



Resilient Aquatic Food  
Systems for Healthy  
People and Planet

# Near-real-time nutrition-sensitive fisheries management

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# The problem

Malnutrition due to poor diets has increased by 15% since 2010.

Micronutrient deficiencies are a global problem

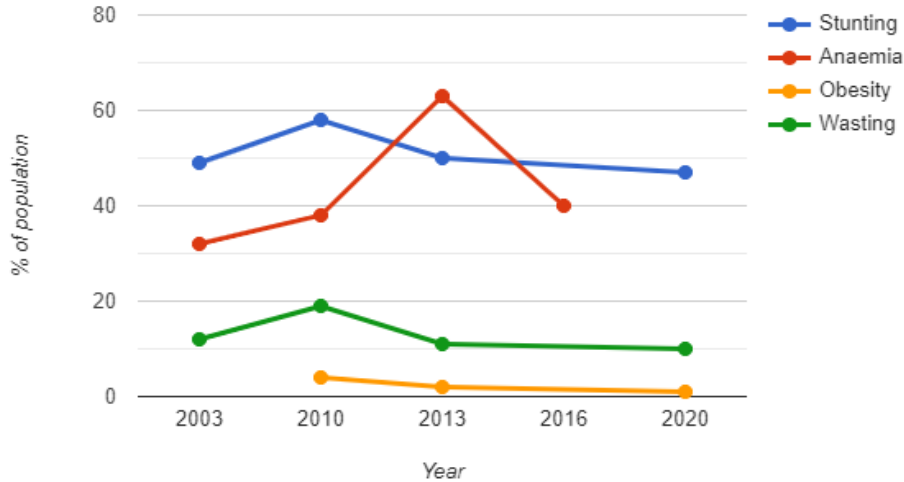
- **Iron** deficiency (resulting in anaemia) impairs motor and cognitive function, slow emotional development, and poor academic performance in children
- **Zinc** deficiency results in reduced immune system, among other complications. Growing babies require zinc and only get it from the mother
- **Calcium** is essential for bone growth, skeletal development and bone density

Food systems are under increasing pressure, and costs are rising.

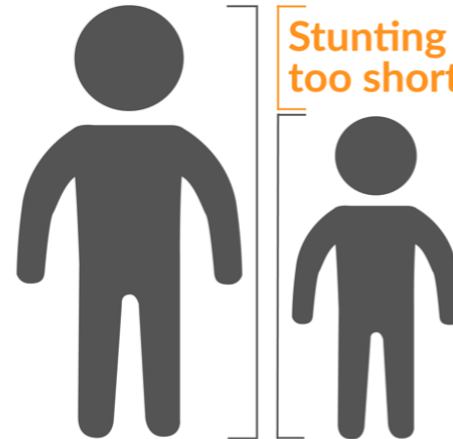
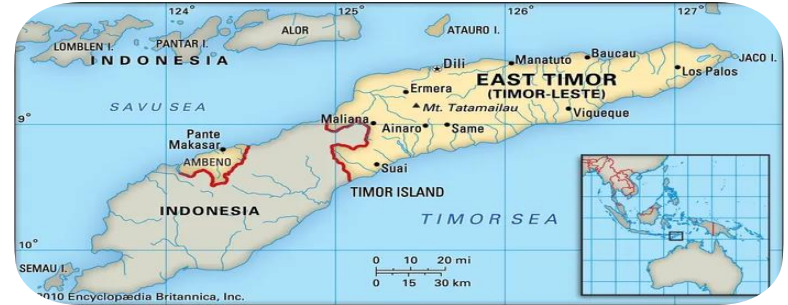
- Equity - Undernourishment and poverty intersect
- Dietary quality - Diets often are energy-dense and nutrient-poor
- Economic access - Animal-source proteins are generally expensive
- Affordability - A nutritious diet would cost 3x the price of an energy only diet

# Malnutrition in Timor-Leste

Malnutrition in children in Timor-Leste (0-59 months)



Timor-Leste has the third highest prevalence of stunting in the world



Stunting means you're too short for your age

well-nourished kids are more likely to:

