

Life cycle analysis (LCA) to improve nutrition-sensitive aquaculture



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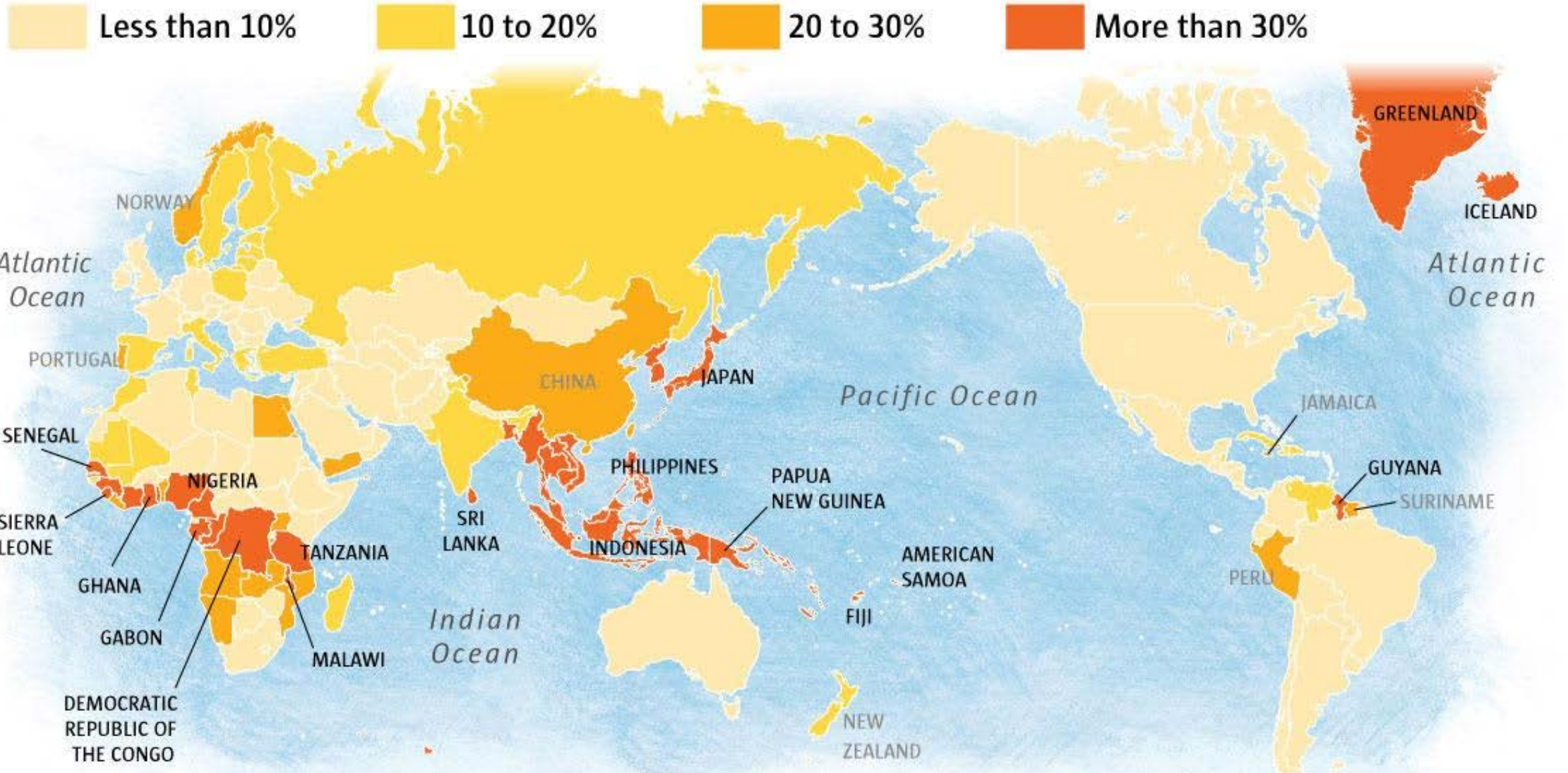


What is nutrition-sensitive aquaculture?

