oceanloop®

next level **seafood**

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ENVIRONMENTAL RISKS AFFECT THE SEAFOOD INDUSTRY




Global risks ranked by 1,500 global experts over the short (2 years) and long term (10 years):

WEF Global Risks Perception Survey

	2 years	10 years
1st	Misinformation and disinformation	Extreme weather events
2nd	Extreme weather events	Critical change to Earth systems
3rd	Societal polarization	Biodiversity loss and ecosystem collapse
4th	Cyber insecurity	Natural resource shortages
5th	Interstate armed conflict	Misinformation and disinformation
6th	Lack of economic opportunity	Adverse outcomes of AI technologies
7th	Inflation	Involuntary migration
8th	Involuntary migration	Cyber insecurity
9th	Economic downturn	Societal polarization
10th	Pollution	Pollution

Almost all environmental risks dominate the risk landscape over a 10-year period.

Risk categories

- Economic
- Environmental
- Geopolitical
- Societal
- Technological

LAND-BASED FARMING WILL DISRUPT THE SEAFOOD INDUSTRY

LOCAL EXOTICS: AN EUROPEAN FOODTREND

- Production close to consumer markets
- Low land usage due to high productivity
- Fair wages and good working conditions
- Environmental-friendly footprint
- ESG compliant with focus on key UN goals
- Year-round constant production conditions
- Energy and nutrient recycling
- No use of antibiotics or pharmaceuticals
- Transparent and traceable farming
- European legal framework

SUSTAINABLE DEVELOPMENT GOALS

6 CLEAN WATER AND SANITATION

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRIE, INNOVATION UND INFRASTRUKTUR

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

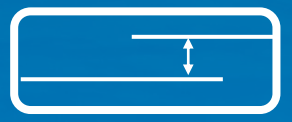
14 LIFE BELOW WATER

RAS-TECHNOLOGY “MADE IN GERMANY”

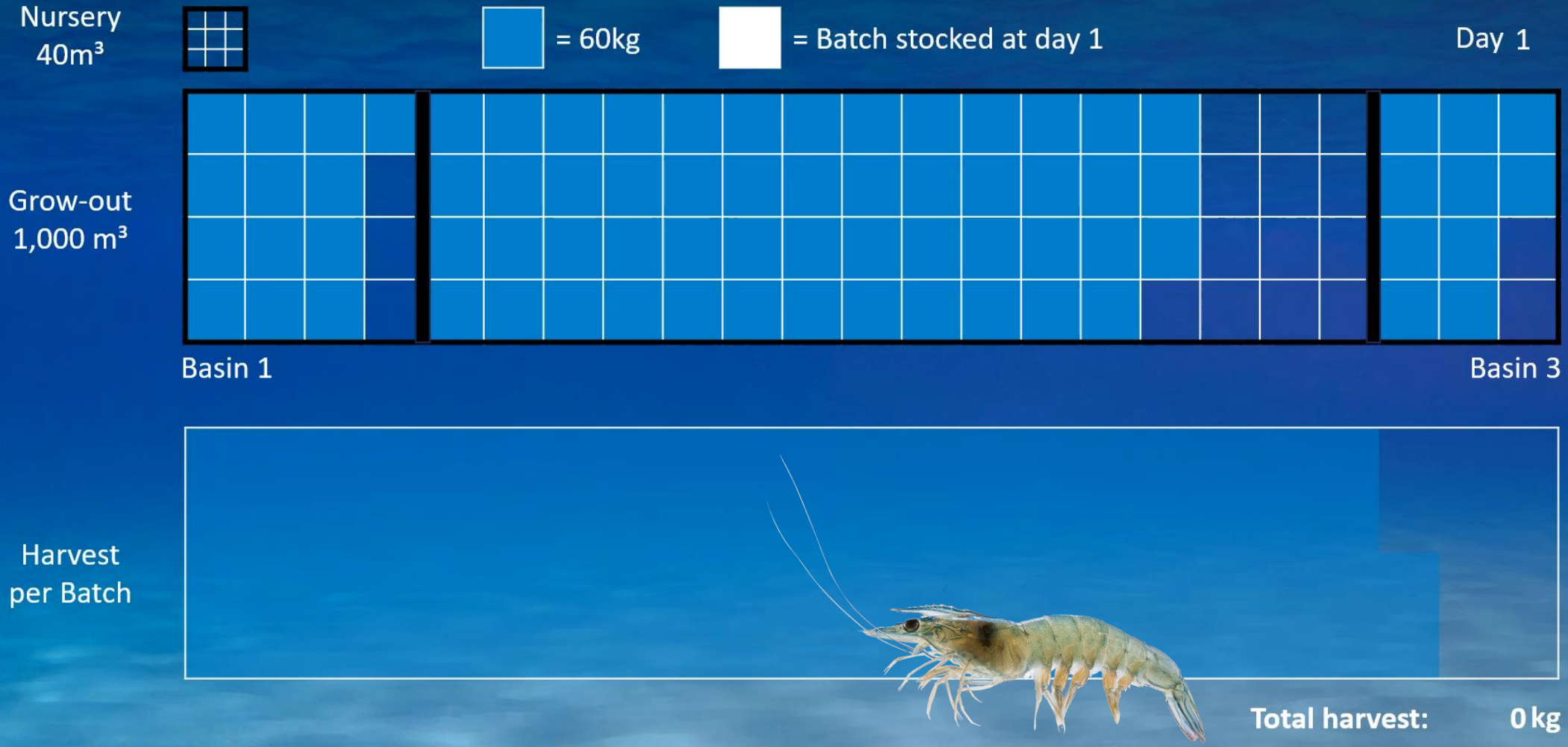
Oceanloop is a unique platform-technology for land-based farming of diverse seafood incl. shrimp, grouper, kingfish, seabass and seabream. It is proven in large scale-production and optimized since more than 10 years.

