

The global food system provides fundamental nutrition for human survival and is critical to economic, environmental and social well-being. But in its current state, it is a major contributor to environmental degradation, social and health inequities and climate change. To mitigate these impacts, while protecting both people and planet, we need urgent action to systemically transform global food production.

The global food system is the major cause of environmental degradation and a major contributor to climate change, accounting for



24% of global greenhouse gas emissions¹



93% of the world's fishery stocks, which are either fully or over-exploited⁴



Conversion of **half** of the world's habitable land for agriculture²



78% of global ocean and freshwater algal blooms caused by agricultural pollution⁵



70% of global freshwater withdrawals for agriculture³



70% of terrestrial biodiversity loss⁶

Transforming the global food system requires commitment from companies that can influence and impact commodity production and movement around the world. The increasing ethical demands from shareholders and stakeholders create a clear business case for action across the supply chain. Growing stakeholder and consumer expectations also demand that businesses lead the way on sustainability solutions. Without meaningful action, businesses risk their reputations, profits and longevity.



FARMED SHRIMP: AN INDUSTRY RIPE FOR CHANGE

Farmed shrimp is an industry poised for transformation. Globally, shrimp is the most valuable traded seafood by volume, representing \$32 billion in annual trade. Through controlled intensification, farmed shrimp has the potential to sustainably support the growing global demand for animal protein by using resources more efficiently, maximizing yields and reducing inputs.

Even though farmed shrimp has been characterized as one of the most environmentally and socially destructive commodities, major industry actors have *recently made progress* working collaboratively to address sector-wide issues. The challenges and opportunities in farmed shrimp are emblematic of many food commodities. Thus, transforming shrimp supply chains offers an opportunity for businesses to apply learnings—in principle and practice—to other commodities.

Collective Action in Seafood

The *Seafood Task Force* is a consortium of seafood processors, feed producers, buyers, retailers, government representatives and NGOs who have joined together in pre-competitive fashion to address issues surrounding traceability, transparency, illegality and environmental and social issues in seafood supply chains. Since 2016, the Task Force has mapped the supply chains of buyers and processors, implemented track and trace systems for visibility, engaged with government and industry to upgrade conduct and legislation codes and supported fishery reforms. With an overarching objective to achieve full supply chain oversight, Task Force members are working together with the view that "the sum is greater than its parts" and that industry improvements will ultimately benefit every actor.

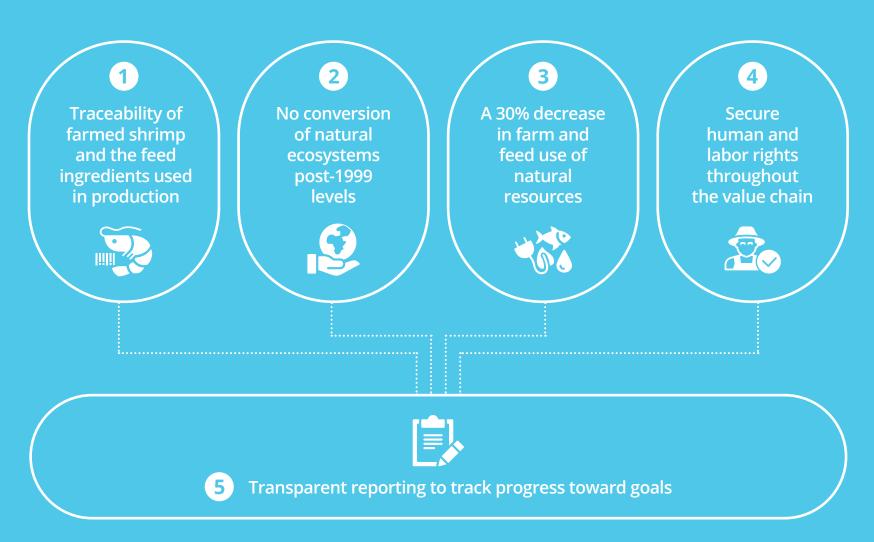


THE BLUEPRINT

Investing in more sustainably farmed shrimp can help companies demonstrate leadership and produce results that will change the future course for the better. Addressing the persistent issues in shrimp production isn't just good for the environment; it's also smart for business.

In our current economic climate, companies have substantial opportunity to show progress and action on the issues outlined in this Blueprint. Proactive steps can de-risk suppliers, ensure reliable supply and markets for shrimp, increase efficiency, and improve profitability over the long-term—all while protecting people and the planet.

