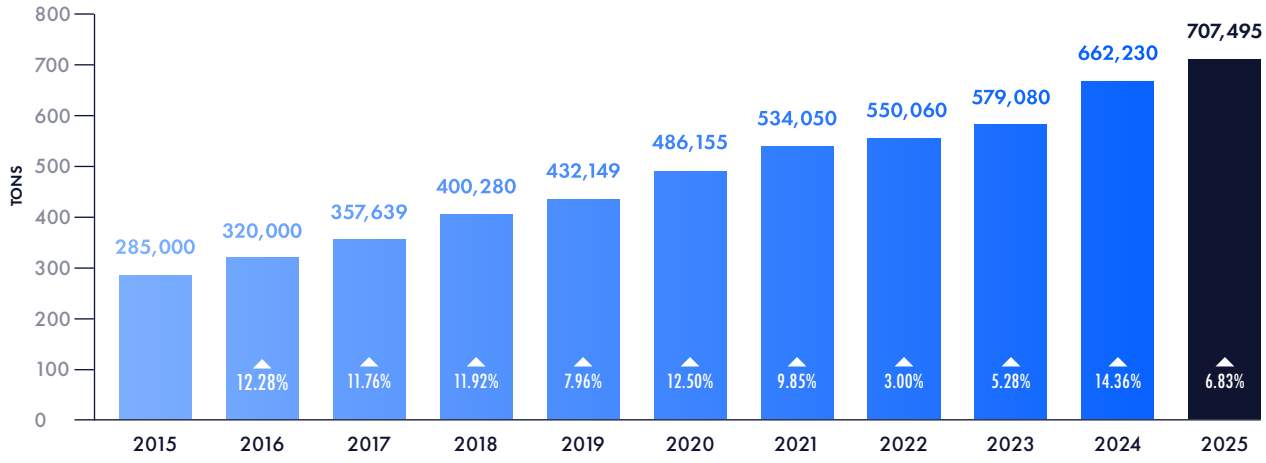


Over the past decades, Brazilian tilapia farming has undergone a significant transformation. What was once a relatively small activity has become the main segment of the country's fish farming sector, currently accounting for nearly **70% of all farmed fish production in Brazil** (1).



In 2025, Brazilian tilapia production reached approximately 707,500 tons, continuing the growth trend observed in recent years. Since 2015, when approximately 285,000 tons were produced, **production volume has increased by 148.2%,** consolidating tilapia as the leading species in Brazilian fish farming (1).

EVOLUTION OF BRAZILIAN TILAPIA PRODUCTION (2015-2025)



Source: (Peixe BR, 2026)

TILAPIA IN NUMBERS (1)



BRAZIL'S LEADING AQUACULTURE SPECIES

707,500 TONS produced in 2025

273,100 TONS produced only in the State of Paraná

+6.8% growth compared with 2024

+148.2% growth over the past decade

More than an increase in production volume, the trajectory of Brazilian tilapia farming reflects the maturation of a supply chain that has expanded, achieved greater scale, and become increasingly relevant to producers, companies, industries, and consumer markets.

GROWTH ACCOMPANIED BY TRANSFORMATION

Production growth did not occur in isolation. This sustained expansion has been driven by growing demand in domestic and international markets, advances in genetic improvement, and improvements in industrial processes, which have increased production scale and diversified the range of products available to consumers (1).

This scenario has driven investments in innovation, genetics, automation, equipment, biosecurity, industrial processing, and new product development, while producers have adopted technologies to increase efficiency, improve production system monitoring, and enhance predictability of results.

Perspectives from companies across different segments of the supply chain reinforce this trend, highlighting the pursuit of greater operational efficiency, stronger health programmes, reduced losses and waste, and the development of increasingly specialised solutions for aquaculture (1).

"Brazilian tilapia farming has reached a high level of development and is well positioned to consolidate Brazil among the world's leading producers of farmed fish. To maintain this trajectory, it will be increasingly important to strengthen an environment conducive to innovation, research, digital transformation, biosecurity, producer training, and expanded market access through public policies that promote competitiveness and sustainability."

Luciene Mignani

Director of Development and Innovation, National Secretariat of Aquaculture – Ministry of Fisheries and Aquaculture (MPA)



WHAT HAS CHANGED IN THE SUPPLY CHAIN?

- Advances in genetics
- Process automation
- Strengthened biosecurity
- Industrialisation
- Product diversification
- Efficiency gains

AN INDUSTRY INCREASINGLY CONNECTED TO THE GLOBAL MARKET

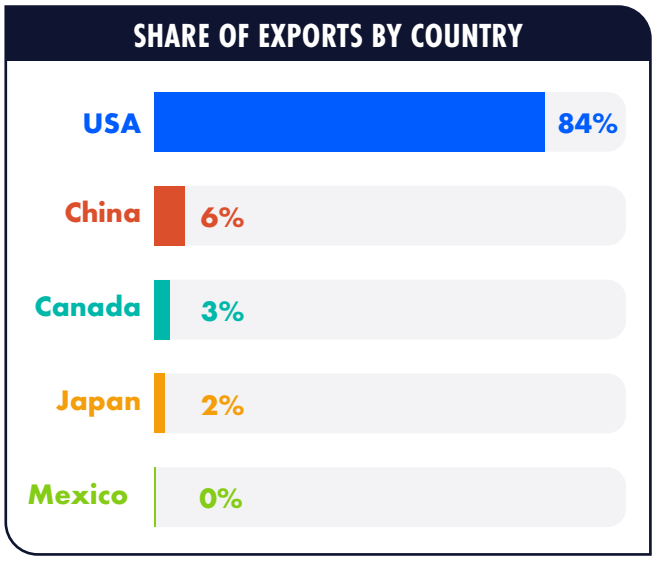
In recent years, **the United States has consolidated its position as the main destination for Brazilian tilapia exports**, while markets such as Canada and Mexico have gained increasing relevance (1). At the same time, the sector has sought to expand its presence in other destinations and diversify commercial opportunities.

This integration into global markets creates new opportunities, but also increases the supply chain's exposure to external factors. Changes in tariffs, economic fluctuations, trade barriers, and the actions of international competitors can directly affect the sector's performance. Recent examples include discussions surrounding US tariff measures on Brazilian seafood, which raised concerns among companies and industry organisations and prompted discussions about seeking new international markets and strengthening the competitiveness of domestic production.

Another issue that has gained prominence in industry discussions is increasing international competition, including the growing presence of imported tilapia in certain segments of the Brazilian market. The issue has also been discussed in the context of the challenges faced by Brazilian fish farming as imports increase, as illustrated by analyses of the entry of tilapia from Vietnam into the Brazilian market.

Despite these challenges, tilapia accounted for approximately **92% of the total volume of fish farming exports from Brazil,** in tons, in 2025 (1).

In more mature supply chains, growth depends not only on increasing production, but also on the ability to adapt to new economic, commercial, and regulatory scenarios.





BEYOND PRODUCTION: NEW QUESTIONS FOR THE FUTURE OF TILAPIA FARMING

For many years, tilapia farming focused its efforts on increasing production, strengthening animal health, and improving genetics. These challenges remain relevant, but as the supply chain becomes more established, new questions are gaining prominence:

- How can losses throughout production be reduced?
- How can the efficiency of farming systems be increased?
- How can product quality be improved?
- How can the expectations of increasingly demanding markets be met?
- How can greater value be generated in a changing competitive environment?