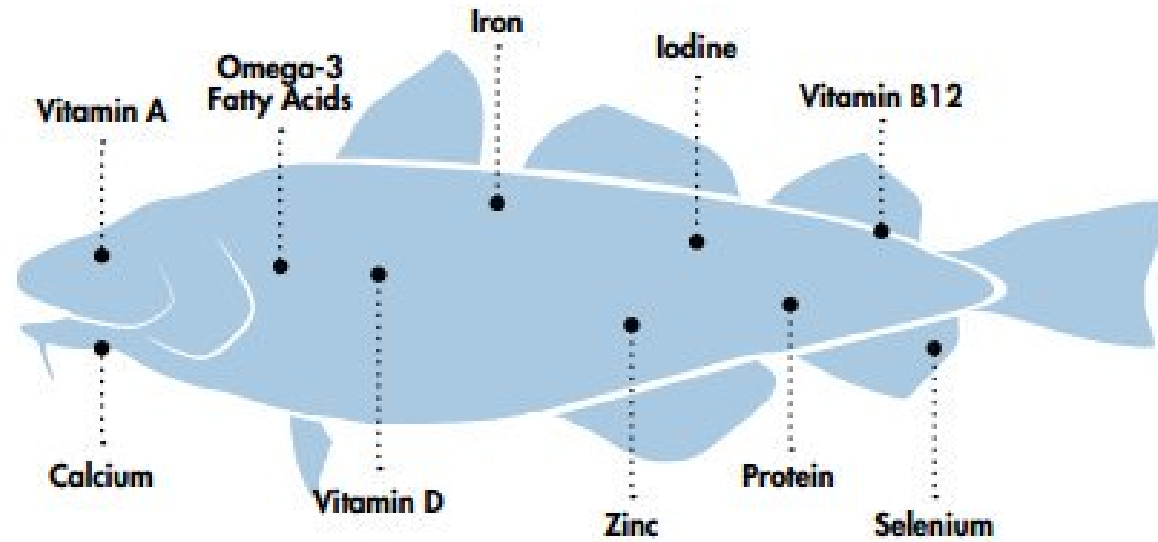
Nutrition-sensitive aquaculture is a **food-based approach** to aquaculture development that puts nutritionally rich foods and dietary diversity at the heart of **overcoming malnutrition and micronutrient deficiencies**. This approach stresses the importance and social significance of the seafood sector for **supporting livelihoods**.

The overall objective of nutrition-sensitive aquaculture is to make the global food system better equipped to produce positive nutritional outcomes.

Seafood reliance (% animal protein from seafood)



More than protein



LONG CHAIN OMEGA-3 FATS

Mainly found in fish and fishery products, these fatty acids are essential for optimal brain development.



IODINE

Seafood is in practice the only natural source of this crucial nutrient. Iodine serves several purposes like aiding thyroid function. It is also essential for neurodevelopment.



VITAMIN D

Another nutrient crucial for mental development, this vitamin also regulates the immune system function and is essential for healthy bones.