It's time businesses respond to this critical inflection point by moving beyond targets and commitments towards progress and accountability. A step-change that demonstrates and quantifies improved shrimp production is an immediate requirement. This means producing shrimp in a way that preserves natural resources, protects natural climate mitigation systems—particularly mangrove forests—and improves conditions for workers throughout the supply chain. The Blueprint for Future-Proofing Shrimp Supply Chains is a challenge to businesses that buy, sell, produce, or benefit from farmed shrimp to achieve the following by 2025:





With increased traceability, businesses can better understand their operations and the potential risks and opportunities within their supply chains. In the shrimp sector, it is critical for companies to demonstrate that the product is safe, minimizes destructive impacts on the environment and does not support practices that may be harmful to the people that produce it.

To date, it has been challenging to operationalize full traceability in shrimp supply chains; most retailers and food service companies are unable to trace their product back to specific farms. This complexity fosters a lack of accountability and increases opportunities for fraud, labor rights violations and environmental degradation. Additionally, the origin of wild fish caught for shrimp feed is notoriously difficult to track due to a lack of stringent regulation and enforcement in the feed industry.

To safeguard (or reestablish) their reputations, retailers need to disclose who produced their product and how it was produced. This action is critical because consumers increasingly doubt the information currently provided after hearing frequent reports of fraud and mislabeling. Fortunately, emerging technologies make traceability much easier. Forensic techniques can now track shrimp back to its water origination using methods like elemental profiling, where shrimp are chemically analyzed to determine country of origin.⁷ Advanced technologies, like forensics, help retailers ensure quality and build consumer confidence.

There are several available tools for actors in shrimp value chains to improve traceability and accountability. One example currently in its pilot phase is *TruTrace*. Developed by WWF in partnership with Republic Systems, TruTrace is a cloud-based smartphone app and web portal that connects supply chains from end-to-end. To ensure the application is equally accessible at each stage of the supply chain, it is open source and publicly available on GitHub. That means farmers, buyers and everyone in between can use the app without paying licensing fees that typically hinder the ability for upstream actors to participate. While TruTrace is not the end-all solution, its availability, ease of use and marginal cost are meant to encourage adoption.



2) NO CONVERSION OF NATURAL **ECOSYSTEMS POST-1999 LEVELS**

During the early stages of industry development, shrimp farms contributed to significant deforestation and habitat loss in many countries where they operated. Intertidal ecosystems, like the carbon-dense mangroves, felt the brunt of the farmland expansion.

As industry actors realize that shrimp infrastructure can be built cheaper and more reliably outside of intertidal zones, the conversion rates of mangrove forests has decreased. In fact, all major ecolabels for farmed shrimp identify with the 1999 cutoff date and the need to protect natural ecosystems from conversion. However, while most farmed shrimp is now produced outside of mangrove ecosystems, there are still places where mangroves are being rapidly converted.

Efficient and responsible land use is critical to improving shrimp farming operations. Although it is illegal to convert mangroves in some export markets, like Thailand, Ecuador and India, protection and enforcement must be strengthened in all major producing countries. Protecting mangrove forests mitigates the effects of climate change because these habitats act as a carbon sink, storing three to four times as much carbon as tropical forests—carbon that is released into the atmosphere when these habitats are destroyed.

To follow this Blueprint, companies should wholly commit to sourcing conversion-free shrimp. Beyond such a commitment, companies can also use geospatial mapping and traceability to ensure shrimp supplies are not produced at the expense of these important ecosystems.

22% SHRIMP POND AREA

In Indonesia about 22% of current shrimp pond area has been converted since 1999; in certain jurisdictions such as Kalimantan Timur and Kalimantan Utara, that number is over 50% of 2018 pond area. Conversion in the past 20 years has mainly been carried out by smallholder farmers.

In partnership with the Gordon and Betty Moore Foundation, Clark Labs created an **online mapping tool** that shows land use change over time in major shrimp- producing countries.* Companies can use these maps to identify the ecosystem impacts of farmed shrimp operations. Another mapping tool is **Global Forest Watch**, which provides information about production areas further inland. By analyzing the change in the composition of coastal areas, companies can avoid sourcing from producers who deforest protected mangrove ecosystems.

* Bangladesh, Cambodia, Ecuador, India, Indonesia, Malaysia, Myanmar, Thailand, and Vietnam



When done inefficiently, shrimp farming requires large amounts of land, energy, water, and wild fish for feed. To stop detrimental farm expansion, these natural resources must decrease per unit of production through controlled intensification. This is the only sustainable way to meet growing demand.

Fortunately, the shift toward more efficient farming is underway, and the business case for **controlled intensification** is clear. A WWF economic analysis proves that increasing efficiency is important for farmers of all sizes, because it streamlines operations and balances the dual goals of profitability and disease mitigation.8 Today, there are more opportunities to engage small- and medium-scale producers than ever before. One example is investing in above-ground pond systems made with plastic liners and metal fencing to reduce capital expenditure and minimize the amount of soil

excavation and movement. Other foundational technologies that can reduce the use of natural resources include closed loop water and waste management systems, selectively bred and clean post-larvae, surface aerators and feed formulated to promote growth. Together, these technologies serve to mitigate exposure to disease while creating low-stress environments able to house higher densities of shrimp.

