



THE  
**OCEAN COLLECTIVE**  
SUMMIT 2024



# Exploring Blue Food Solutions Cultivating a Sustainable Future

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**UMAMI  
BIOWORKS**

# Cultivating a Sustainable Future

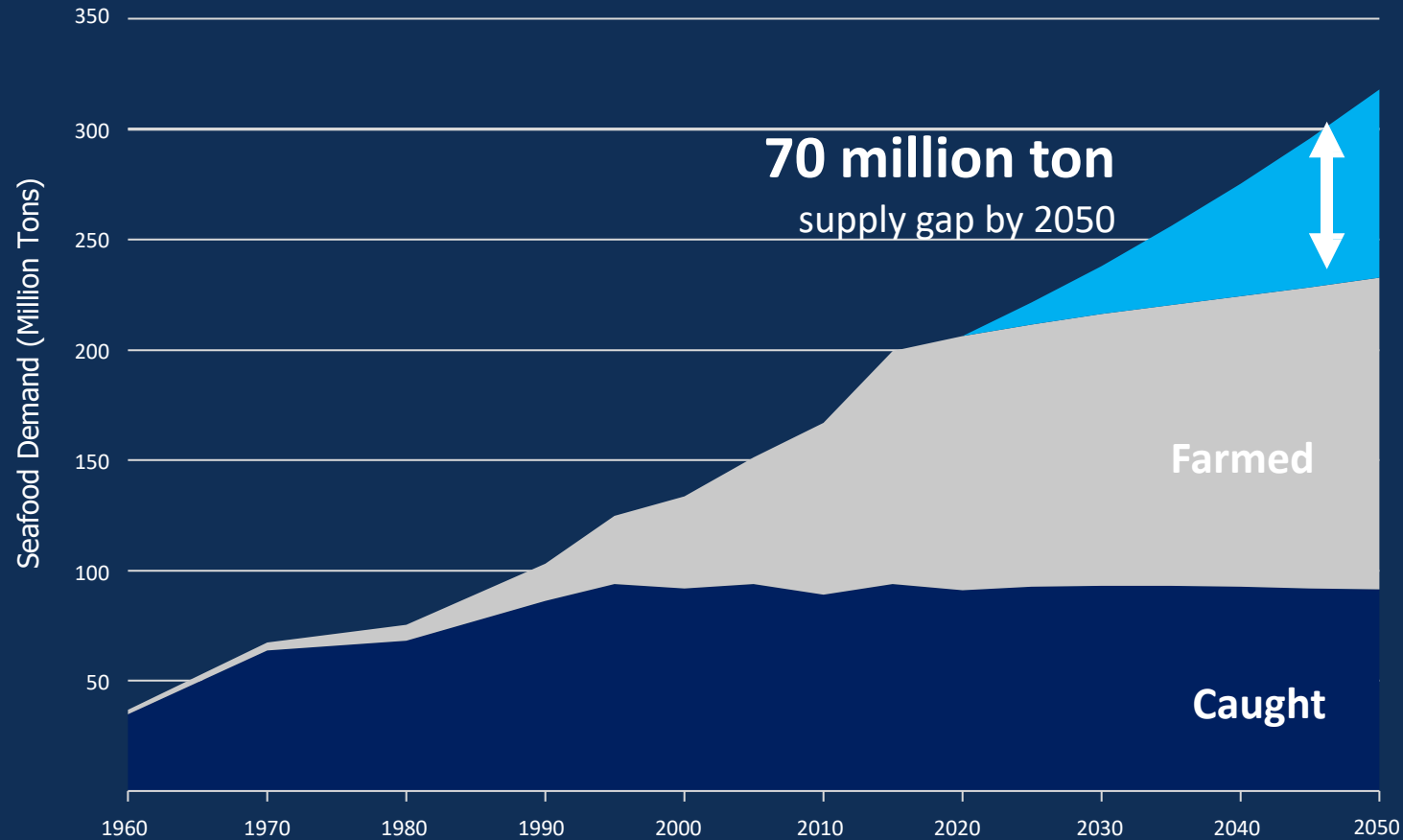
Ocean Collective Summit  
October 2024



Asia is home to 70% of global seafood demand,  
with deep cultural connections to seafood



