

# Meeting growing seafood demands through sustainable aquaculture growth

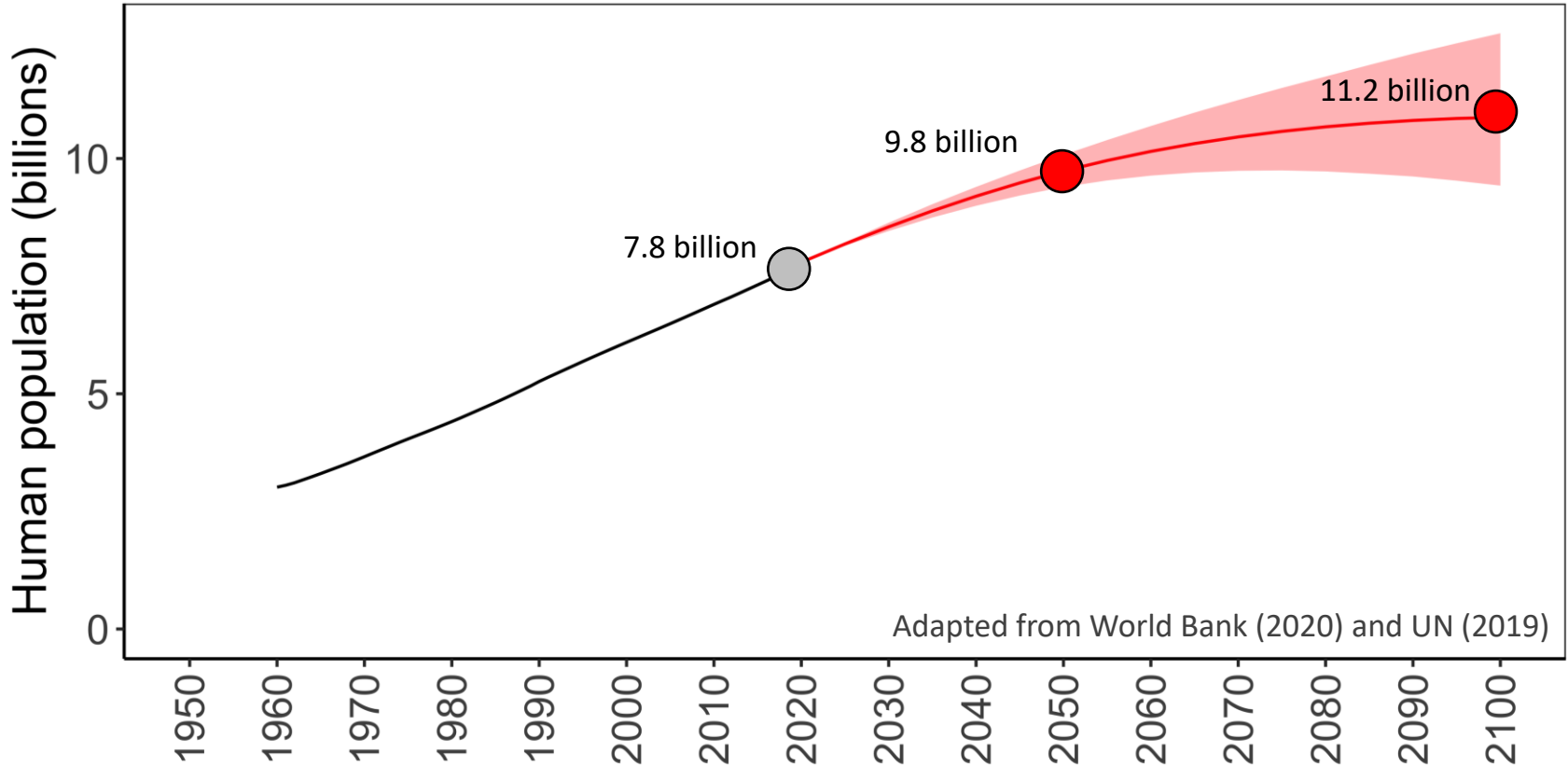
**Christopher Free, PhD**

on behalf of a large author team

IFFO Members Meeting

Market Forum 2 | October 21, 2020