Issues such as traceability, food safety, and sustainability reflect this broader discussion and, across different agri-food supply chains, have become part of long-term development strategies. **In this context, fish welfare is receiving growing attention because of its potential relationship with different aspects of production, including growth, health, losses, production efficiency, final product quality, and transparency.**

"Fish welfare is part of a modern vision of aquaculture production. In addition to contributing to better production performance and higher fish product quality, it represents an advantage in meeting the demands of increasingly demanding markets with regard to sustainability, traceability, and responsibility in food production."

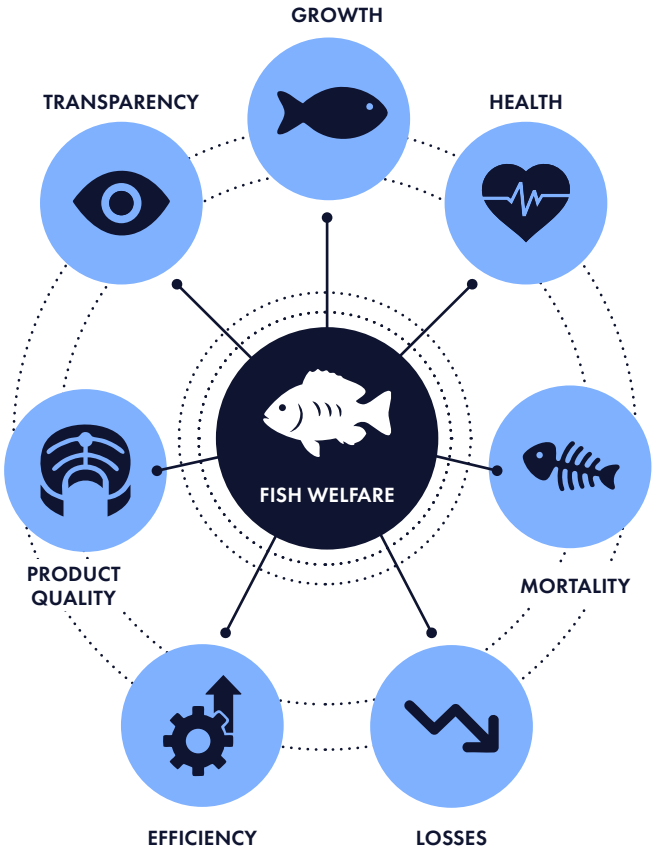
Luciene Mignani
Director of Development and Innovation, National Secretariat of Aquaculture – Ministry of Fisheries and Aquaculture (MPA)



Although some questions still lack definitive answers, scientific interest in the topic is growing. Understanding these relationships is essential to advancing the discussion on the challenges and opportunities facing tilapia farming.

BUT WHAT DOES SCIENCE ALREADY TELL US ABOUT THIS RELATIONSHIP?





4. WHAT DOES SCIENCE ALREADY TELL US ABOUT TILAPIA PRODUCTION AND WELFARE?

Although this is still a relatively recent area of research, the scientific literature already provides important evidence on how different management, environmental, and production conditions can simultaneously influence fish welfare and production indicators, such as growth rates (feed conversion and average weight gain), survival rates, product quality (physicochemical and sensory parameters), and production losses.

This does not mean that all the answers are already available. For many topics, the evidence remains limited and depends on the conditions evaluated. Nevertheless, when the available evidence is considered as a whole, a consistent message emerges: production and management conditions that favour tilapia welfare are often associated with favourable production indicators.

Understanding these relationships can therefore help broaden the discussion about possible pathways for the development of tilapia farming. After all, in increasingly technology-driven and competitive supply chains, understanding how animals respond to the environments in which they live can contribute both to decision-making and to identifying new opportunities for improvement.

The tilapia X-ray presented below brings together the main areas in which science has investigated the connections between production and welfare.

OVERVIEW AND OUTLOOK

This report does not offer definitive answers, but brings together evidence, identifies knowledge gaps, and contributes to a more informed discussion of the challenges and opportunities facing Brazilian tilapia farming.

TILAPIA X-RAY

HEAD
STRESS AND PHYSIOLOGICAL RESPONSES

Stress caused by handling, environmental changes, transport, and pre-slaughter procedures can compromise the physiological balance of fish, diverting energy toward recovery and reducing resources available for other biological functions. In tilapia, minimizing these sources of stress promotes animal recovery and can contribute to productive performance and the quality of the final product.

BODY
GROWTH AND FILLET QUALITY

Production conditions directly influence tilapia growth and fillet quality—particularly stocking density, which affects space, the social environment, and access to resources. Therefore, performance assessment must consider multiple indicators, as increases in total biomass may be associated with reduced individual growth or changes in the quality of the final product.

GILLS
WATER QUALITY AND PRODUCTION CONDITIONS

Gills play essential roles in respiration and the maintenance of physiological balance in fish, making water quality a key factor for the welfare of tilapia. Water in suitable conditions can contribute to the animals' health, improved growth and survival rates, and, consequently, productive performance.

Adequate physiological conditions favour production performance, product quality, and the efficiency of farming systems.



Picture: Pngtree

FINS
SOCIAL ENVIRONMENT AND AGGRESSION

Social interactions and aggression can directly influence welfare and productive performance of tilapia, particularly given that the species is naturally territorial. Stocking density and environmental characteristics affect hierarchy formation, the occurrence of disputes, and energy expenditure; when inadequate, these factors can lead to injuries and compromise production efficiency.

BELLY
HEALTH, SURVIVAL, AND LOSSES

Inadequate production conditions can compromise the welfare and health of tilapia, increasing their vulnerability to health issues and reducing survival rates. Although research on this relationship remains limited, understanding these factors is crucial for minimizing losses throughout the production process.

TAIL
TRANSPORT, SLAUGHTER, AND PRODUCT QUALITY

The final stages of production—such as fasting, harvesting, transport, and stunning—are particularly critical for tilapia welfare and can influence fish quality. Adopting strategies to reduce pre-slaughter stress aids animal recovery and contributes to preserving key characteristics of the final product, such as texture, water-holding capacity, and the progression of *rigor mortis*.

ENVIRONMENT
ENVIRONMENTAL ENRICHMENT AND FUNCTIONAL NUTRITION

The use of structures and conditions that enrich the environment and diet—such as substrates for periphyton growth, exercise-promoting stimuli, and probiotics—favors natural behaviors, optimal physiological conditions, and the nutrition of tilapia. Although the evidence is still emerging, these interventions can simultaneously contribute to animal welfare and production performance.

Environment, nutrition, and health conditions influence fish quality of life as well as productivity.

TILAPIA X-RAY

Each of these areas represents a body of scientific evidence that helps us understand how welfare can influence different production outcomes in tilapia farming.