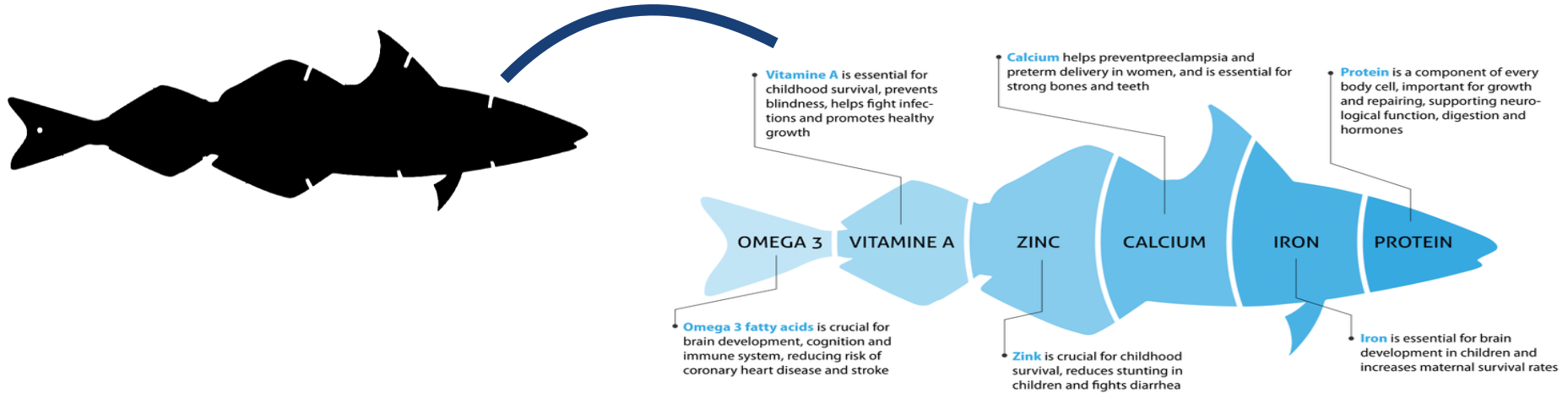
- stay in school longer
- earn higher wages
- escape poverty

# The potential

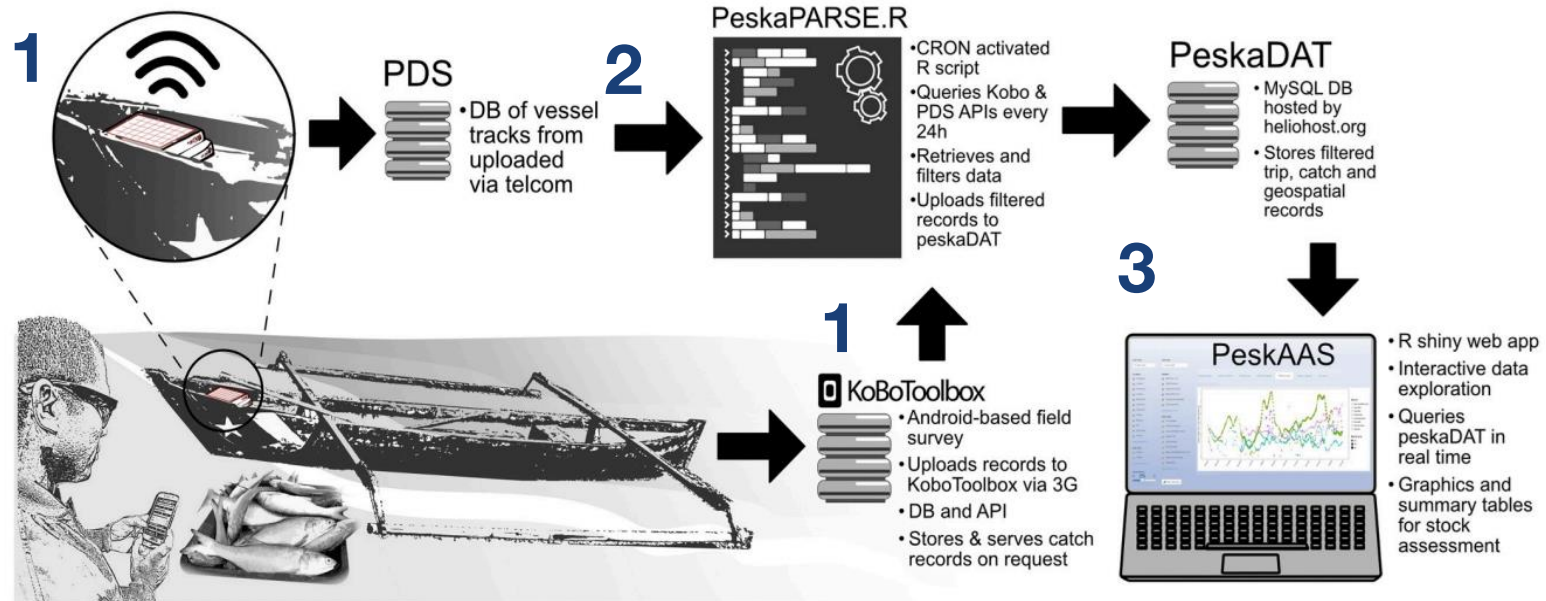
If **catch composition can be converted into nutrient yields to identify the gears, fleets, and species that supply nutrient-rich seafood** then we can identify fisheries that might provide a sustainable source of nutrients lacking in local diets.