# The human population and demand for food is growing





# Nourishing the planet will require innovation in food systems

## Land



## Freshwater



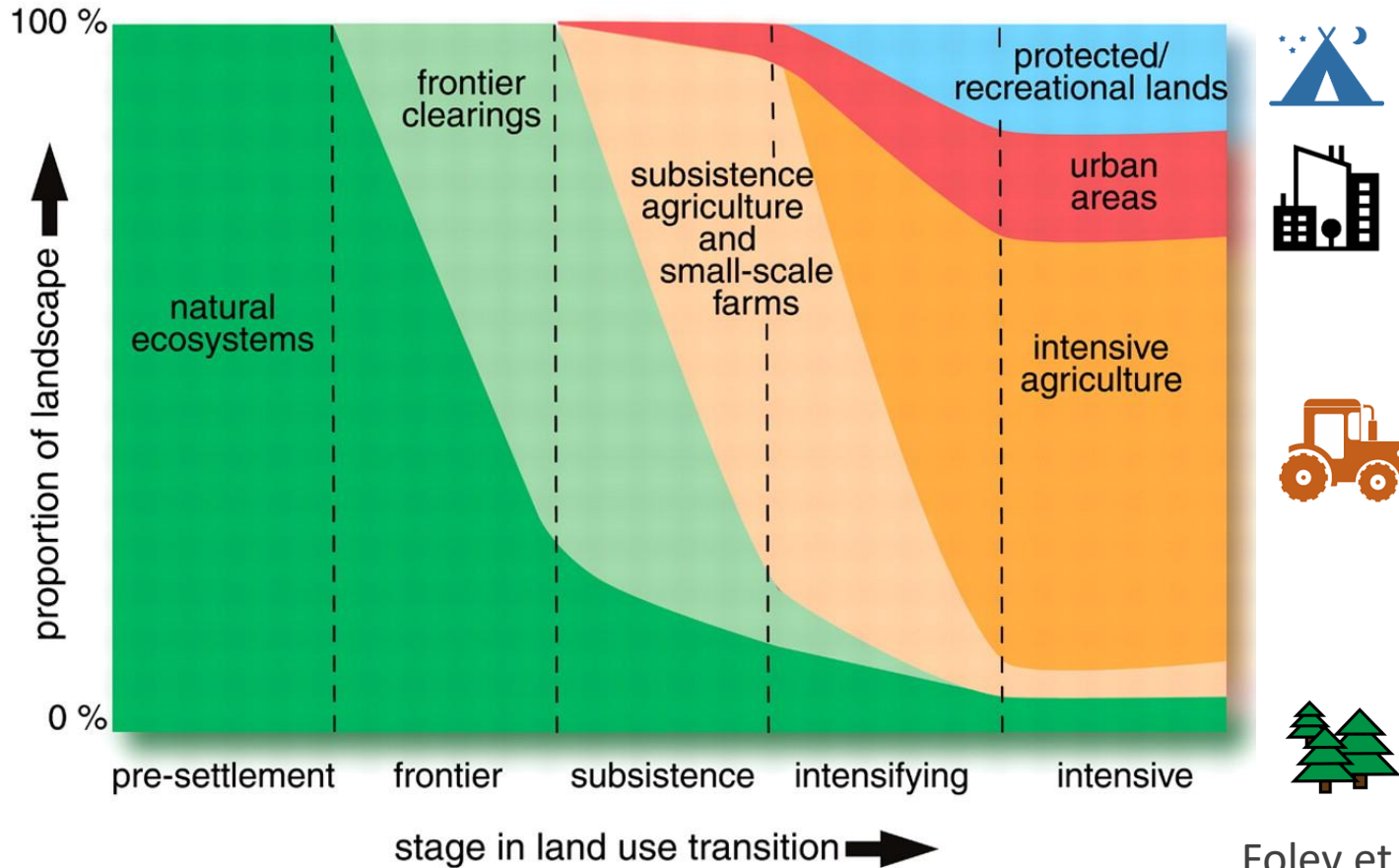
## Marine



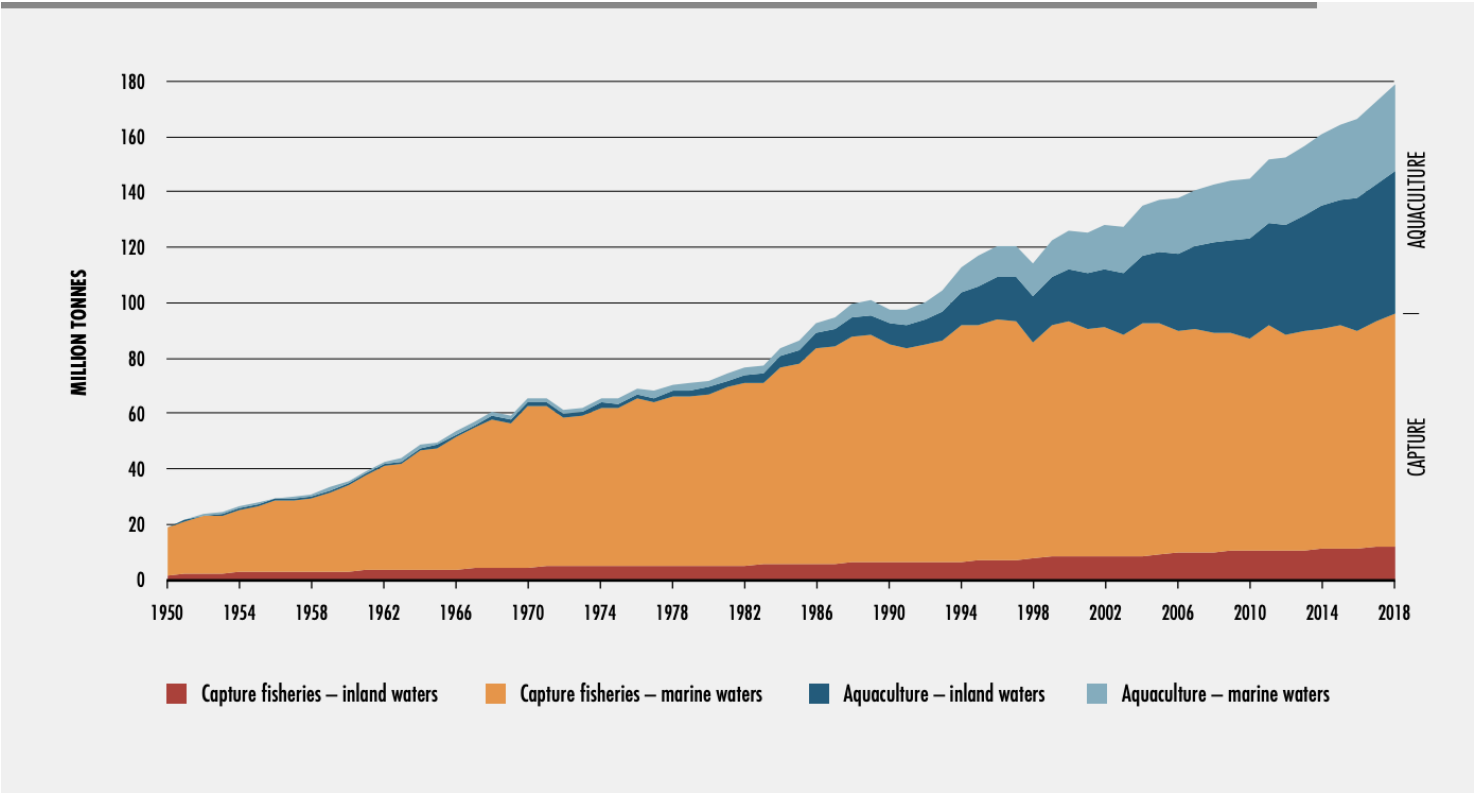
Wild

Cultured