IRON

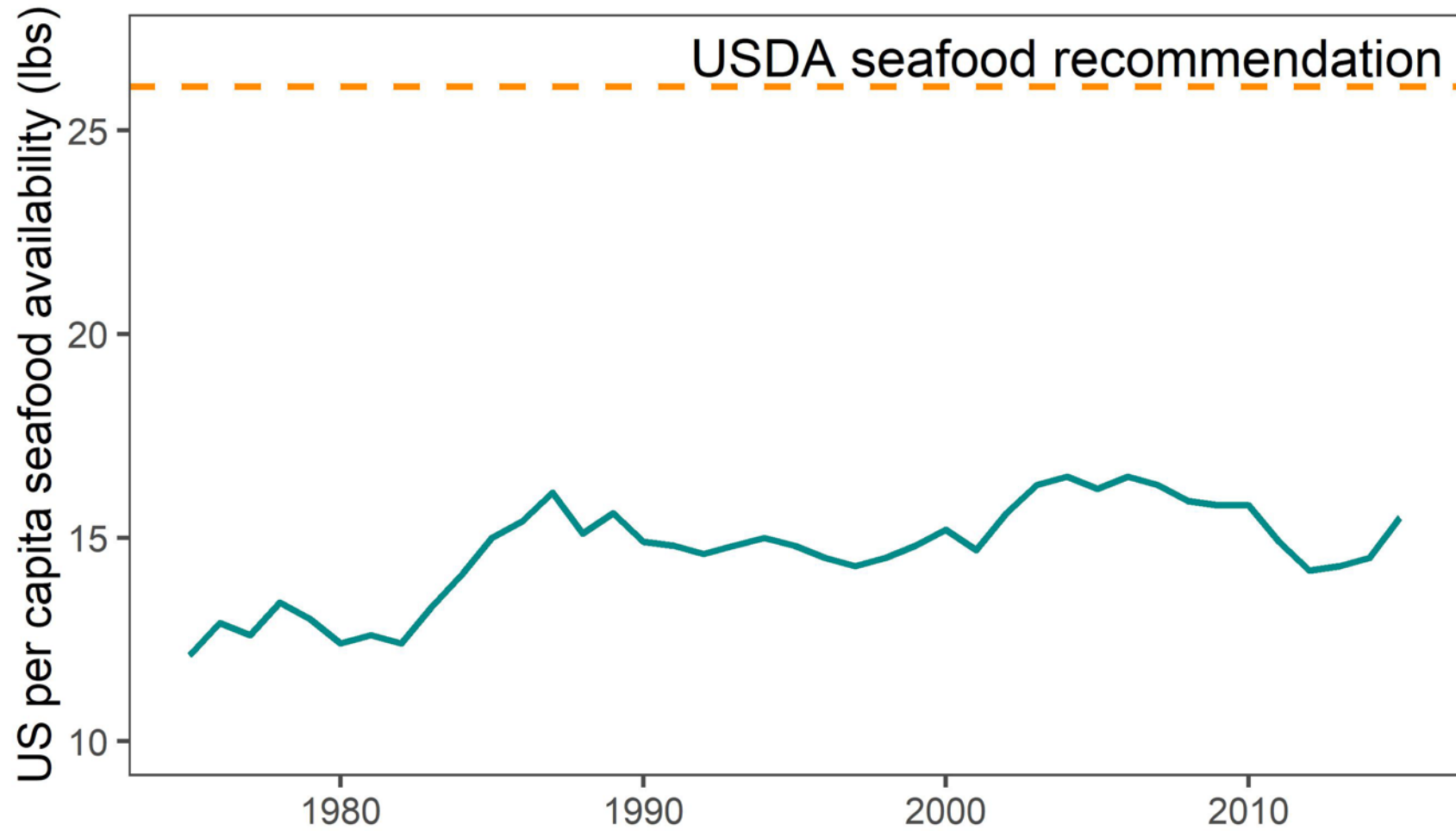
During pregnancy, iron intake is crucial so that the mother can produce additional blood for herself and the baby.



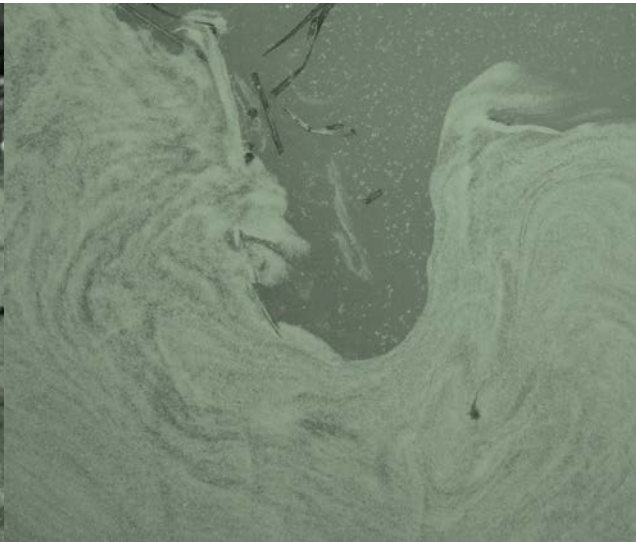
CALCIUM, ZINC, OTHER MINERALS

Diets without dairy products often lack calcium, and zinc deficiency slows a child's development.