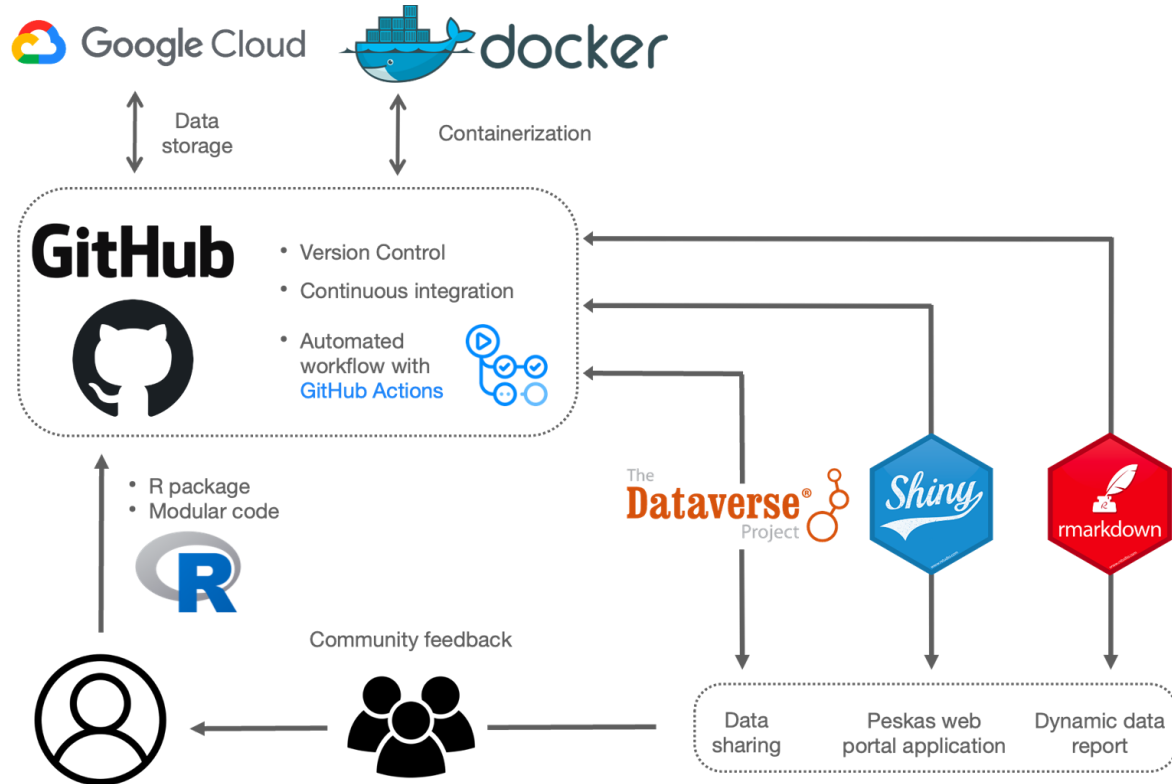
# Fish Nutrients tool - FishBase



# PeskaAAS monitoring system



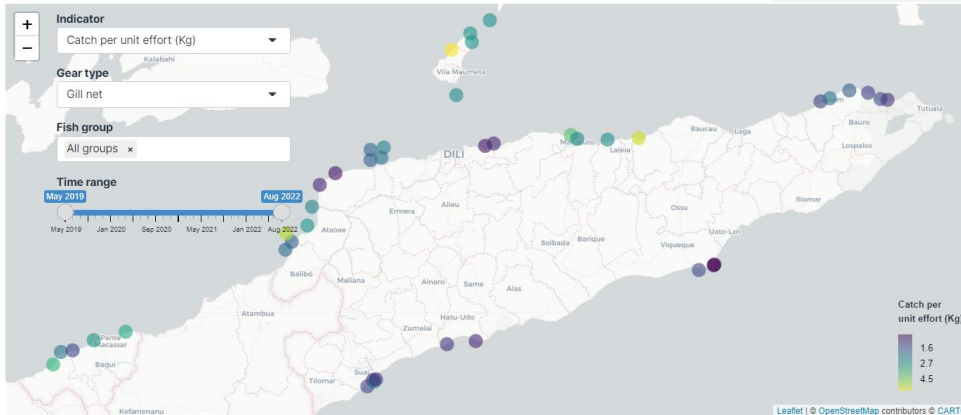
# PeskAAS work flow



# PeskAAS monitoring system



## Dynamic map of catch and effort



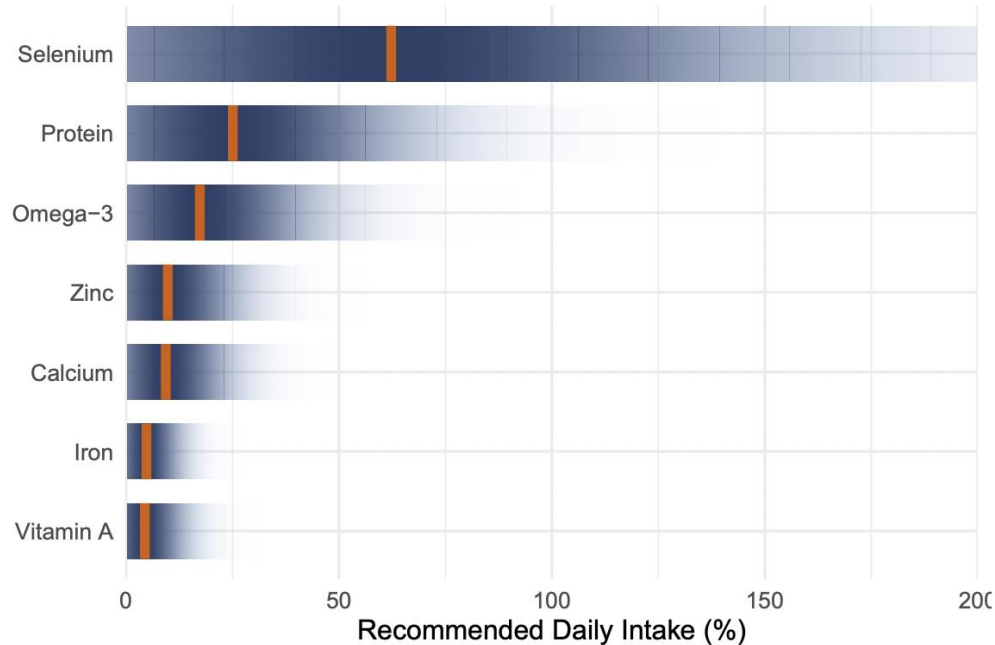
## Extrapolated fisheries revenue



# Nutrient composition by