# Seafood demand is outstripping supply, creating food security risk for 2+ billion people

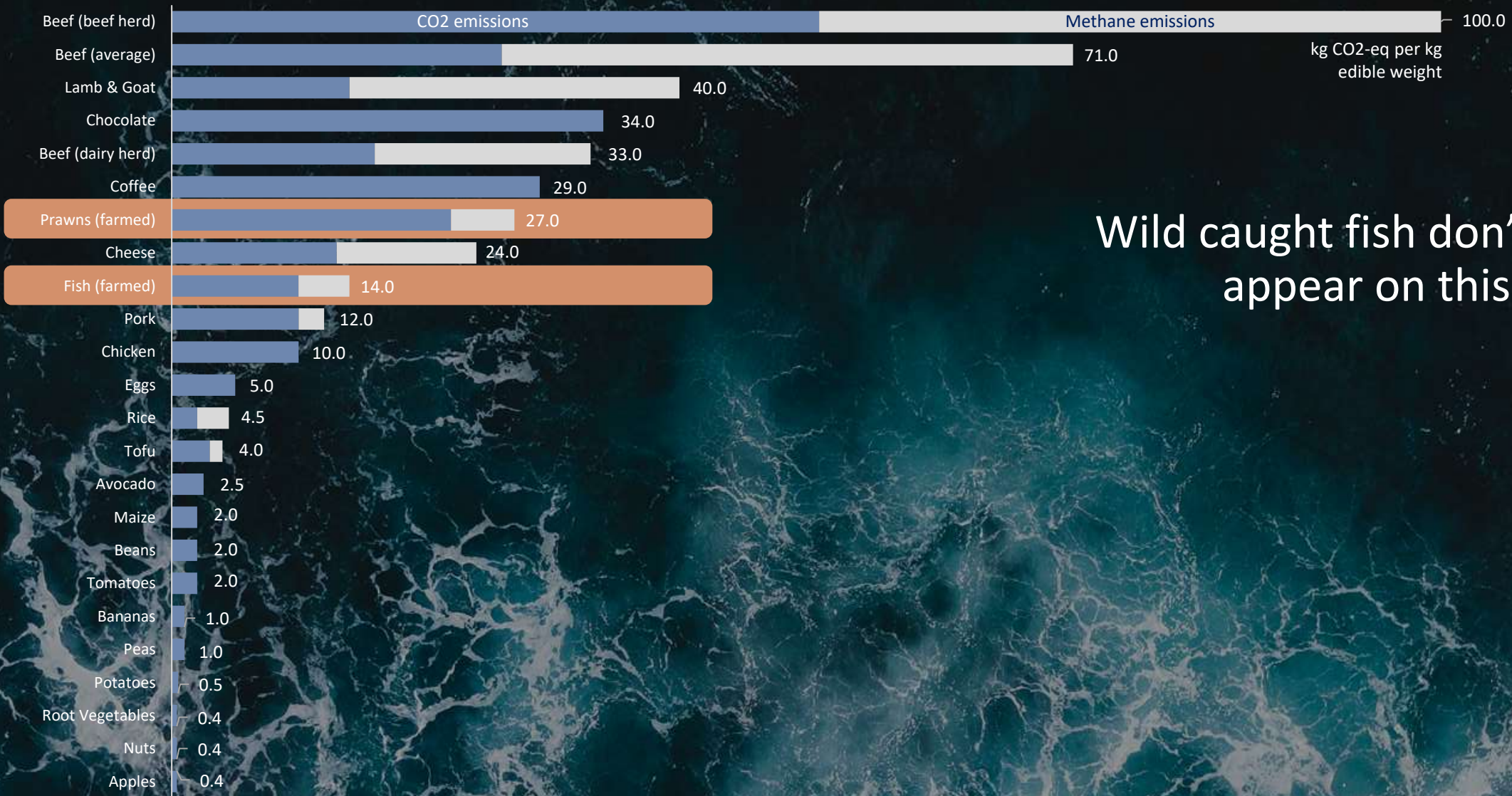


## But producers face growing challenges:

Climate change | Microplastics | Heavy Metals Pollution | Overfishing | Antibiotics Residues



# We're told seafood is a sustainable food source



Wild caught fish don't even appear on this chart!

