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A large, light blue illustration of a shrimp, shown from a side profile, swimming towards the left. The shrimp's body is curved, and its tail fan is visible. The background is a solid light blue color.

# **SUSTAINABLE AND RESPONSIBLE SHRIMP FARMING TO SATISFY EUROPEAN DEMAND**

**The Case of Two Aquaculture Farms in Madagascar**



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## WWF - Together Possible

WWF is one of the leading independent organisations for environmental protection in the world. With a network active in more than 100 countries and thanks to the support of nearly 6 million members, WWF is acting to curtail the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature – maintaining the world's biological diversity, ensuring a sustainable use of natural and renewable resources and promoting the reduction of pollution and waste.

Since 1973, WWF France has been acting to provide a living planet for future generations. Thanks to its volunteers and to the support of 220 000 donors, WWF France leads concrete action to save nature and its species by promoting sustainable lifestyles, advising decision-makers, driving companies and educating the young public.

However, mutual respect is necessary to make change acceptable. For this reason, WWF's philosophy is founded on dialogue and action.

Learn more at: <http://projets.wwf.fr>

The case study of this report was conducted as part of WWF's EU co-funded Fish Forward project. Fish Forward aims at raising awareness of the global impact of seafood choices made in Europe, as well as their effects on people living in developing countries.

[www.fishforward.eu](http://www.fishforward.eu)

This summary is based on the findings of the case study "Shrimp Farming in Madagascar" by Marie-Christine Monfort and Sandy Rajaosafara, consultants.

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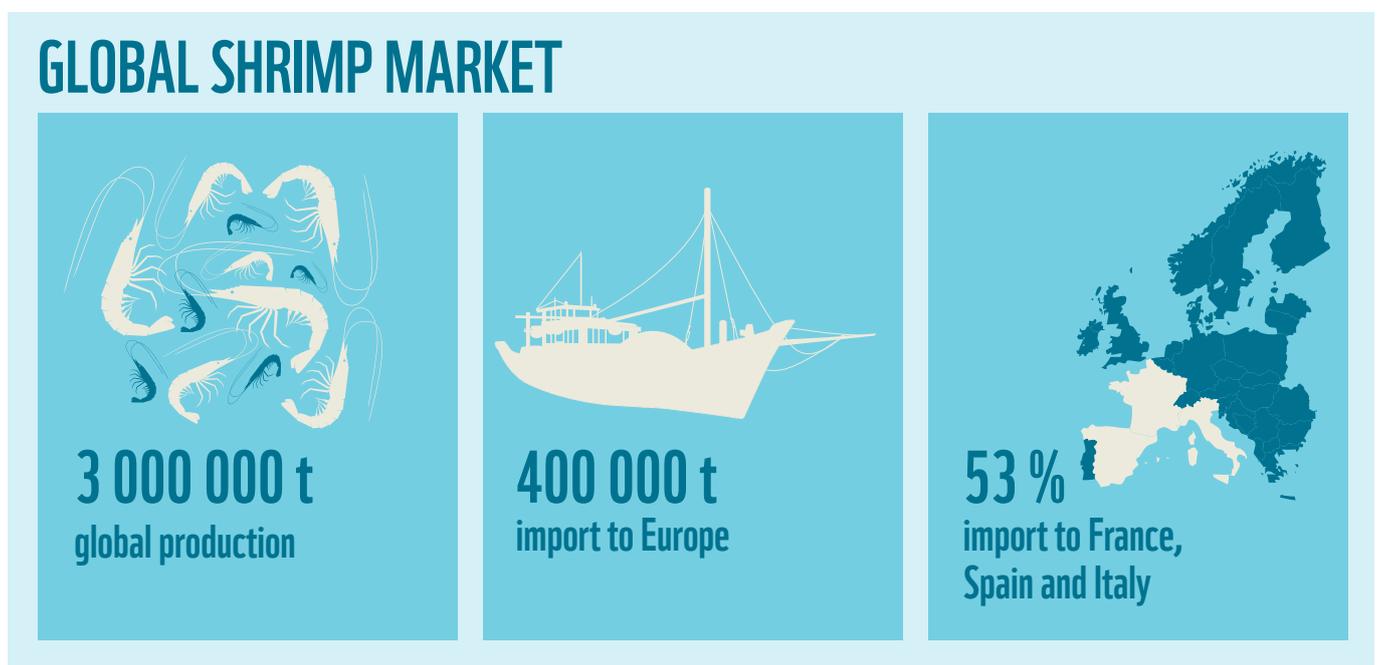
# SHRIMP - A BOOMING MARKET

## Rising Demand

Shrimp is the best known shellfish, and an increasingly popular food around the globe. Shrimp is a real star. It's currently the second most traded seafood commodity in the world in terms of value, just ahead of tuna and behind salmon.