fish groups

## Catches' nutritional properties

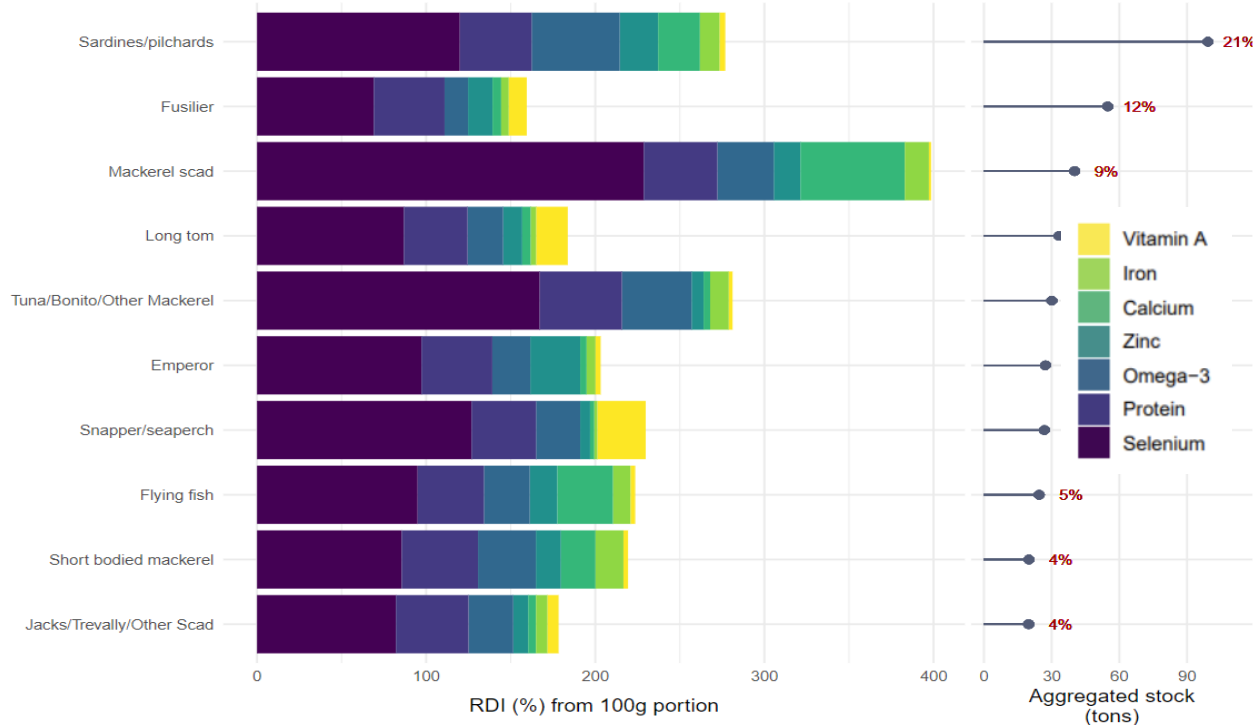
Average nutritional properties of Timor catches relative to the Recommended Daily Intake (%). The orange line represent the mean, shaded areas represent the limits of the 95% confidence interval with dark shades indicating high density in the distribution.