Seafood consumption in the US



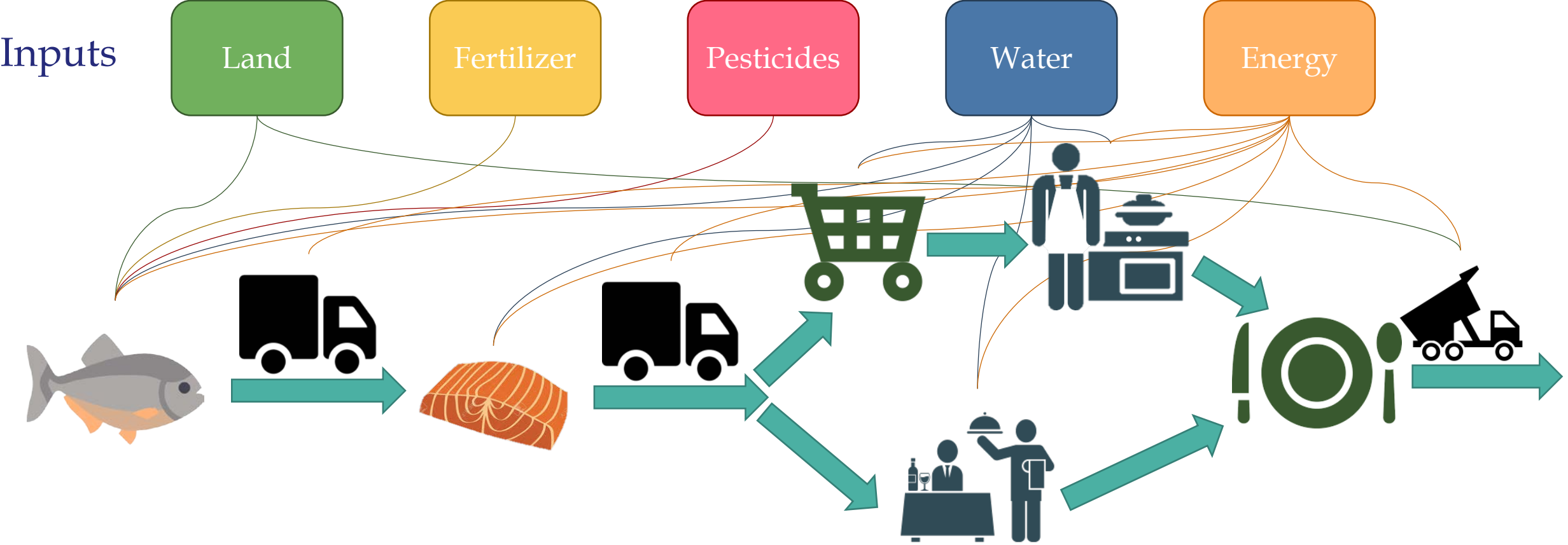
How can we improve nutrition with minimal environmental impacts?