With exports totalling about \$11 billion, it represents 15 percent of the worldwide seafood business.

In many European countries, shrimp is one of the most consumed species. Based on European imports, tropical shrimp (mainly *Penaeus monodon* and *Penaeus vannamei*) ranks third amongst all aquaculture species.



## Meet Demand Through Aquaculture

**78%**  
of shrimp  
consumed  
in Europe  
is farmed

The return on investment from marine fisheries has stagnated for 30 years. In order to meet increasing demand, fish farming is expanding. With an average annual growth of 9% since 1970, aquaculture has recorded stable and substantial growth.

According to the UN's Food and Agriculture Organization (FAO), total aquaculture production exceeded 90 million tons in 2014. Nowadays, more than half of the edible fish consumed worldwide comes from fish farming.

Shrimp consumption experienced a boom in the 1980s, at a time when wild shrimp stocks were decreasing at an alarming rate. To meet increasing demand, Asian countries such as Thailand, Taiwan, Vietnam, Indonesia, and India switched to intensive and large-scale farming for export.

Other countries did likewise: Brazil, Mexico, and above all Ecuador. This extraordinary rise has caused multiple problems.



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## Ecological and Social Damage

Launched on a small scale in the 1970s, shrimp farming, also called shrimp culture, has now become industrial. The size of shrimp farms has increased from a few to many hundreds of hectares. Shrimp density has multiplied by ten and can reach up to 200 individuals per square meter.

This intensive production creates both ecological and social damage. Moreover, shrimp farms are subject to the legislation of their native country. In many countries, no environmental or labor rights legislation exist, or existing laws are not effectively enforced. In some, human rights and laws prohibiting child labor are not respected. Working conditions are tough for farmers.

Most of the time, the aquaculture development has been achieved to the detriment of mangrove forests, destroyed to be replaced by new ponds. Known as “blue forest”, this biotope is essential to maintaining coastal biodiversity and providing local populations with irreplaceable ecological, economic, and cultural services.

Furthermore, shrimp feces, chemical products, and antibiotics discharged into rivers and seas cause water and coastal land pollution. Shrimp are carnivorous. Their diet has also become industrial, consisting of terrestrial meat, bone meal and fish meal. Forage fish — wild-caught fish used partly as animal food in aquaculture — and fish oil are major components of their feed in farms. Intensive fertilization of production areas artificially increases the production of phytoplankton, another source of nourishment for shrimp. However, all fisheries are not sustainably managed, and this is also true for some forage fish. Worldwide, nearly 90 percent of fish stocks are fully exploited (58 percent) or overexploited (about 31 percent).

Moreover, waste is increased by feed. Almost 80% of feed is consumed and 10 to 20 percent is discharged as feces into the production system. In addition, water is a good carrier of diseases into the shrimp culture system. Spreading disease can also affect the environment and wild species, causing huge overall damage.

## Mangrove Forests, an Irreplaceable Biotope

These blue forests are crucial for local communities living on the coast. They provide food and fuel wood as well as construction materials for houses. Their plants are used in traditional medicine.

Moreover, mangrove forests protect inland regions from cyclone damage and erosion. The first line of defense against global warming, they filter water and store carbon like terrestrial forests. Thanks to these unique ecosystems, classified as Ramsar sites, fish and invertebrates migrate towards reefs and the high seas. They find shelter there to feed and breed. In addition, mangrove forests stabilize and renew sediments and absorb pollutants and excess nutrients.

In Madagascar, they ensure the protection of the future new marine area of the Barren Islands archipelago against sedimentation originating on the western side of the country. This archipelago is one of Madagascar's most intact reef areas and one of the most important sea turtle nesting sites in the Western Indian Ocean.

In addition, mangrove forests guarantee the protection of the Manambolomaty wetland (listed as a RAMSAR site) as well as the primeval forest of Tsimembo and the rice fields of Bemamba and Soahany against all the negative effects of the rising sea level caused by climate change.