# Nutrient composition by fish groups

## Fish groups nutritional contribution

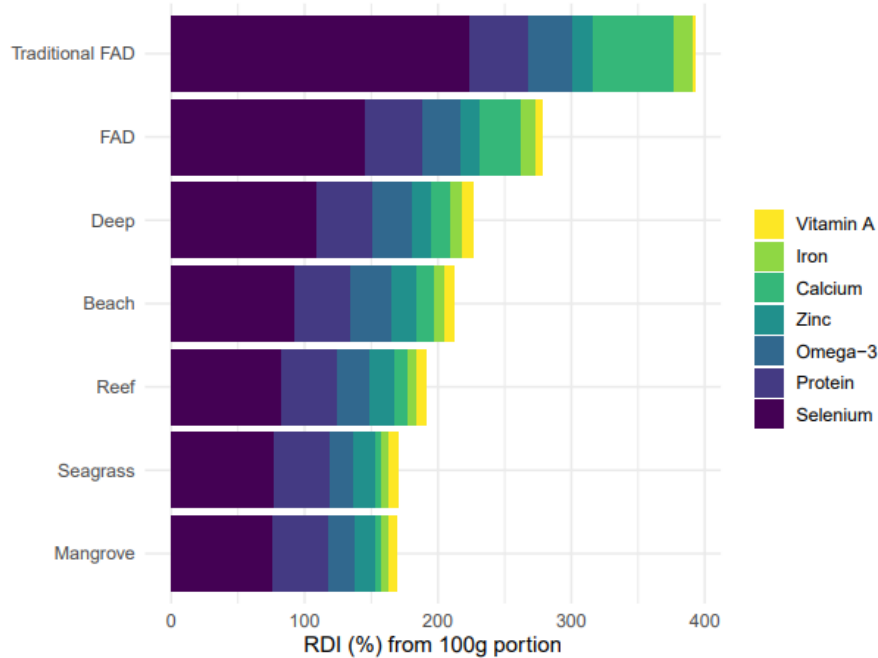
Median contribution of fish groups to the Recommended Nutrient Intakes (%) for the seven nutrients considered and overall aggregated fish groups stock. Red numbers are the percentage of the total catch the species comprise.