# Limited opportunity for land-based growth

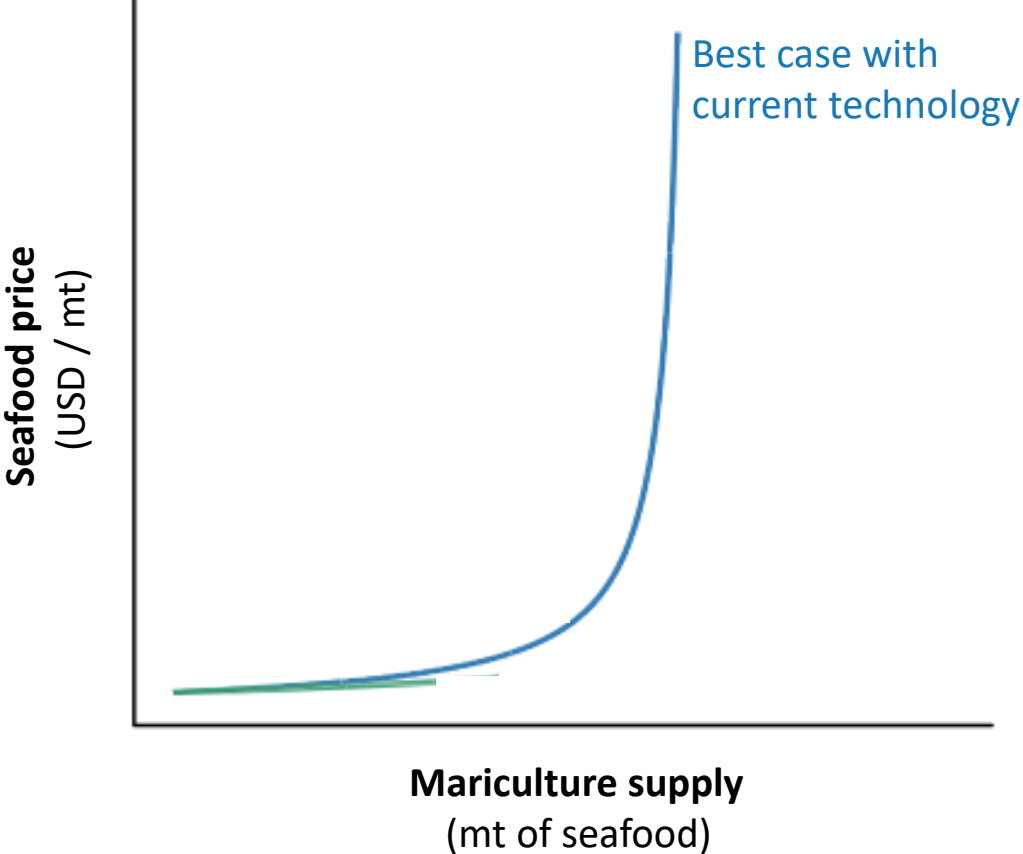


# Large opportunities for growth in sustainable mariculture

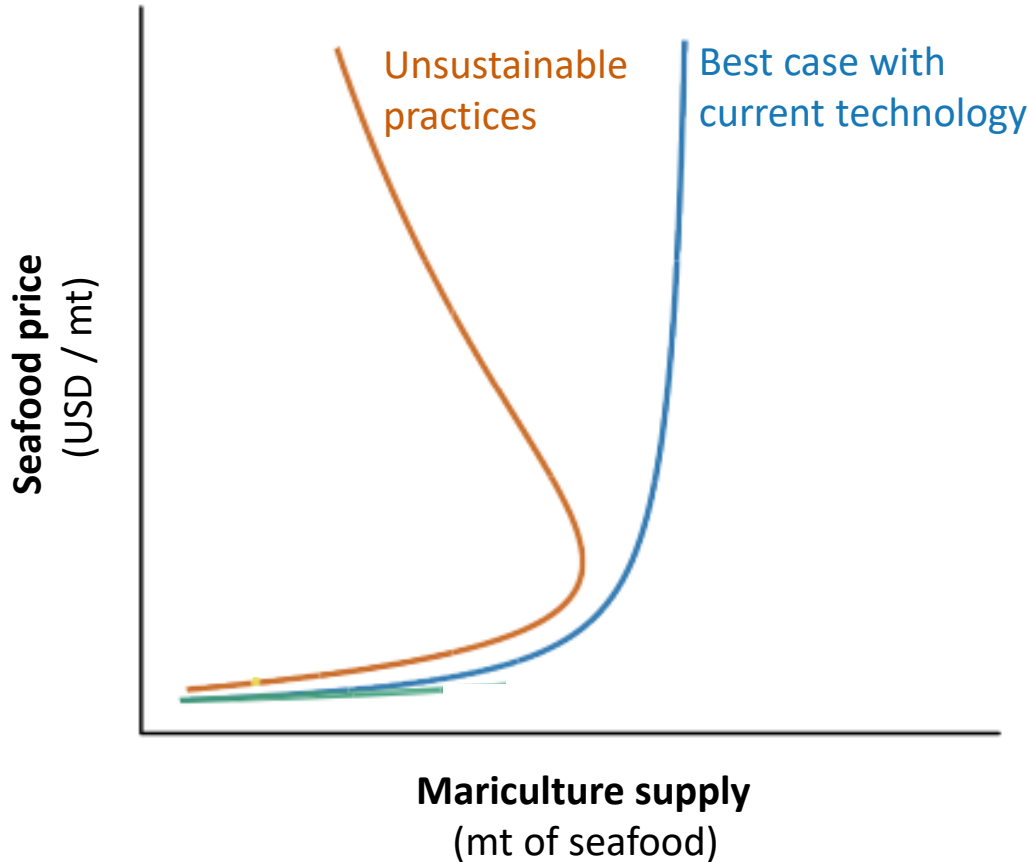


**What is the future of  
sustainable mariculture?**

# Estimating sustainable mariculture supply



# Estimating