HEAD

WHAT THE EVIDENCE SUGGESTS

✔ Reducing pre-slaughter stress promotes physiological recovery in fish (2)

✔ Lower stress levels are associated with improved fillet characteristics* (2,3)

✔ Certain environmental stimuli** can attenuate stress-related ventilatory responses (4)

⚠ **There are still few studies on the production effects of chronic stress.**

*pH, colour, texture, water-holding capacity, cooking weight loss, and shear force

**water flow

FINS

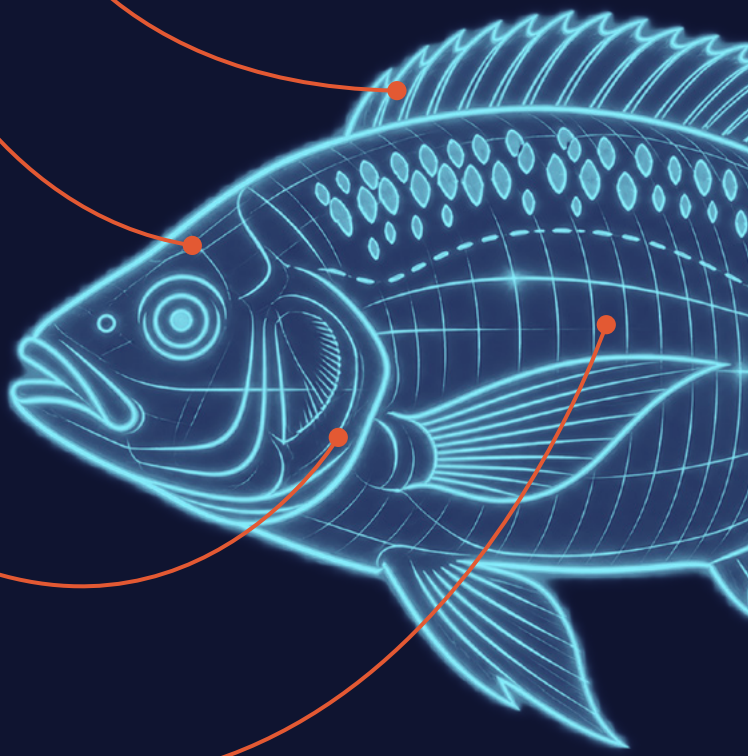
WHAT THE EVIDENCE SUGGESTS

✔ Stocking density influences social behaviour in tilapia (8)

✔ Aggressive interactions can affect welfare and increase the risk of injuries (9)

✔ Reducing social conflicts can benefit both fish and production (8,9)

⚠ **The balance between stocking density and welfare is complex and requires further study.**



GILLS

WHAT THE EVIDENCE SUGGESTS

✔ Better water quality promotes health and production performance (5)

✔ Environmental conditions affect gill structures, growth, and survival (5,6)

✔ More favourable environments can increase survival and production(6)

⚠ **There is still limited data on optimal thresholds for different farming systems.**

BODY

WHAT THE EVIDENCE SUGGESTS

✔ Lower stocking densities may favour growth and final product yield (5,7)

✔ Production conditions can affect final product quality (7)

✔ Greater biomass does not always correspond to better individual performance (5,7)

⚠ **There is still no single solution applicable to all production systems.**

BELLY

WHAT THE EVIDENCE SUGGESTS

✔ Better physiological condition may reduce the risk of production losses (5,6)

✔ Environmental quality* promotes growth and increases survival rates (6)

⚠ **The relationship between welfare, mortality, and economic returns remains poorly studied.**

*use of bamboo substrate enrichment

ENVIRONMENT

WHAT THE EVIDENCE SUGGESTS

✔ Environmental enrichment can benefit both fish and production (6, 10)

✔ Controlled exercise has the potential to improve performance and product quality (11)

✔ Probiotics have shown positive effects on growth and behaviour (12)

⚠ **More studies are still needed under commercial-scale conditions.**

TAIL

WHAT THE EVIDENCE SUGGESTS

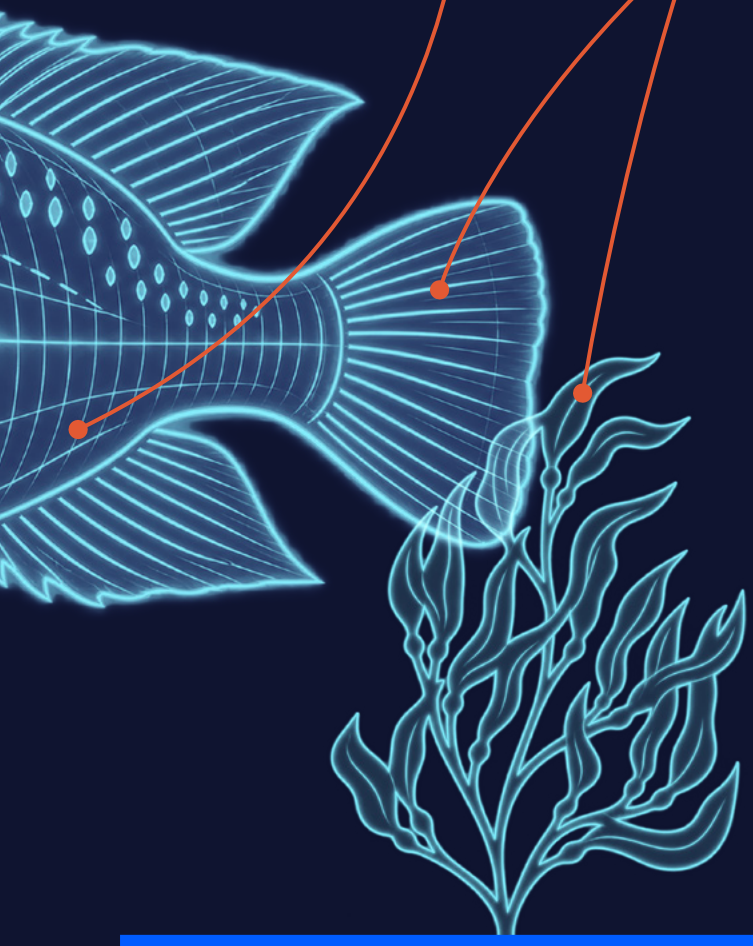
✔ Transport affects welfare and product quality (2,3)

✔ High transport densities compromise fillet quality (2)

✔ Pre-slaughter rest promotes physiological recovery and improves fillet quality (2)

✔ Less stressful slaughter methods can preserve fillet attributes (13, 14)

⚠ **There are still few economic studies evaluating these practices.**



WHAT DO THESE STUDIES HAVE IN COMMON?

Although the evidence remains incomplete and research has investigated different aspects of production, the findings presented throughout this chapter point in the same direction:

Conditions that reduce sources of stress, improve the production environment, or minimise challenges faced by fish are often associated with favourable production indicators.

This does not mean that there is a single solution applicable to all production systems or that all relationships are fully understood. However, the available results indicate that welfare should not be viewed solely as an ethical issue, but also as a relevant factor in production efficiency, final product quality, and the reduction of losses throughout the supply chain.

1. LESS STRESS AND SUFFERING DURING PRODUCTION, HANDLING AND SLAUGHTER
2. BETTER FISH WELFARE STATUS
3. BETTER PRODUCTIVITY AND PERFORMANCE INDICATORS
4. REDUCTION OF LOSSES AND BETTER FINAL PRODUCT QUALITY

WHAT DO WE KNOW SO FAR?