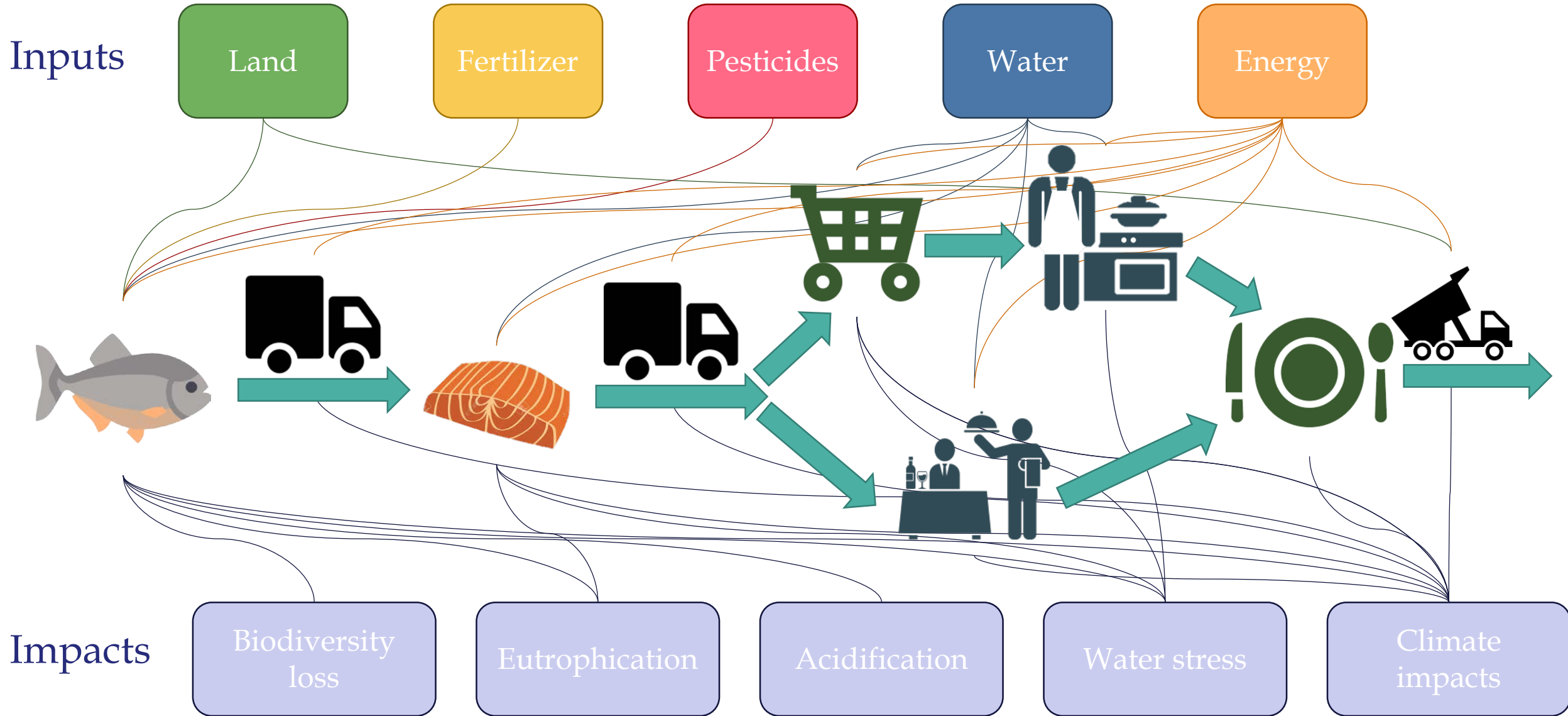
Estimating environmental impacts



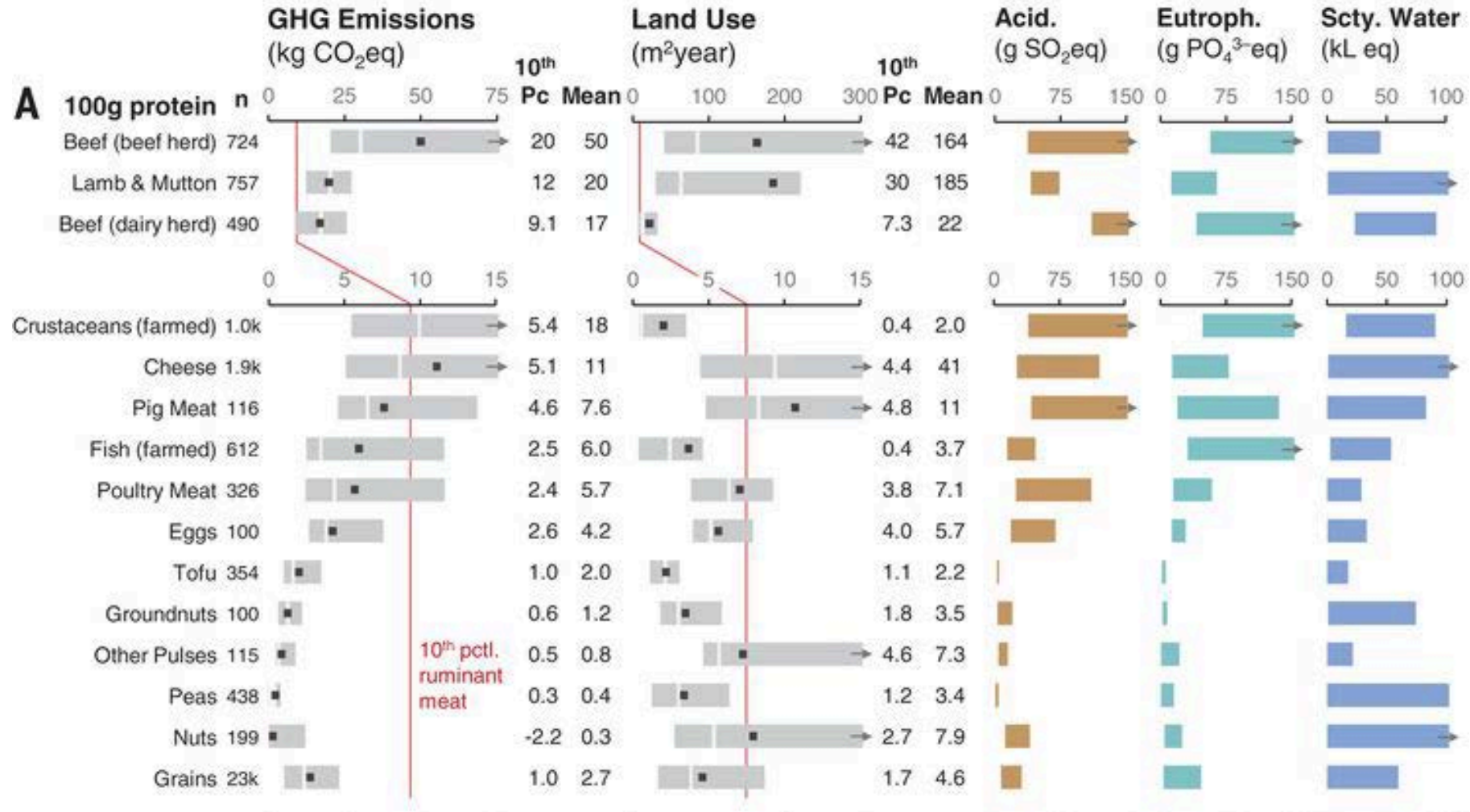