Controlled intensification can ultimately reduce the costs of land use per unit of production by more than 90%. The most intensive farms can be more energy efficient and achieve costs that are 74% to 89% lower than extensive operations.9 When amortized over the life of a farm, fixed costs associated with investments in land, infrastructure and equipment decrease per unit of shrimp as the intensity level of the farms increase. In a survey of farms in Thailand and Vietnam, the contribution of annual fixed costs to total costs decreased from 35-50% to 4-20% as production intensity increased. This drop demonstrates clear economic and environmental gains from efficiency interventions.¹⁰

Regarding feed inputs, an overall global decrease in the feed conversion ratio (FCR) in shrimp—calculated as the amount of feed used per unit of farmed product produced—by 10% equates to 106,000 hectares of land, 141 million cubic meters of water, 468,000 tons of wild fish and 3.6 million gigajoules of energy spared. With approximately half the production cost of shrimp stemming from feed, farmers can also see significant savings. For example, a 10% decrease in FCR across Thailand and Vietnam would equate to savings of \$85 to \$110 million for farmers. 11 Based on the business benefits that widespread farm transitions can provide, companies should promote, and invest in controlled intensification in their supply chains.

2.4M ha SHRIMP PONDS

There are approximately 2.4 million hectares of shrimp ponds in the world. 96% of shrimp comes from 1.4 million hectares, meaning approximately 4% of shrimp is produced with 40% of the total pond area. Resources can and need to be used more efficiently.

Controlled intensification

Controlled intensification is a type of aquaculture that uses more precise methods to produce shrimp at higher levels of input and output per unit of land area.



4) SECURE HUMAN AND LABOR RIGHTS THROUGHOUT THE VALUE CHAIN

Over the past decade, significant labor and human rights violations on fishing vessels—some of which provide marine ingredients for shrimp feed—have come to light. Reports document vessel owners and captains exploiting migrant labor, trafficking people, and engaging in illegal, unreported, and unregulated (IUU) fishing. After a poignant media moment in 2014, farmed shrimp in Thailand became associated with illegal labor practices, most notably forced labor on fishing vessels selling their catch for shrimp feed. While important steps have been taken to address this challenge in Thailand, more progress is needed there and in other shrimp-producing countries.

WWF unequivocally believes there is no place for human and labor rights abuses in the fishing and seafood industries. All allegations should be reported and immediately investigated. Unfortunately, current systems are not set up to do this and must rapidly pivot to guarantee holistic protections for workers. Any company operating in the farmed shrimp industry must conduct appropriate due diligence, put traceability mechanisms in place and ensure oversight mechanisms are intact at scale to identify warning signs, investigate claims and remediate and eliminate any abusive practices towards workers in their supply chain.

Food supply chains must also be free of child and forced labor. Companies should provide healthy, safe and equitable working conditions while establishing cultural values that encourage continued education and clear performance expectations. Employment contracts must honor fair

working hours, wages and benefits and allow employees freedom of movement and association. Employees must have 24/7 access to personal documents and necessities. And finally, there should only be limited and legal use of recruitment fees and private employment.



5) TRANSPARENT REPORTING TO TRACK PROGRESS TOWARD GOALS

This pillar of the Blueprint is cross-cutting in nature, meaning that to realize the first four results, companies must transparently report on their overall progress. Companies can use comprehensive reporting to show how they integrate the Blueprint into their business and communicate the value of their efforts.

According to the World Business Council for Sustainable Development, corporate reporting is the language that will bridge the trust gap between business and society, allowing the market to allocate capital where solutions have the most material impact. By setting these achievable goals and demonstrating progress through transparent reporting and shared metrics, the shrimp industry can be the greatest agent for change. And by pooling resources and data to achieve these results in pre-competitive fashion, companies can reduce duplication of efforts, foster greater industry equity and expedite learnings to catapult the shrimp sector towards a sustainable, prosperous future.



CALL TO ACTION

We must react to the current state of shrimp aquaculture with urgency and take action to drive transformational, sector-wide change.

WWF challenges the private sector to help reimagine a more transparent and sustainable shrimp sector that protects the environment, natural resources, and human well-being with a radical level of transparency. The shrimp industry, NGOs, governments, and consumers must all work together to chart a new and better path toward positive, lasting change. The transformation of farmed shrimp can and will be achieved through private sector collaboration and technological innovations that enable resource-efficient production and improved traceability.

While the risk of inaction is considerable, the opportunity to establish new business models that minimize harmful environmental and social impacts is even greater. To this end, we call on supply chain actors to show corporate leadership and responsibility to protect people and nature by collectively identifying and implementing concrete steps to improve shrimp supply chains.

For more information about the concepts in this Blueprint, please contact *blueprint.placeholder@wwfus.org*.