sustainable mariculture supply

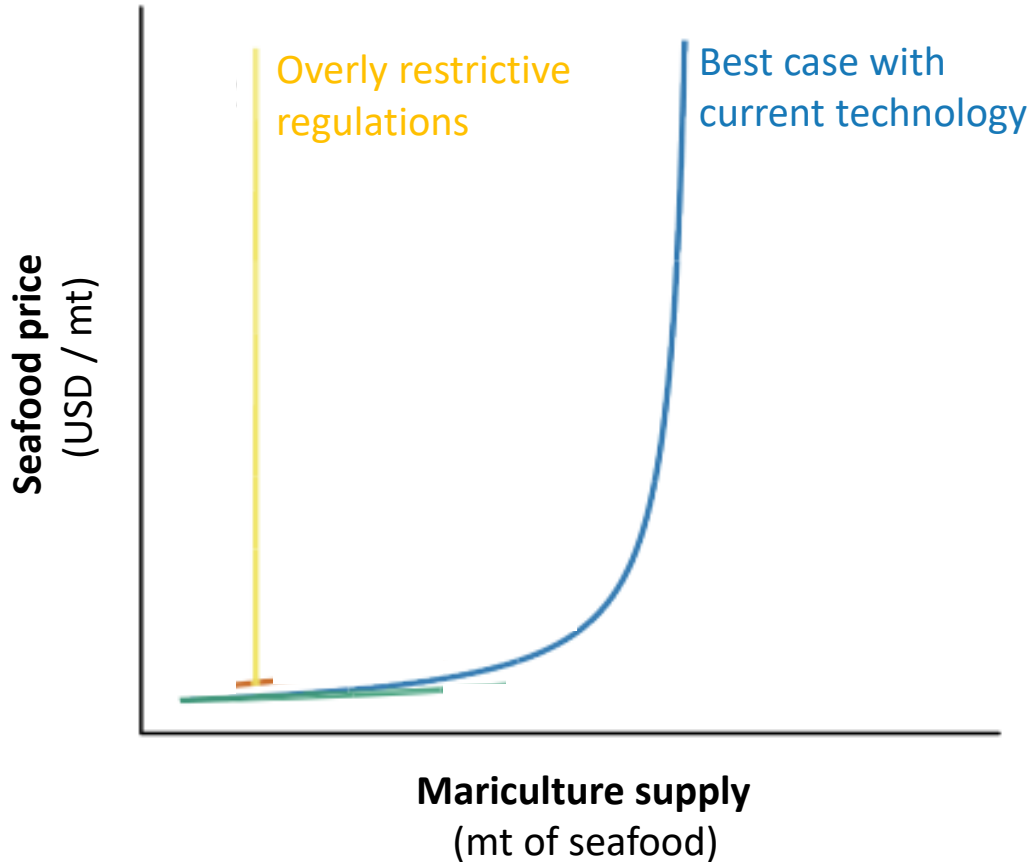


## Pathways to expand mariculture

1. Ensure sustainable practices through improved governance



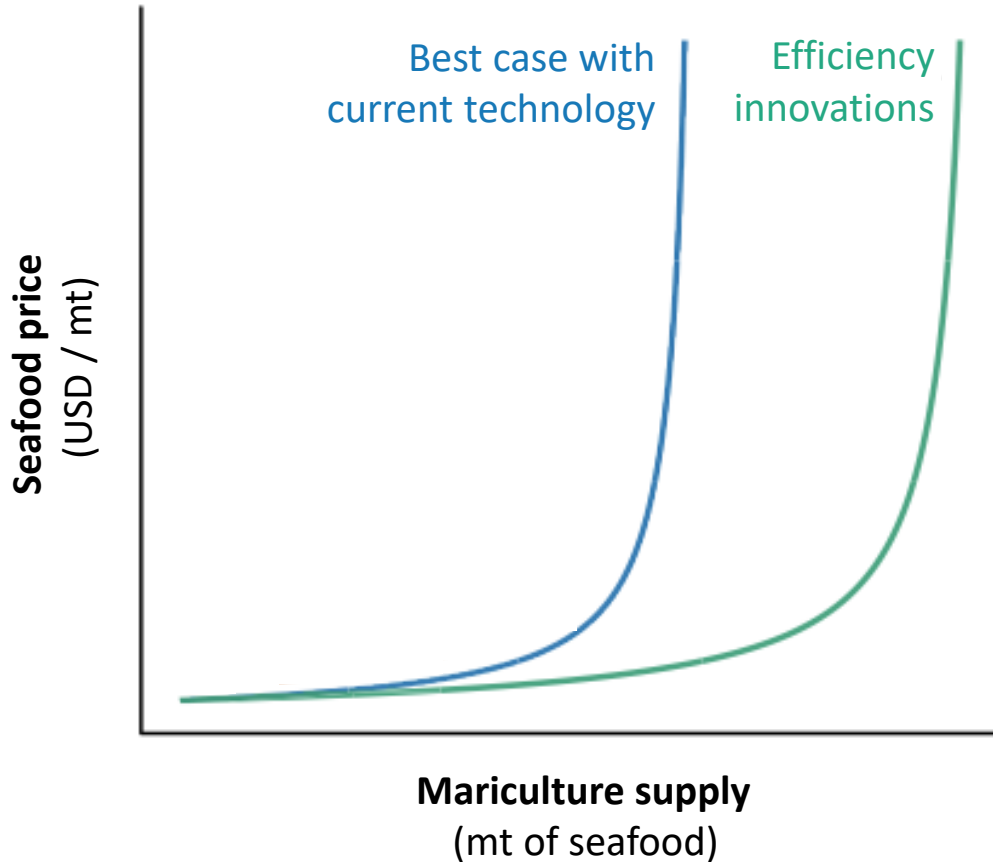
# Estimating sustainable mariculture supply



## Pathways