Estimating environmental impacts



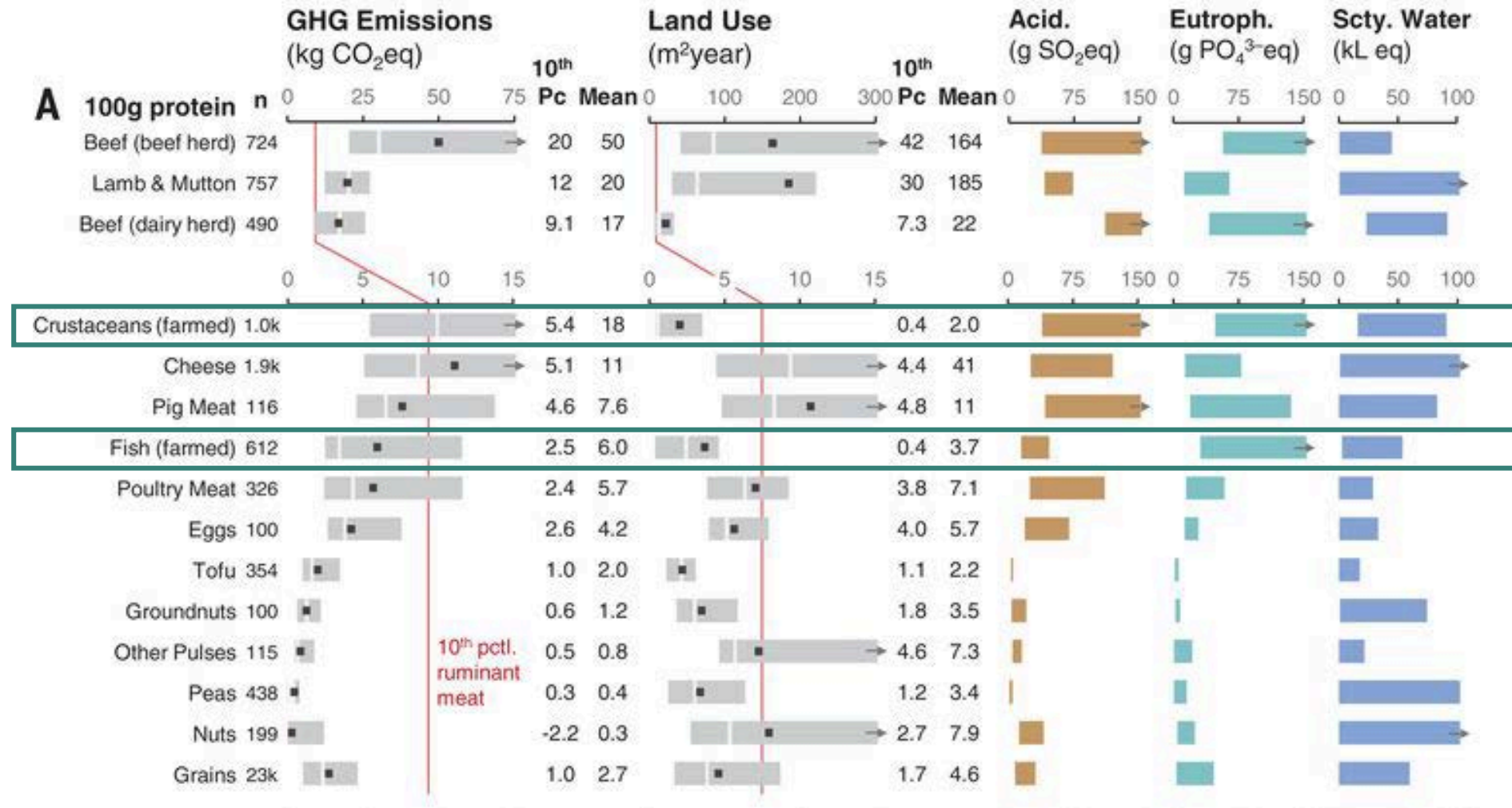
Estimating environmental impacts



How do foods compare?