Urban Mangrove is a revolutionary solution for high-density farming of shrimp using Oceanloop technology. It is used in pilot-production for more than 5 years.

OCEANLOOP TECHNOLOGY DIFFERENCIATORS

	Closed water cycle	Low-head raceway	Plug-flow design	High recirculation	Multi-batch stocking
					
Key facts	Water renewal rate: <0,5% of the system water volume per day based on location	System's head loss: Approximately 2m including degassing and protein skimmer	Laminar flow: Velocity of 4-6 cm per second	Flow-rate: Up to 4 times the basin water volume per hour	Stocking interval: Adjustable basins and stocking in the range of 1-3 months
Advantages	• Low water consumption • Location independence • Increased biosecurity • Waste recycling	• Approximately 60% energy savings for water recirculation compared to conventional design • Reduced footprint • Reduced piping and surfaces eliminate off-flavors	• Up to 50% better water quality for the same water recirculation • Laminar flow pattern improves species and feed distribution • Improves self-cleaning in the basin	• Higher recirculation rate improves water quality and reduces daily concentration spikes • Increases velocity and reduces sedimentation in basin	• Up to 3x higher production efficiency compared to single batch stocking • Year round continuous harvest • Constant biomass and feed load • No species transfers

ANIMATED MULTIPLE BATCH STOCKING case shrimp



COMPUTER VISION TO IMPROVE RAS-FARMING

Oceanloop biomass and welfare detection software for shrimp

Horizontal shrimp counting

Individual weight detection

Vertical shrimp counting

Stress detection

Biomass detection

BLE funded R&D project “ShrimpWiz” 2024-2026

FARMING EFFICIENCY IS THE KEY TO SUSTAINABILITY

OCEANLOOP SUSTAINBABILITY [3]

49% saving in land use

96% saving in used water resources

77% saving in global warming

100% renewable energy

	per ton shrimp	Oceanloop	Pond Farming [1]
Global warming potential	ton CO_2	3.8 [4]	2.8 – 48 [2]
Total land use	ha	0.25	0.48
Feed	ha	0.24	0.30
Farming	ha	0.001	0.14
Support	ha	0.002	0.03
Total water use	m³	2,866	76,817
Feed and others	m³	2,803	3,457
Water exchange	m³	63	73,360

[1] Resource use in whiteleg shrimp *Litopenaeus vannamei* farming in Ecuador. https://doi.org/10.1111/jwas.12818

[2] Literature research on shrimp farming LCA:-GWP: 2.75 - 48.0 kg CO2e (median: 16.5 kg CO2e)

[3] per ton shrimp Oceanloop Europe vs. pond farming [1]

[4] preliminary „Cradle-to-gate“ data without infrastructure and capital goods

OCEANLOOP REYCYLES WATER AND NUTRIENTS

Shrimp

"Nose-to-tail" processing

Grouper

Ready to cook

Launched 2022

Tail

Other processed shrimp products are easy peel, tartar, and carpaccio.