to expand mariculture

1. Ensure sustainable practices through improved governance
2. Ease regulatory barriers and streamline permitting

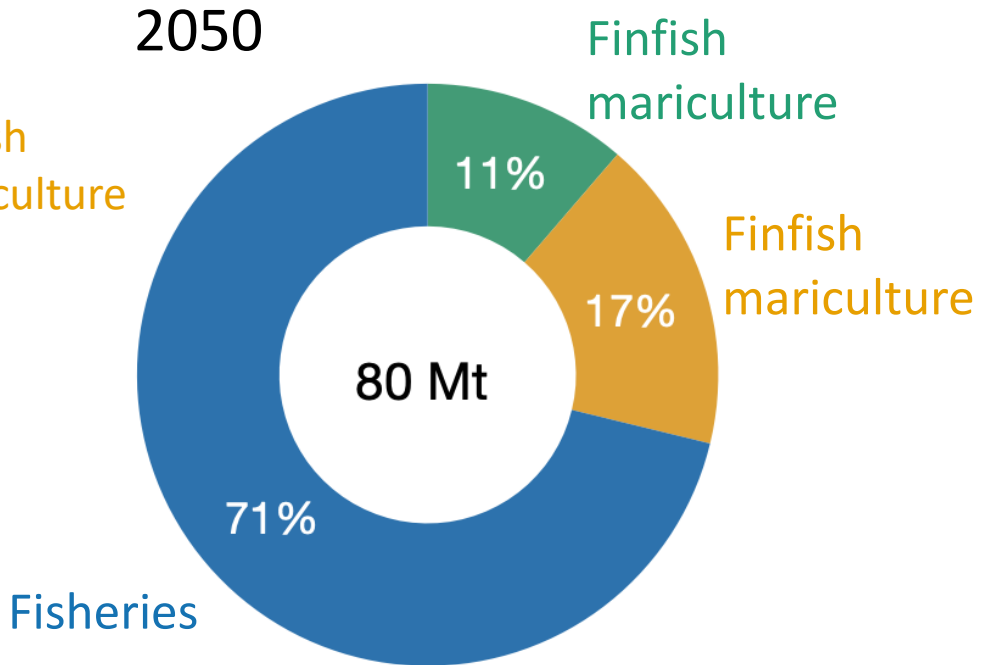
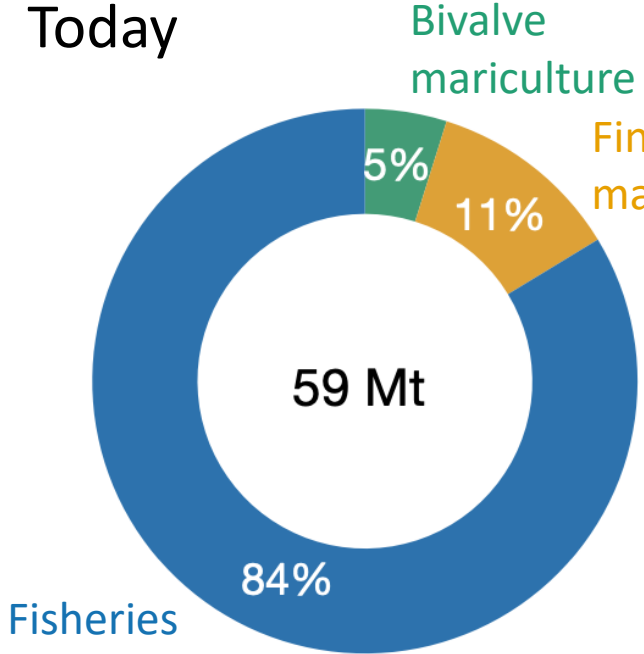
# Estimating sustainable mariculture supply