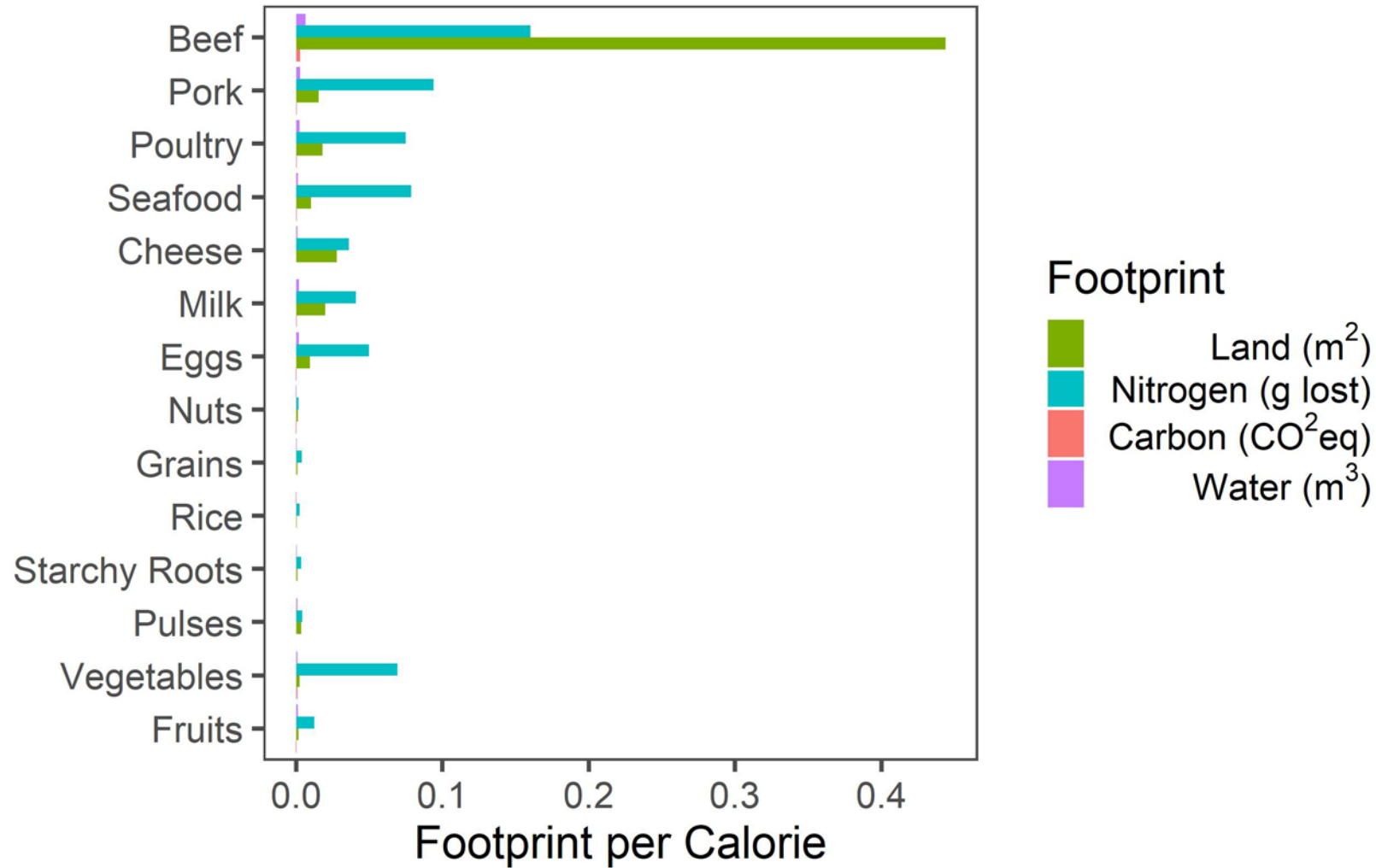
How do foods compare?