Bouillon & soup

Launched 2023

Head

Shell

R&D in 2024

Chitosan pharmaceutical grade

Launched 2024

All parts of the grouper are processed and used including:

- Filet with skin
- Belly
- Collar
- Head
- Liver

Further we investigate the use of :

- Collagen
- Scales
- Intestines

Main material input:

- Feed
- Oxygen
- Water

Renewable energy

Waste water can be reduced to below 0.1% of the system's water volume per day.

Dissolved nutrients

Particulate nutrients incl. moults

Used today also for biogas production.

Seawater and waste heat is used to produce a sprayable sea salt.

Launched 2024

R&D in 2024

Aeroponic sea herb farming

Launch in 2025

Organic fertilizer

CIRCULAR ECONOMY

Purified sewage

Baltic sea water

Saline

Spraying sea salt

Gas turbine

Heat

Biogas

Power

oceanloop shrimp kiel

Whole shrimp

Fresh caught or easy-peel shrimp

Sewage

Sewage & gas plant

Processed shrimp

Ready to cook shrimp

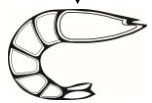
Vapothermal carbonization (R&D project)

Sludge

Head

Shell

Molted shells



Dead shrimp

TERRA PRETA

Organic fertilizer

Bio-Coal

Shrimp bouillon / soup / garum

TERRA PRETA

Development followed the ancient practice of terra preta, a type of very dark, fertile anthropogenic soil found in the Amazon basin.

typical soil

terra preta

Analysis have shown a mixture of charcoal, bones, broken pottery, compost and manure.

A WAY TO ADD VALUE FROM SLUDGE AND MOLTS

By vapo-thermal carbonization sludge can be transformed to bio-coal

Use cases:

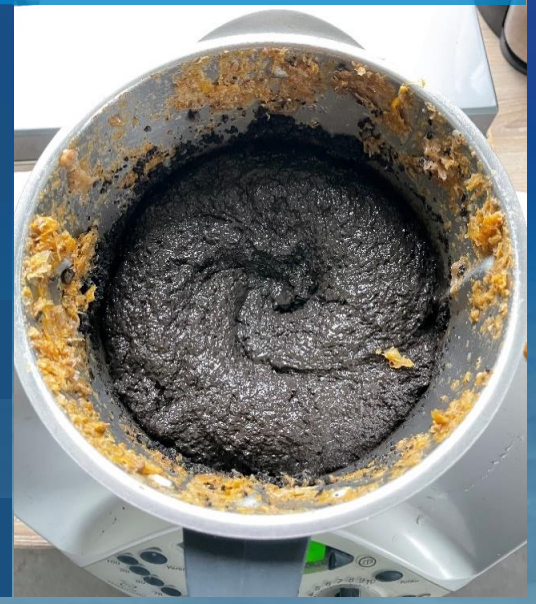
- raw material for terra preta
- potential for carbon sequestration

Potential to increase revenues by 10-20%

Usage of solid waste streams from a shrimp Oceanloop farm (underlined)

Ingredient	Share	Functional description
Biocoal	15%	Nutrient and water storage, Soil ventilation
Molts*	10%	Improving the rhizosphere microbiology
Dead shrimp	10%	Manure substitute, organic fertilizer
Phonolith	8%	Source of minerals, Water storage and Soil ventilation
EM water	10%	Effective microorganisms
Plant humus	47%	Compost substitute, organic fertilizer

Mixing / Aerobic digestion



*only shrimp molts daily removed from the raceways are used (not from the processing)

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Talk to us:
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