# But some seafood has *very* high emissions!



Source: Kim, J.-H, et al. Estimation of Green-House-Gas emissions from domestic eel farm. *J. Korean Soc. Fish. Technol.* **50**, 58–66 (2014). <https://ourworldindata.org/grapher/ghg-emissions-seafood>

# Trawling emissions are the methane of the seafood industry



Multiple fish species have higher GHG emissions than all meat except beef!

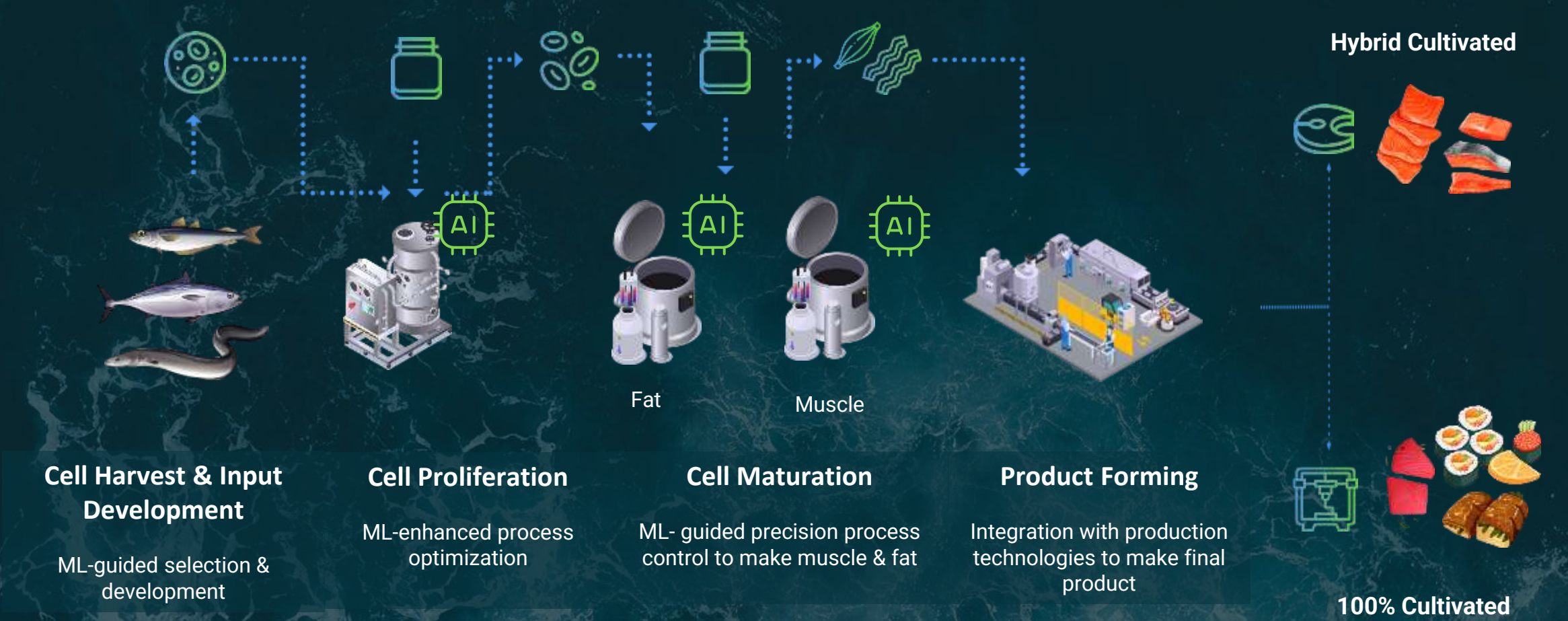
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<https://www.nature.com/articles/s41586-023-06825-8>  
<https://ourworldindata.org/fish-and-overfishing>

An aerial photograph of a white fishing boat moving through dark blue water, leaving a white wake. The boat is equipped with various gear, including orange and blue buoys along its deck and a satellite dome on the upper deck.