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# TOWARDS ECO-FRIENDLY PRACTICES

Demand-driven aquaculture production will continuously increase. A change towards sustainable practices is inevitable in order to reduce environmental and societal harm. On the one hand, government's action is of utmost importance to set a sustainable framework. On the other hand, the corporate sector has to face up to its responsibilities. Some of them lead the way.

## OSO AND UNIMA, TOP PERFORMERS

In order to reduce the impact of their industry on the environment, the groups OSO and UNIMA (leaders in aquaculture shrimp production in Madagascar) are both engaged on the path to certification and even more...



Since 1976



Certified Biologic Agriculture (AB) since 2007

- Extensive breeding (very low density: 8 shrimps /m<sup>2</sup> on average)
- Natural feeding: without hormones, growth stimulators, or chemical dyes.

Since 1970



Certified CSA since 2016

- Environmental protection
- Social responsibility



Certified "Label Rouge" since 2005

- Semi-intensive breeding (low density: 10 shrimps/m<sup>2</sup> on average)
- Product quality (taste requirements, hygiene, traceability)

## VOLUNTARY COMMITMENTS



### Rational use of chemical products and management of residues

- Antibiotic use prohibited
- Natural feed, 100% GMO-free
- Treatment and thorough monitoring of effluents



### Measures aimed at minimizing impacts of activities on mangrove forests

- Restoration of 118 hectares of mangrove forest between 2003 and 2014
- Monitoring of the plant diversity of stands and demographic assessment of mangrove forests



### Human resources policies that are attentive to employee well-being

- Compliance with international labor standards (ILS): no child labor, no forced labor, no discrimination, freedom of association, etc.
- Signing up employees for supplementary health insurance, enabling the reimbursement of medical expenses for employees and their families