# Nutrient composition by fishing habitat

## Nutrients distribution by habitat

Distribution of nutrients' concentration relative to the Recommended Daily Intake (%) of 100g of catch in each habitat monitored in Timor.



# Nutrition-sensitive fisheries policy



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Fisheries managed for nutrient outcomes will require support from markets and institutions to raise **demand** for nutritious seafood and promote **access** to fish

Make nutritious fish  
**available** and **affordable**

Raise awareness of diverse  
diet and healthy habits

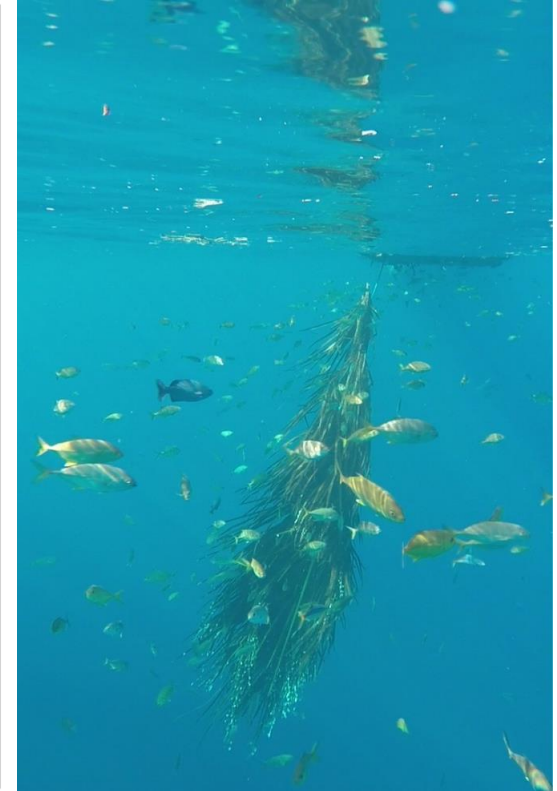
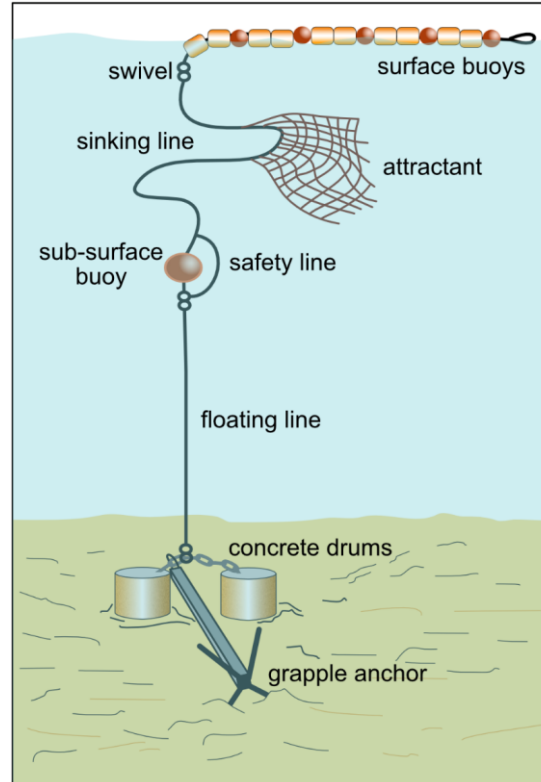
# Nutrition-sensitive fisheries policy



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## Increasing supply...

Nearshore Fish Aggregating Devices Show Positive Outcomes for Sustainable Fisheries Development in Timor-Leste Tilley et al. (2019)



# Nutrition-sensitive fisheries policy

Increasing demand...

Social and behaviour change  
communication

**PLOS ONE**

A randomised controlled trial to test the effects of fish aggregating devices (FADs) and SBC activities promoting fish consumption in Timor-Leste: A study protocol

Tilley et al. 2022



# Conclusion



Aquatic foods are rich in nutrients that can improve micronutrient intake and enhance dietary quality

→ important in Timor-Leste where consumption is low and diets poor

Monitoring systems on fisheries catches have potential to unpack valuable nutrient composition data

→ PeskAAS + FishBase

Nutrition-sensitive fisheries policies can inform management decisions to increase the supply and raise the demand of fish, while promoting access to nutritious seafood

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**Thank You**



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