The available scientific evidence is still limited compared with other areas of animal production. Nevertheless, existing studies make it possible to identify topics where positive relationships between welfare and production already show consistent patterns, as well as areas where knowledge remains limited.

STATE OF THE EVIDENCE	
TOPIC	**CURRENT SCENARIO**
Stress	🟢 Consistent evidence
Transport and pre-slaughter	🟢 Consistent evidence
Growth and stocking density	🟢 Consistent evidence
Environmental enrichment	🟡 Promising evidence
Exercise and functional nutrition	🟡 Promising evidence
Health and survival	🟡 Limited evidence
Economic impacts	🔴 Limited data available

FINAL MESSAGE

The scientific literature on tilapia welfare is still developing, but it already provides relevant evidence on the relationship between fish management, production, and slaughter conditions and different production indicators. Growth, fillet quality, survival, health, and losses throughout the supply chain are among the topics already investigated.

Although many questions remain open and the economic impacts of welfare improvements are still poorly documented, it is clear that animal welfare and productivity are interconnected dimensions of aquaculture systems seeking ethics, efficiency, quality, transparency, and long-term sustainability.

LOOKING AHEAD

One question remains open: **If welfare improvements can generate production benefits, what is the actual cost/investment required to implement them in practice?**

Answering this question requires looking beyond biological and production indicators and also considering the economic dimension of production. This is precisely the topic of the next chapter.



Picture: Shutterstock

5. IS FISH WELFARE WORTH THE INVESTMENT?

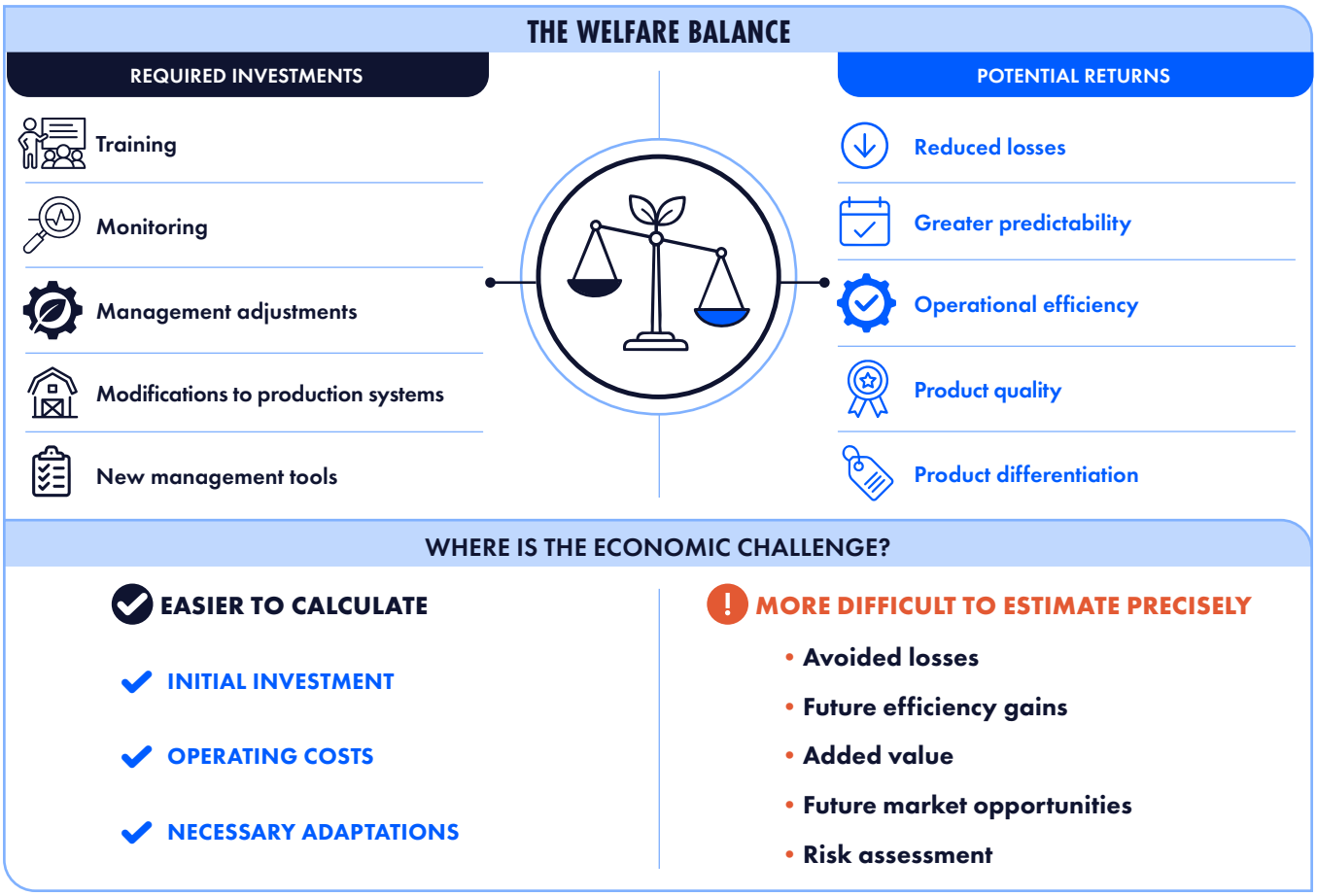
THE ECONOMIC QUESTION

Investing in technology, training, monitoring, improved management practices, or modifications to production systems aimed at improving fish welfare requires planning and resources. Considering that such improvements can also bring production benefits, as discussed in the previous chapter, a question naturally arises:

Does producing under better conditions for fish mean higher production costs?

The answer is not straightforward. Some changes may require initial investments, such as infrastructure adjustments, staff training, or the adoption of new management practices. At the same time, these strategies may be associated with benefits across different aspects of production, including reduced avoidable losses, greater process control, and improved product quality.

The challenge lies in understanding this relationship broadly. Some costs are easy to identify, while certain benefits emerge indirectly or over time, and the actual economic gains remain uncertain. Economically assessing welfare-related improvements requires considering not only the investment involved, but also how these changes may contribute to production systems that are more efficient, predictable, and prepared for new scenarios.



The main challenge is not identifying the costs, but accurately measuring all the potential returns across the supply chain.

COMPETITIVENESS IN A CHANGING ENVIRONMENT

As presented in Chapter 1, Brazilian tilapia farming is experiencing a period of growth and consolidation, becoming increasingly relevant to the economy and fish market (1). In this context, commercial, economic, and regulatory factors directly influence the strategies adopted by different segments of the supply chain.

Recent discussions surrounding the US tariff measures on Brazilian products illustrate this new scenario. As one of the main destinations for Brazilian tilapia exports, the US market is strategically important to the supply chain. The initial impacts of the measure led to a decline in Brazilian fish farming exports, while also stimulating discussions about market diversification, strengthening competitiveness, and reducing dependence on specific buyers. More recent data indicate that the sector has demonstrated an ability to adapt, with exports remaining stable despite this uncertain trade environment.

At the same time, the growing presence of tilapia imported from Vietnam in the Brazilian market has introduced new elements into the competitiveness debate. The discussion involves different factors, including production costs, operational efficiency, commercial conditions, and the ability to differentiate domestic products. The issue has gained prominence in analyses of the economic impacts of Vietnamese tilapia on the Brazilian market. In this context, the sector is also seeking to expand commercial opportunities. A recent example was the resumption of discussions with the European Union on trade in Brazilian seafood, reinforcing the importance of maintaining the capacity to serve different markets and meet their respective requirements.