## Pathways to expand mariculture

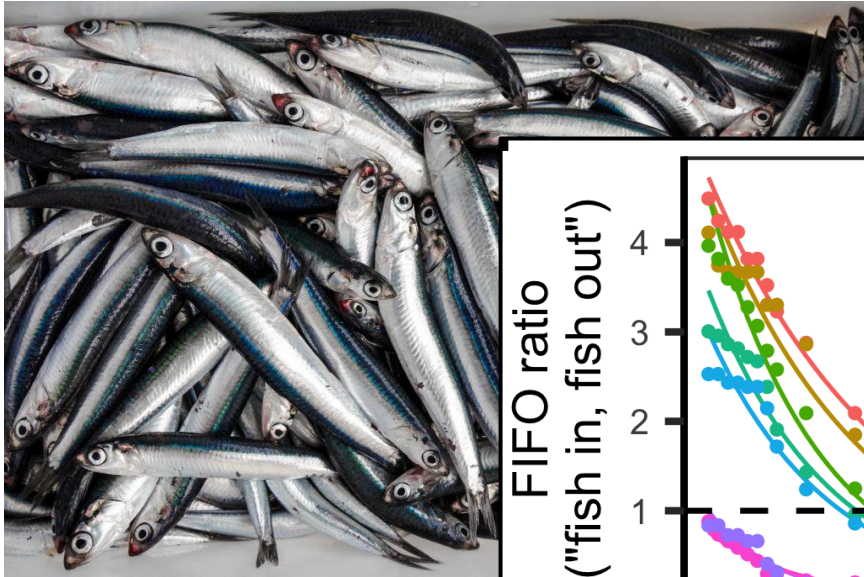
1. Ensure sustainable practices through improved governance
2. Ease regulatory barriers and streamline permitting
3. Technological innovations in production efficiency
  - Lower costs
  - Better yields
  - More raw material for feed
  - Better feed efficiency