**We subsidize this harm to  
the tune of  
\$37 billion  
per year**



# Cultivated seafood offers a more sustainable approach to meeting consumer demand



# UMAMI is building AWS for biomanufacturing



Stable, non-GMO cell lines

Food-grade basal media    Fish growth factors

**Development**

Full supply chain spec'd-in & strategic supply agreements

**CRUCIBLE™**  
Standardized, modular architecture

**ARBITER™**    **KATALYST™**  
QA/QC system    automated process control

**Plug & Play Cultivation™**

with modular components, standard backbone & automated

Product co-label    Impact reporting

**ARBITER™**  
Provenance & traceability

**Commercialization**

Ingredient co-label with impact reporting & full traceability

Biomarker-based cell line selection    Accelerated Process Development    Continuous biomanufacturing    Highly versatile production range

**Marine species genomics**  
Deep knowledge of fish genetics & biomarkers

**ALKEMYST™**  
ML process optimization toolkit

**KATALYST™**  
Automated process control algorithm

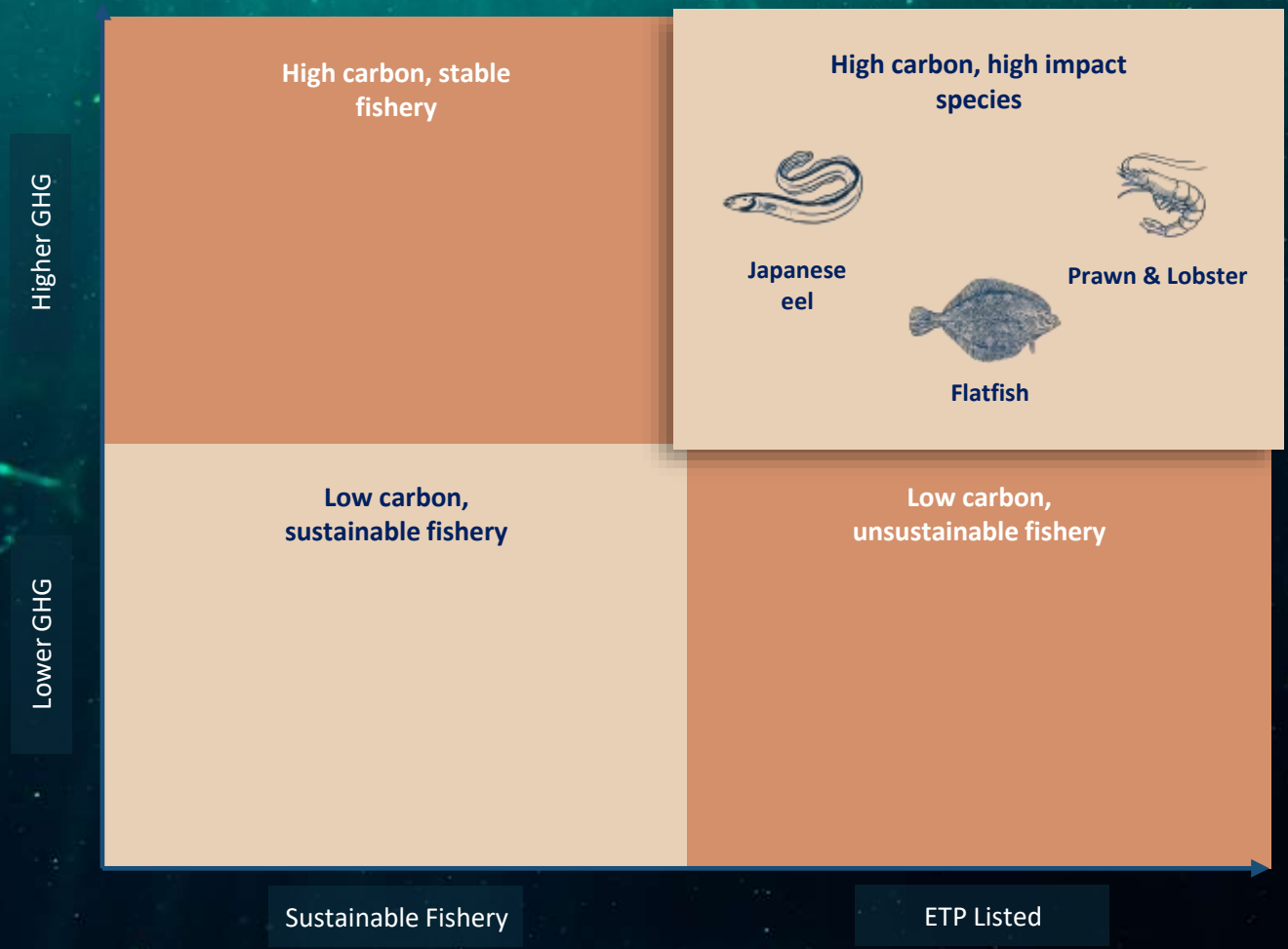
**Core Platform Pillars**

# UMAMI is partnering with leading global food brands to transform seafood sustainability



# By prioritizing high impact species, we align producer & consumer incentives

MARKET OPPORTUNITY  
**\$72 BILLION**



Unsuitable for commercial farming

Endangered, Threatened & Protected (ETP)

High GHG Emissions

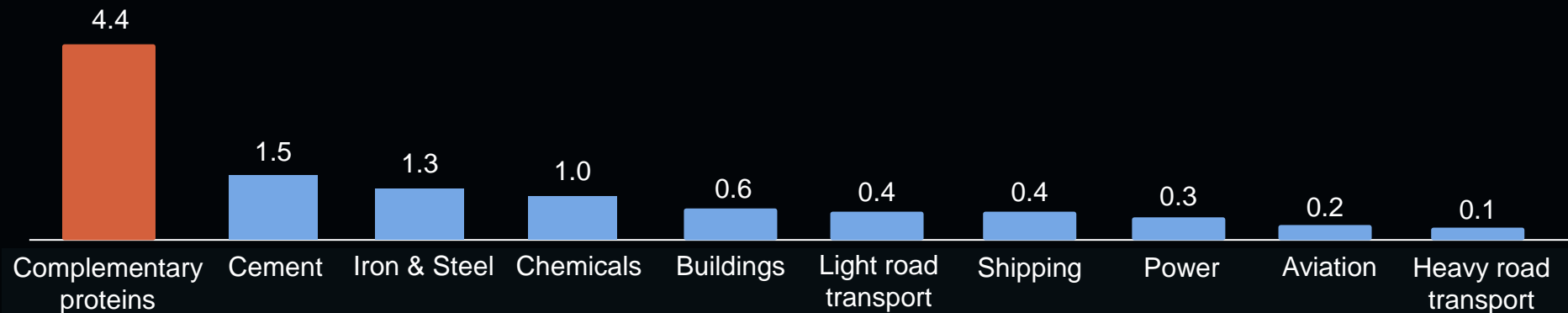
Unprofitable without subsidies

# Cultivated seafood is one of the highest impact per dollar solutions to climate sustainability

Impact on capital employed (\$billions per \$1 trillion invested)



CO2eq savings (in gigatons) per \$1 trillion invested



**Join us in creating a brighter future  
in which seafood is  
cultivated without compromise.**



**WAVES OF CHANGE**

*Uniting Business in Ocean Conservation*



**THANK YOU**