These developments show that competing in more dynamic markets depends on multiple attributes. Price remains important, but quality, consistency, confidence in production processes, and the ability to meet different demands are also becoming part of the equation.

THE NEW COMPETITIVE ENVIRONMENT FOR TILAPIA FARMING IN BRAZIL



A SECTOR IN TRANSFORMATION

- Greater integration into global markets
- Need for commercial diversification
- Increasing international competition
- Pursuit of differentiation beyond price

WELFARE: ADDITIONAL COST OR STRATEGY?

In this context, fish welfare is being discussed not only as an ethical issue, but also as part of a broader perspective on efficiency, quality, and the sector's preparedness for new challenges. Although its economic impacts vary across production systems and gaps remain in their measurement under commercial conditions, the available evidence indicates that several welfare practices may contribute strategically to better outcomes.

In addition to production impacts, welfare can also play a strategic role in markets where transparency, differentiation, and trust are becoming increasingly important. The discussion on certification, added value, and market access was explored in greater depth in the previous edition of Fish Watch and remains relevant to understanding the future pathways of the supply chain.

Thus, the question may not simply be "how much does it cost to produce with higher animal welfare?", but also:

How can the sector prepare to produce more competitively in an environment that increasingly values quality, transparency, and responsibility?

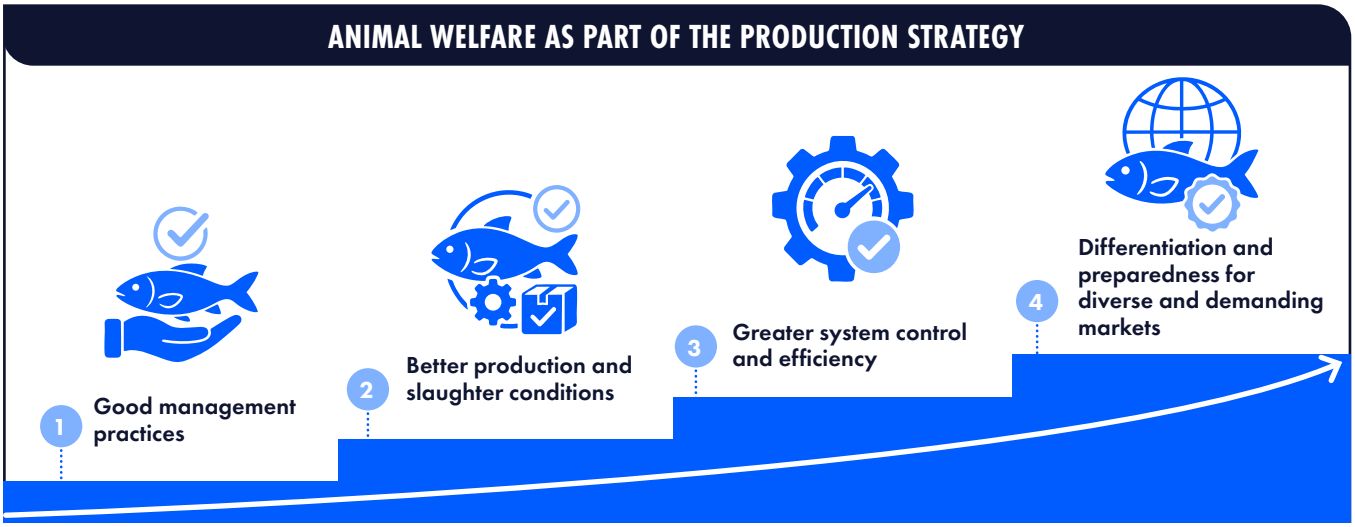
FINAL MESSAGE

Important gaps remain regarding the specific costs, benefits, and economic returns associated with welfare improvements across different production systems. This means that there is no single answer applicable to the entire supply chain, nor universal solutions for every production context.

However, the absence of definitive answers should not be interpreted as an obstacle to decision-making. In a sector seeking greater efficiency, competitiveness, and adaptability to new scenarios, incorporating animal welfare into the production strategy represents an opportunity to strengthen the supply chain and increase its preparedness for emerging challenges.

As markets, companies, and consumers increasingly discuss clearer standards for responsible production, anticipating this debate represents a unique strategic opportunity for Brazilian tilapia farming.

The future of tilapia farming depends not only on the ability to produce more, but also on the ability to produce better, with greater efficiency, quality, and a long-term perspective.



6. WHAT HAS THE SECTOR ALREADY BEGUN TO RECOGNIZE?

THE CONVERSATION HAS ALREADY BEGUN

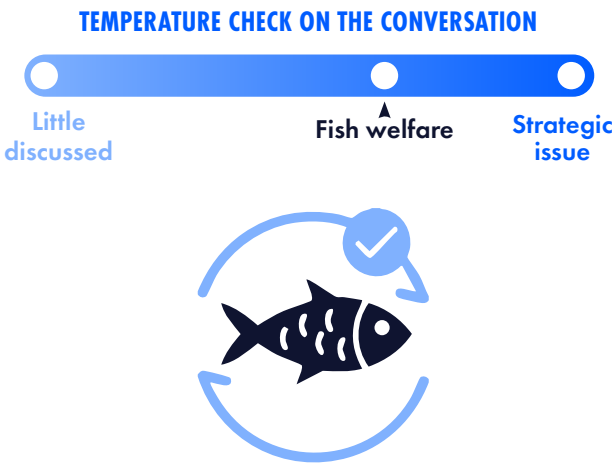
Although levels of knowledge and engagement still vary, companies and organisations across the supply chain are beginning to broaden the scope of their discussions. Risk management, quality, traceability, transparency, innovation, and preparedness for new markets are becoming increasingly prominent in this process. In many cases, this shift is taking place gradually, driven by commercial demands, technical advances, and the pursuit of more efficient production systems.

Based on our experience working in the sector and on interviews with professionals from different segments of the tilapia supply chain — including production, genetics, technical consulting, and corporate relations — this chapter explores how this shift is beginning to emerge across different parts of the tilapia supply chain, bringing together emerging perspectives on the role of animal welfare in this new context.



Picture: Pexels

FISH WELFARE IS BEGINNING TO OCCUPY A NEW SPACE IN SECTOR DISCUSSIONS



WHAT COMES UP MOST OFTEN IN THESE CONVERSATIONS?

- Healthiness and nutritional quality
- Product quality
- Production efficiency
- Food safety
- Traceability
- Transparency
- Sustainability
- Competitiveness

The following pages present some of the main perspectives on the challenges and opportunities associated with fish welfare in tilapia farming.

FROM ISOLATED PRODUCTION INDICATORS TO A MORE INTEGRATED VIEW

For many years, discussions in tilapia farming focused on aspects directly related to production performance, such as **growth, feed conversion, health, mortality, and processing yield.** These indicators remain fundamental to decision-making in the sector, but there is now a growing recognition that they should not be analysed in isolation, but rather within a broader context and as part of a more integrated view.