# The ocean could produce 36% more food in 2050 than today, with the greatest growth in mariculture

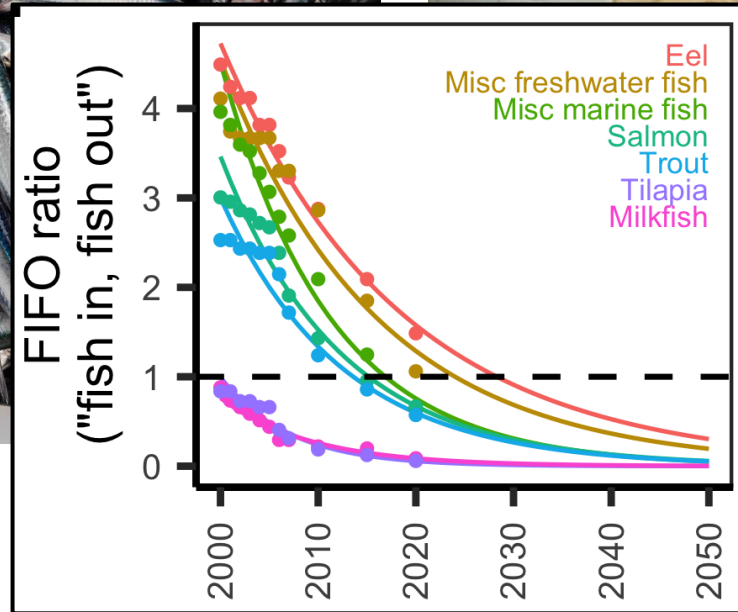


# Tradeoff #1: Direct vs. indirect consumption of fish

Direct human consumption

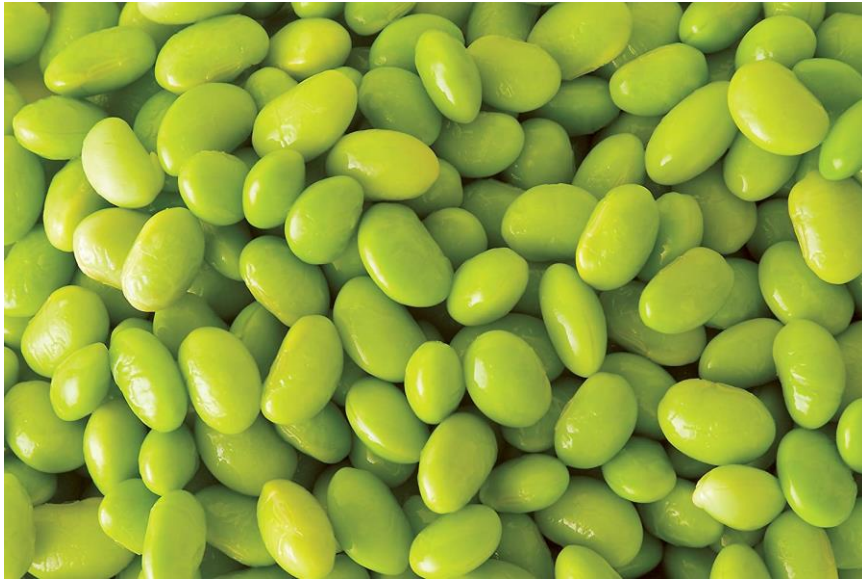


Indirect human consumption



# Tradeoff #2: Direct vs. indirect consumption of plants

Direct human consumption

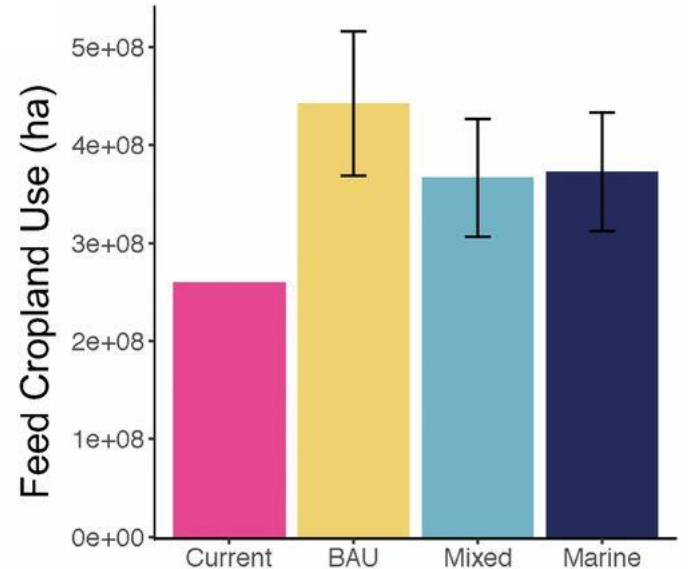
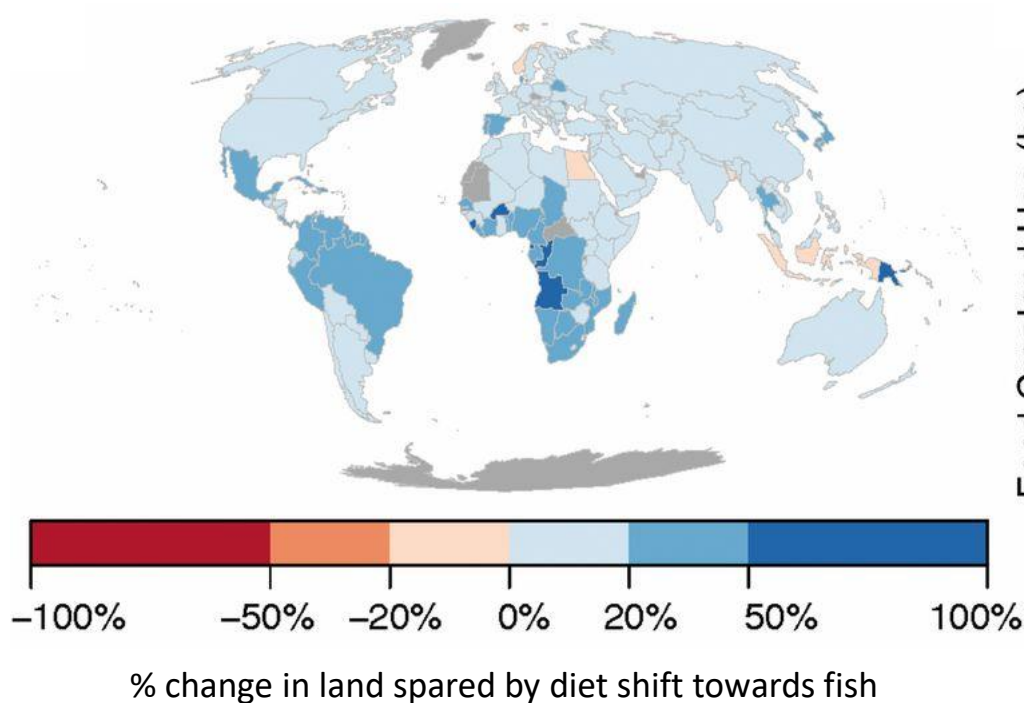