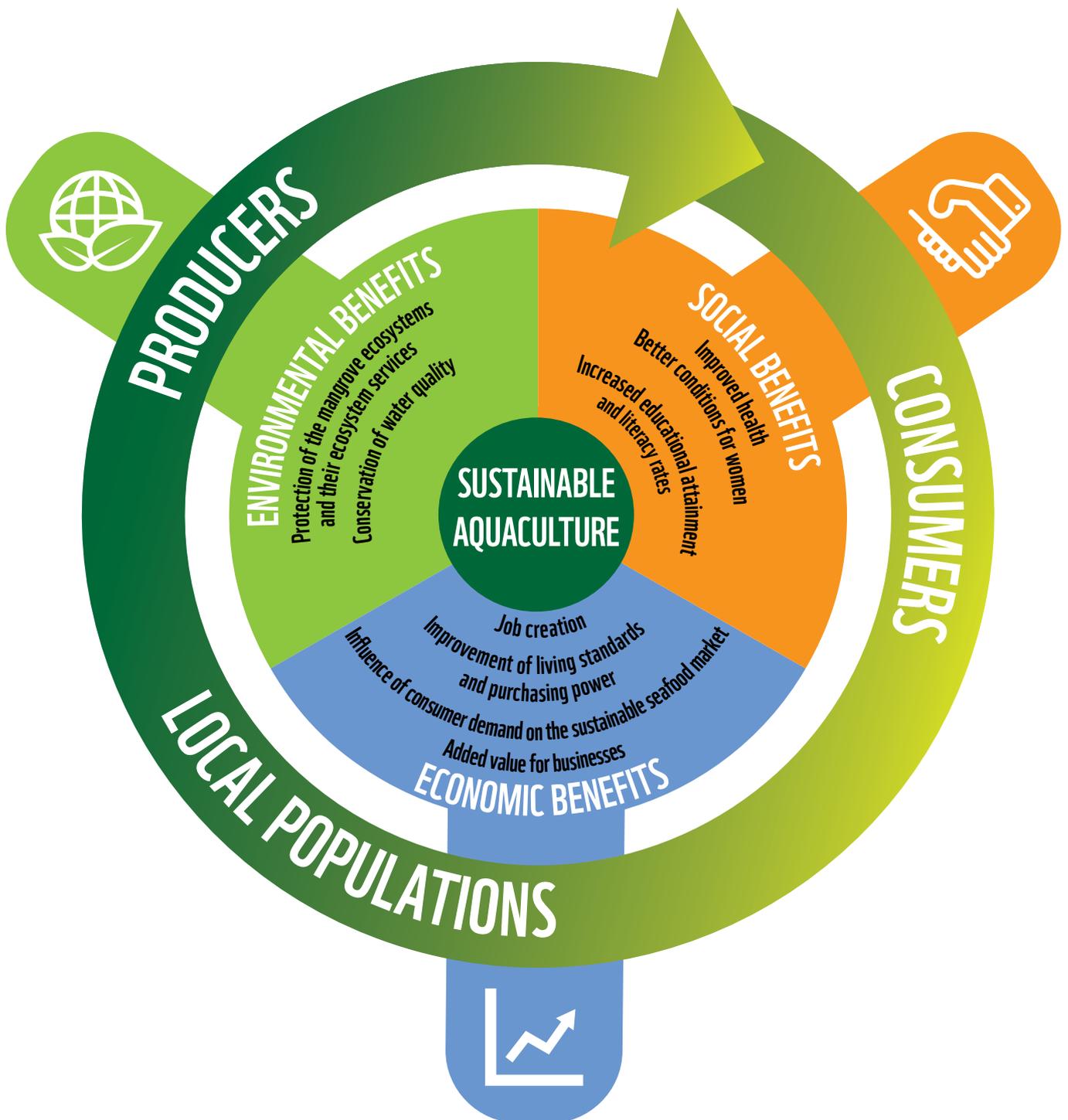
### Communal development actions

- Building of elementary schools, high schools and libraries
- Funding of primary healthcare clinics and preventive actions against sexually transmitted infections (STIs), vaccination, etc.
- Active company training policy (integration, hosting of trainees, continuing education and training of employees)

# WIN-WIN FOR EVERYONE

As much damage to the environment and society can be caused by unsustainable practices, as much positive impacts can be observed in case of the two best-practice businesses, 'UNIMA' and 'OSO'. European consumer demand for sustainable shrimp products – mainly in France, Spain and Italy – drives corporate change resulting in environmental, social and economic benefits.

Local communities experience improved health conditions, better education, higher literacy rates, more and better paid jobs, better conditions for women, a higher living standard and purchasing power. Mangrove ecosystems are protected and its services secured. Water quality improves. On top of all this, producers add value to their businesses.



# TOWARDS RESPONSIBLE AQUACULTURE



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“Nowadays, more than half of the fish consumed around the world comes from fish farms, and this percentage is bound to rise along with the population. According to the latest FAO report, aquaculture production should continue to grow by more than 4 % per year until 2022.

As we all know, the more factory farming grows, the greater its potential impact on the environment and on local communities will be. It is high time to address this issue.

That is why WWF urges all players to adopt production practices that are more environmentally and consumer-friendly and less harmful to the species themselves.

Certain aquaculture businesses have already met the challenge by moving towards semi-intensive and extensive systems with fewer treatments, lower shrimp density, better water quality, and aquaculture farms established outside mangrove forests and wetlands.

Others have gone further by taking social responsibility beyond simple compliance with regulatory requirements. By building schools and primary healthcare clinics, improving working conditions, and taking part in local cultural events, they have contributed to improve the quality of life for their employees as well as for indigenous communities.

These precursors have shown us that it was possible and above all, that these responsible production methods can benefit everybody.

Let's not wait any longer: Together, we can bring about change in aquaculture practices, in order to reduce the social and ecological impacts of an industry that will be essential in the future for food safety and employment throughout the world.

Together, we can improve the production practices of aquaculture farms for the benefit of oceans and people”.

**Isabelle Autissier**  
**President of WWF France**

# SUSTAINABLE AND RESPONSIBLE SHRIMP FARMING

## OVERFISHING

90% of global fish stocks are fully fished or overfished

## +800 MILLION PEOPLE

Worldwide, more than 800 million people depend on fish for food and income. Most of them live in developing countries.



## TROPICAL SHRIMP

Shrimp is the most consumed seafood in Europe. The EU imports nearly 2 billion euros worth of tropical shrimp each year.

## EUROPE

Europe is the largest market and importer of seafood worldwide. More than half of fish imports come from developing countries.

	<p><b>Why we are here</b> To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. <a href="http://www.wwf.fr">www.wwf.fr</a></p>
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	<p><b>THIS PROJECT IS CO-FUNDED BY THE EUROPEAN UNION</b></p>	
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