"Today, the sector's competitiveness depends not only on production efficiency, but also on the ability to demonstrate a commitment to quality, food safety, social and environmental responsibility, and transparency. Final product quality is the result of every stage of the production process. Aspects related to management, health, transport, and processing influence not only production indicators, but also the quality of the fish product that reaches consumers."

Valério Angelozi

Owner of the Fish Farm Super Fish and
President of *Peixe Paraná*
(Paraná Aquaculture Association)





WHAT SEEMS TO BE CHANGING?

- A more integrated view of production
- Greater connection between different indicators
- Growing recognition of healthiness and nutritional quality, transparency, and traceability
- Welfare becoming part of broader sector discussions

BETWEEN PERCEPTION AND PRACTICE

Although interest in fish welfare is growing across the sector, its incorporation into day-to-day supply chain practices still depends on important advances. One of the main challenges is translating broad concepts into practices that can be applied in everyday production. To achieve this, the topic needs to be connected to objective indicators, well-defined processes, and tools that make it possible to monitor results over time.

In addition, the adoption of good animal welfare practices in tilapia farming involves several interconnected factors, including **water quality, health, environmental conditions, stocking density, management, feeding, transport, and slaughter procedures**. These aspects were discussed in depth in the previous edition of Fish Watch. An integrated perspective is essential to prevent welfare from being treated superficially or in isolation.

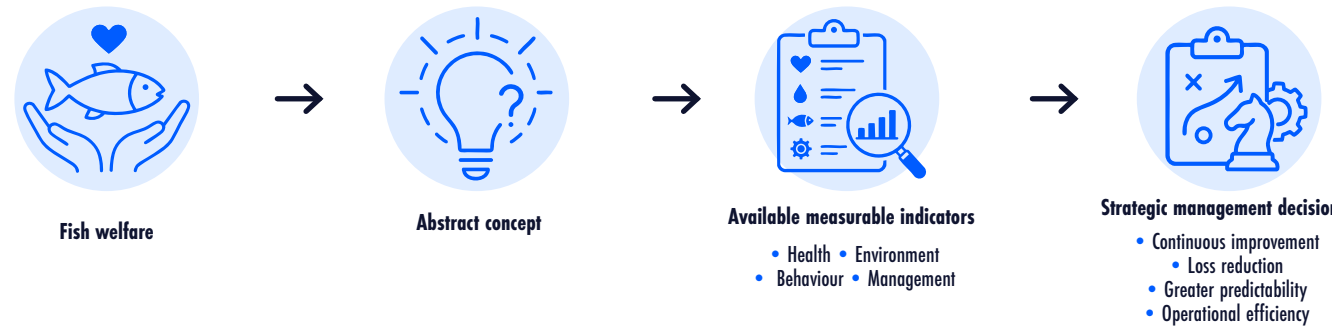
Another point highlighted in sector discussions is the need for **capacity building and knowledge dissemination**. The availability of technical information and assessment tools represents an important step forward, but their application depends on the ability to translate knowledge into practical decisions within production systems.

"Advancing welfare in Brazilian aquaculture is not about imposing barriers, but about demonstrating that improving practices is compatible with productivity, efficiency, and market access. When the topic is translated into practical indicators — reduced mortality, better fillet quality, greater predictability — it ceases to be a cost and becomes a management and competitiveness tool."

Murilo Quintiliano
Chief Operating Officer (COO), FAI Farms



AN OPPORTUNITY IN THE MAKING



WHAT HELPS TURN THE DISCUSSION INTO PRACTICE?

- Objective indicators
- Technical training
- Monitoring tools
- Integration between production, industry, and markets

FROM PRODUCTION TO MARKET: A NEW OPPORTUNITY FOR CONNECTION

As tilapia farming becomes increasingly integrated into markets, it becomes more important to communicate not only product quality, but also how the product is produced, providing consumers and commercial partners with information on **origin, production practices, and social and environmental commitments**. In this context, issues such as transparency, traceability, and sustainability are gaining ground in supply chain strategies and creating new opportunities to incorporate animal welfare into this discussion.

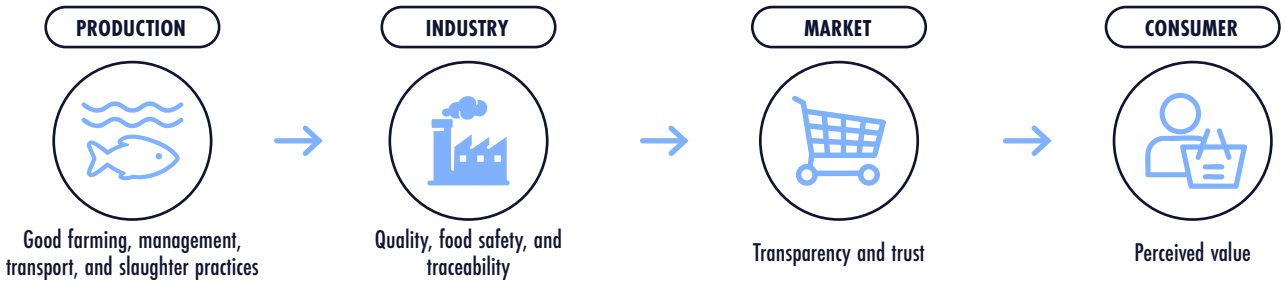
While aspects such as quality, food safety, and health management are already part of many corporate discussions, animal welfare still appears less frequently in strategies related to seafood. This represents a challenge, but also an opportunity. In a market increasingly attentive to how food is produced, implementing and demonstrating good animal welfare practices can help not only meet future expectations, but also strengthen trust in the supply chain.

"As tilapia consolidates its position as a protein associated with health and sustainability, there is also a growing opportunity to incorporate animal welfare into this positioning. In a competitive international environment, the sector can integrate animal welfare both into strategies aimed at increasing yield and quality and reducing losses, and into a strategy for market differentiation and positioning."

Beatriz Veloso
Corporate Relations Manager, Alianima



THE FLOW OF INFORMATION ACROSS THE SUPPLY CHAIN



AN OPPORTUNITY IN THE MAKING

PRESENT

- Quality and food safety are already more firmly established
- Traceability and transparency are gaining ground
- Animal welfare is beginning to be incorporated into these discussions

FUTURE

- Integrate welfare, quality, and sustainability as part of the value proposition of the supply chain

The sector's evolving perception indicates that fish welfare is beginning to occupy a new space in discussions about the future of tilapia farming. The next challenge is to turn this opportunity into practical, monitored strategies aligned with the different realities of the supply chain.

7. POSSIBLE PATHWAYS FOR THE TILAPIA SUPPLY CHAIN

ANTICIPATING CHANGE, BUILDING OPPORTUNITIES

Throughout this report, we have seen how science, production, and markets are broadening the discussion around tilapia welfare. Against this backdrop, the question is no longer whether this topic will become part of the future of the supply chain, but how the sector can prepare to incorporate it gradually and consistently, in alignment with its own needs.

In this context, anticipating trends becomes an important strategy. Waiting for new demands to become established before seeking solutions may reduce the sector's ability to adapt in the short term and limit opportunities for differentiation. By contrast, proactively following these changes allows companies and organisations in the sector to be better prepared to respond to change and strengthen their positioning over time.