Indirect human consumption



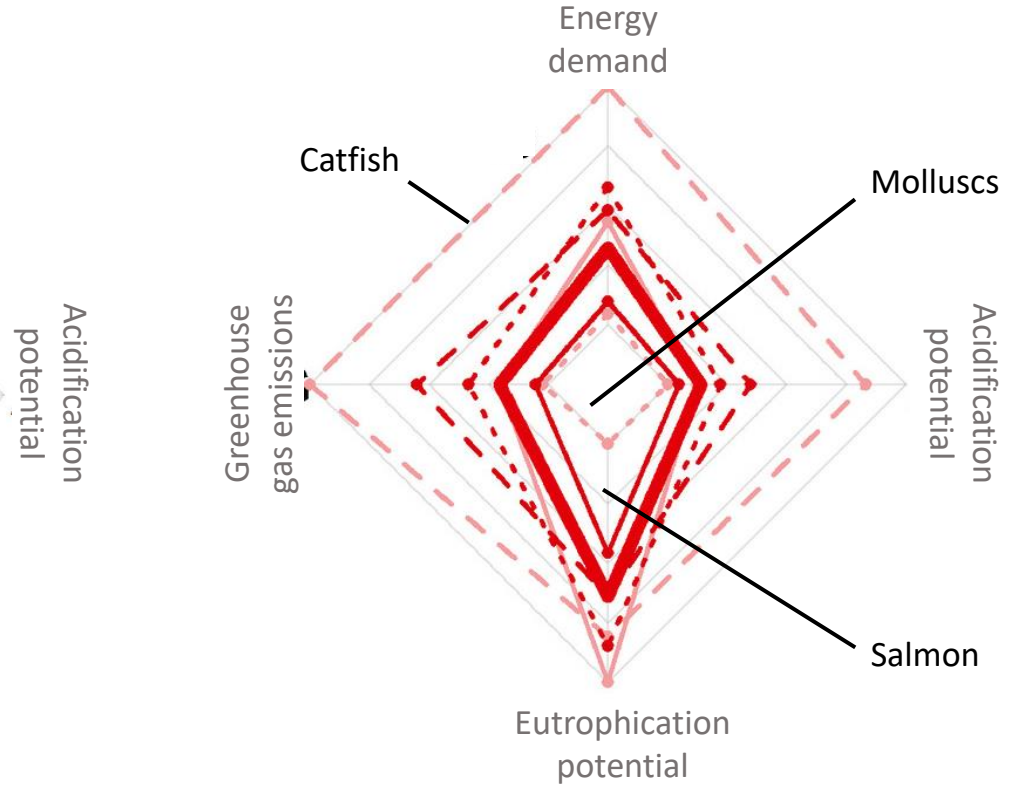
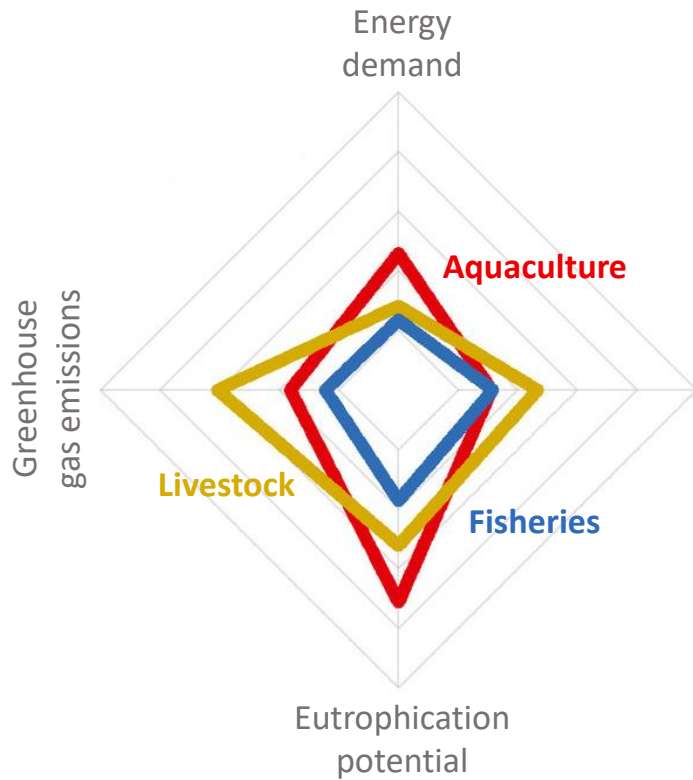
# Tradeoff #3: More plant-based ingredients could mean more pressure on land

(but if diets change towards aquaculture, less land is needed)





# Tradeoff #4: Environmental impacts



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## Land



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## Marine



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