Fish welfare should therefore be part of this process. Rather than simply responding to future requirements, its gradual incorporation into production systems can contribute to continuous improvement, knowledge generation, and the sector's preparedness for new challenges.

"What we have learned from other supply chains, such as salmon, is that anticipating these discussions is much more effective than reacting to them. In tilapia farming, we are still facing a different reality, but I believe we should learn from these experiences before these demands become market requirements."

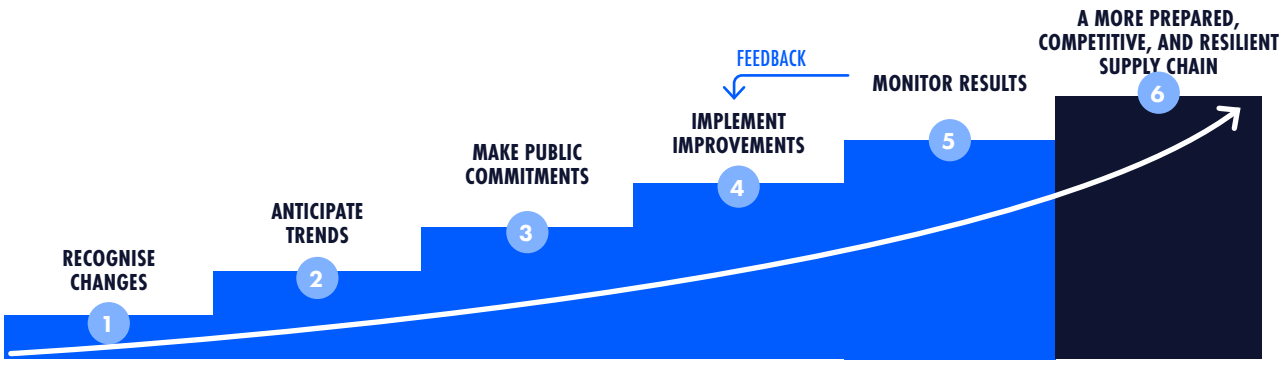
Marina Delphino
Fish Health and Quality Solutions Manager — GenoMar Genetics



FROM STRATEGY TO IMPLEMENTATION

Anticipating change is only the first step. For fish welfare to become part of the supply chain's strategy, it needs to be incorporated into day-to-day management through structured processes, with indicators and continuous monitoring.

FROM AWARENESS TO ACTION



The evolution of welfare in tilapia farming depends less on isolated actions and more on building a continuous process based on appropriate planning, implementation, and monitoring.

In recent years, the availability of assessment tools, technical protocols, and monitoring systems has increased the sector's ability to objectively assess different aspects of tilapia welfare. In addition to measuring outcomes, these approaches help identify opportunities for improvement, guide decision-making, and track the evolution of practices over time.

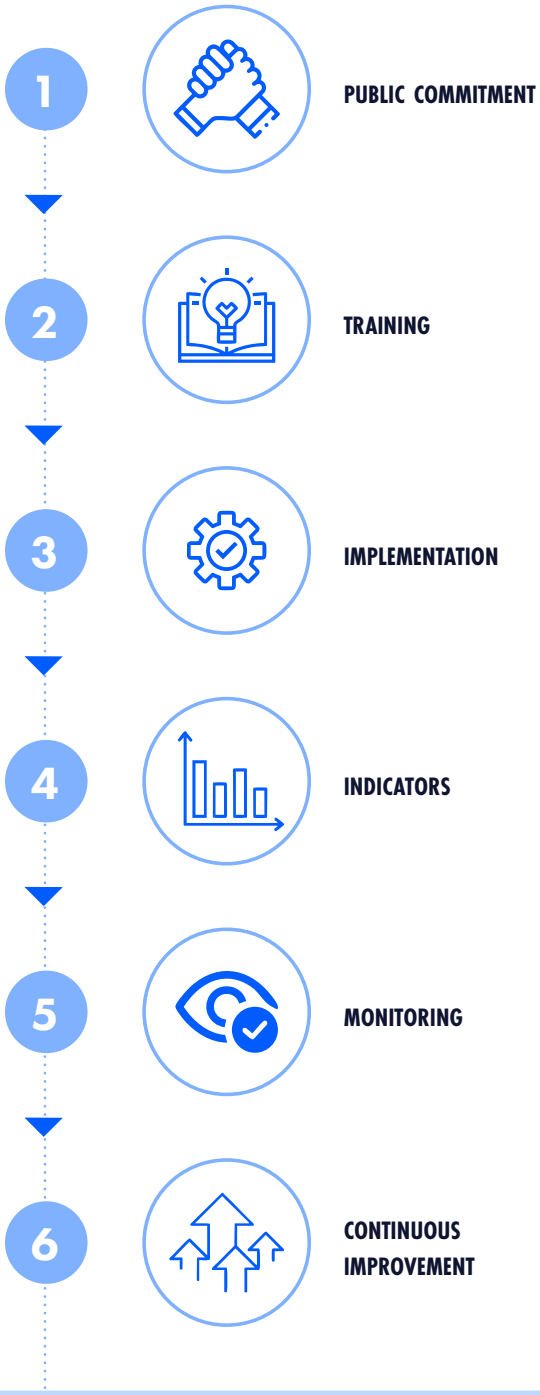
"The main challenge is still turning animal welfare into an operational routine rather than just a concept. This involves staff training, process standardisation, indicator monitoring, and building an organisational culture focused on continuous improvement. Methodologies and platforms already exist that allow indicators to be assessed in a standardised way, making decisions much more technical and evidence-based."

Marina Delphino
Fish Health and Quality Solutions Manager — GenoMar Genetics



In this process, public commitments should serve as important management tools. By establishing priorities, clear reference parameters, and monitoring mechanisms, they help organise the implementation of improvements and strengthen transparency towards different stakeholders.

TURNING COMMITMENT INTO MANAGEMENT



EVIDENCE-BASED MANAGEMENT

Advancing welfare in tilapia farming increasingly depends less on subjective perceptions and more on the use of clear indicators, protocols, and tools that make it possible to track the evolution of practices over time. This approach supports more consistent decision-making and continuous improvement processes.

BUILDING VALUE ACROSS THE SUPPLY CHAIN

It is already clear that creating value for tilapia farming involves more than increasing production. As consumers, commercial partners, and markets increasingly value attributes related to how food is produced, aspects such as transparency, traceability, and good practices are becoming part of the strategy to strengthen and enhance the value of the supply chain, as discussed throughout this report.

Incorporating animal welfare practices into tilapia farming in a planned manner can therefore support the sector's positioning in markets increasingly attentive to aquaculture practices.

"Issues such as origin, traceability, and the adoption of good practices have become attributes valued by consumers and commercial partners, contributing to added value for the product and strengthening the sector's image."

Valério Angelozi

Owner of the Fish Farm Super Fish and
President of *Peixe Paraná*
(Paraná Aquaculture Association)



The opportunities are not limited to market positioning. Experience from other supply chains shows that anticipating trends can be highly effective in practice. In this context, observing these trajectories can help tilapia farming develop solutions aligned with its own reality. And this process also depends on concrete results achieved within production itself.

"Improvements in the environment, nutrition, health, and management create better welfare conditions for tilapia while also supporting production outcomes, such as reduced mortality, greater feed efficiency, and lower incidence of stress and disease. In practice, welfare and economic performance go hand in hand."

Murilo Quintiliano

Chief Operating Officer (COO), FAI Farms



Fish welfare does not replace other supply chain strategies. It can strengthen them by connecting production, markets, governance, and trust around shared objectives.

BUILDING SOLUTIONS TOGETHER

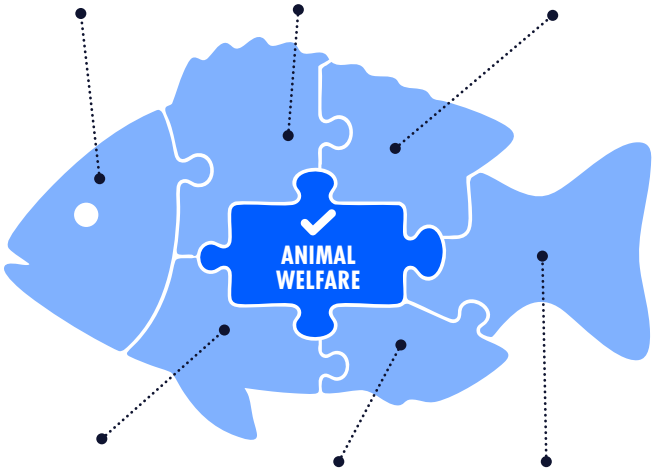
Strengthening the welfare agenda in Brazilian tilapia farming will depend on the joint action of different supply chain actors. Producers, companies, retailers, researchers, certification bodies, and public authorities all play complementary roles in this process. By promoting dialogue, generating and disseminating knowledge, and supporting the practical and gradual implementation of improvements, collaborative initiatives can contribute to a supply chain that is better prepared for future challenges.

ANIMAL WELFARE: A COLLECTIVE UNDERTAKING

Producers implement good practices and innovation; share experiences

Companies develop strategies; make public commitments

Researchers generate evidence; develop indicators



Public authorities public policies; enabling regulatory environment

Certification bodies develop standards; support assessment processes

Retailers promote transparency; strengthen responsible supply chains

Strengthening welfare across the tilapia supply chain depends on the contribution of different actors to the development of practical solutions.

ALIANIMA'S ROLE

- **Knowledge generation and dissemination**
- **Dialogue with companies**
- **Training and technical support**
- **Institutional coordination**
- **Public policy engagement**

"Quality, food safety, and sustainability are already part of the corporate vocabulary. The challenge now is for animal welfare to stop being treated as a separate agenda and to be recognised as a factor that influences these very objectives."

Beatriz Veloso
Corporate Relations Manager — Alianima





Public commitments on tilapia welfare: the next essential step

Incorporating welfare into the tilapia supply chain requires clear public commitments capable of guiding the gradual implementation of improvements. With this in mind, Alianima has developed a guide to support companies in establishing transparent, consistent commitments aligned with best practices.

ACCESS IT FREE OF CHARGE HERE

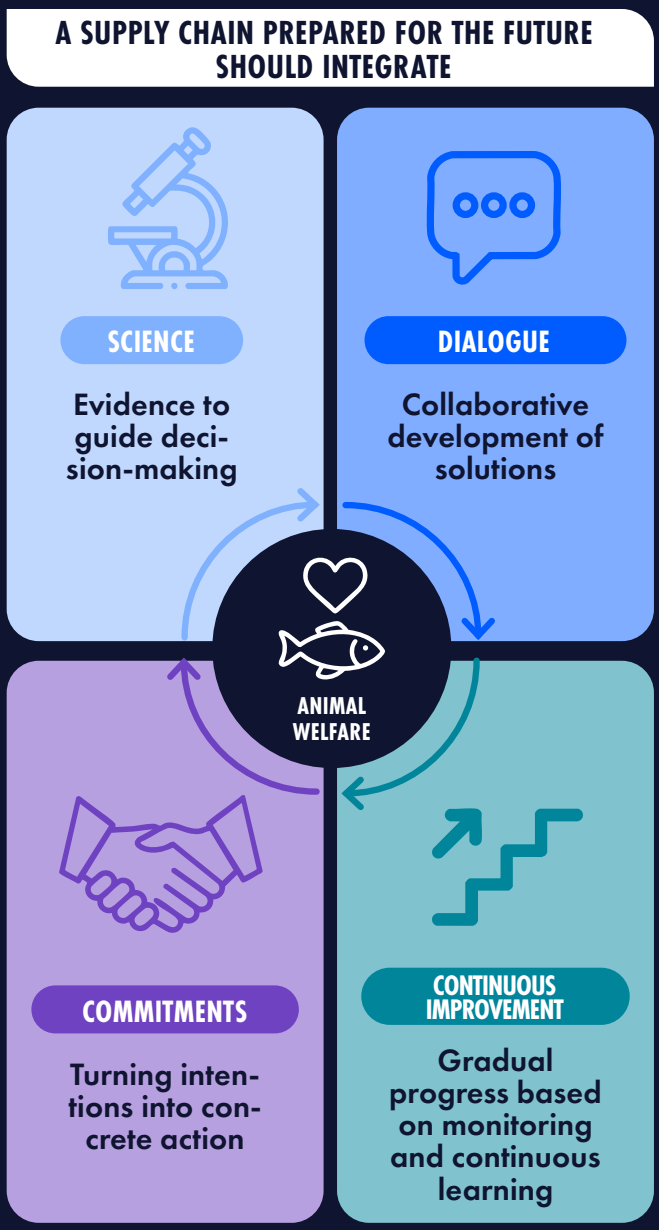
8. THE WINDOW OF OPPORTUNITY IS OPEN

Throughout this Fish Watch, we have seen how the Brazilian tilapia supply chain has undergone a significant process of growth and maturation. This expansion has created new opportunities, but has also reinforced the importance of keeping pace with changes taking place in science, markets, and societal expectations regarding how food is produced.

In this context, fish welfare can be understood as part of a broader continuous improvement agenda. When grounded in scientific and technical evidence and gradually incorporated into the realities of the supply chain, it can contribute to strengthening product quality, reducing losses, increasing the efficiency of production systems, enhancing transparency, improving competitiveness, and preparing the sector for new challenges and opportunities. At the same time, expanding applied research, particularly under Brazilian production conditions and through integrated assessments of production, economic, and welfare impacts, will be essential to strengthen the knowledge base that will guide this evolution.

The future of this agenda will depend on the ability to develop solutions collaboratively, involving producers, companies, retailers, researchers, certification bodies, civil society organisations, and public authorities. Strengthening this agenda will therefore also depend on the development of public policies, incentives for innovation, and greater integration between science, the production sector, and government. Rather than providing definitive answers, this report seeks to broaden this dialogue and encourage the joint development of possible pathways for Brazilian tilapia farming.

This conversation is only just beginning. The sooner different actors become involved in this process, the greater the opportunities to strengthen a supply chain that is increasingly responsible, transparent, and competitive.



Strengthening Brazilian tilapia farming depends on the ability to integrate knowledge, cooperation, and commitment around shared objectives. When these elements come together, animal welfare becomes part of building a supply chain that is better prepared for the future.

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