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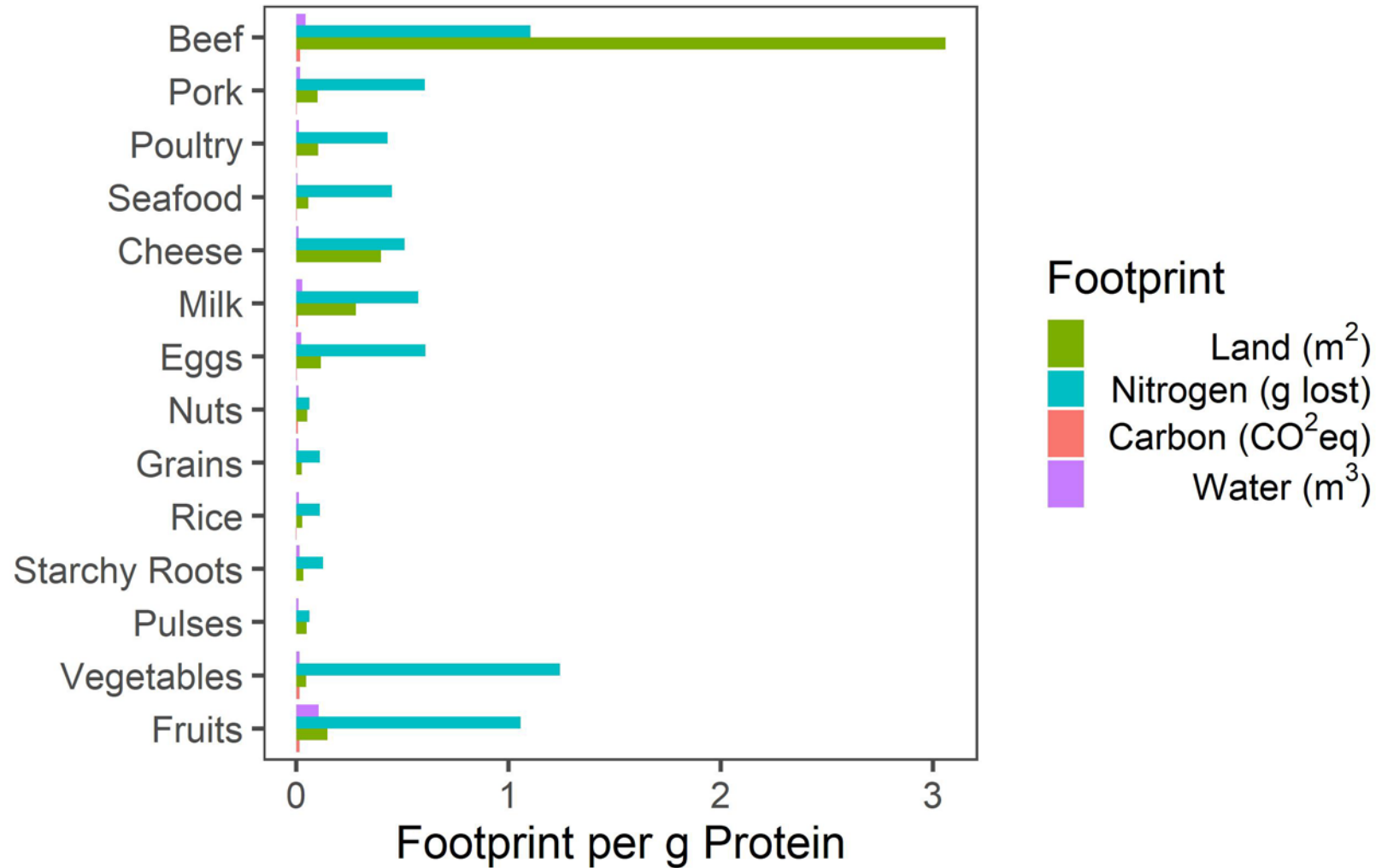
Nutrition Facts			
Serving Size 1 (44g)			
Amount Per Serving			
Calories 96			
		% Daily Values*	
Total Fat 1g			2%
Saturated Fat	0g		0%
Trans Fat	0g		
Cholesterol 0mg			0%
Sodium 1mg			0%
Total Carbohydrate 22g			7%
Dietary Fiber	0g		0%
Sugars	6g		
Protein 1g			2%
*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.			
	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2400mg	2400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

How do foods compare?



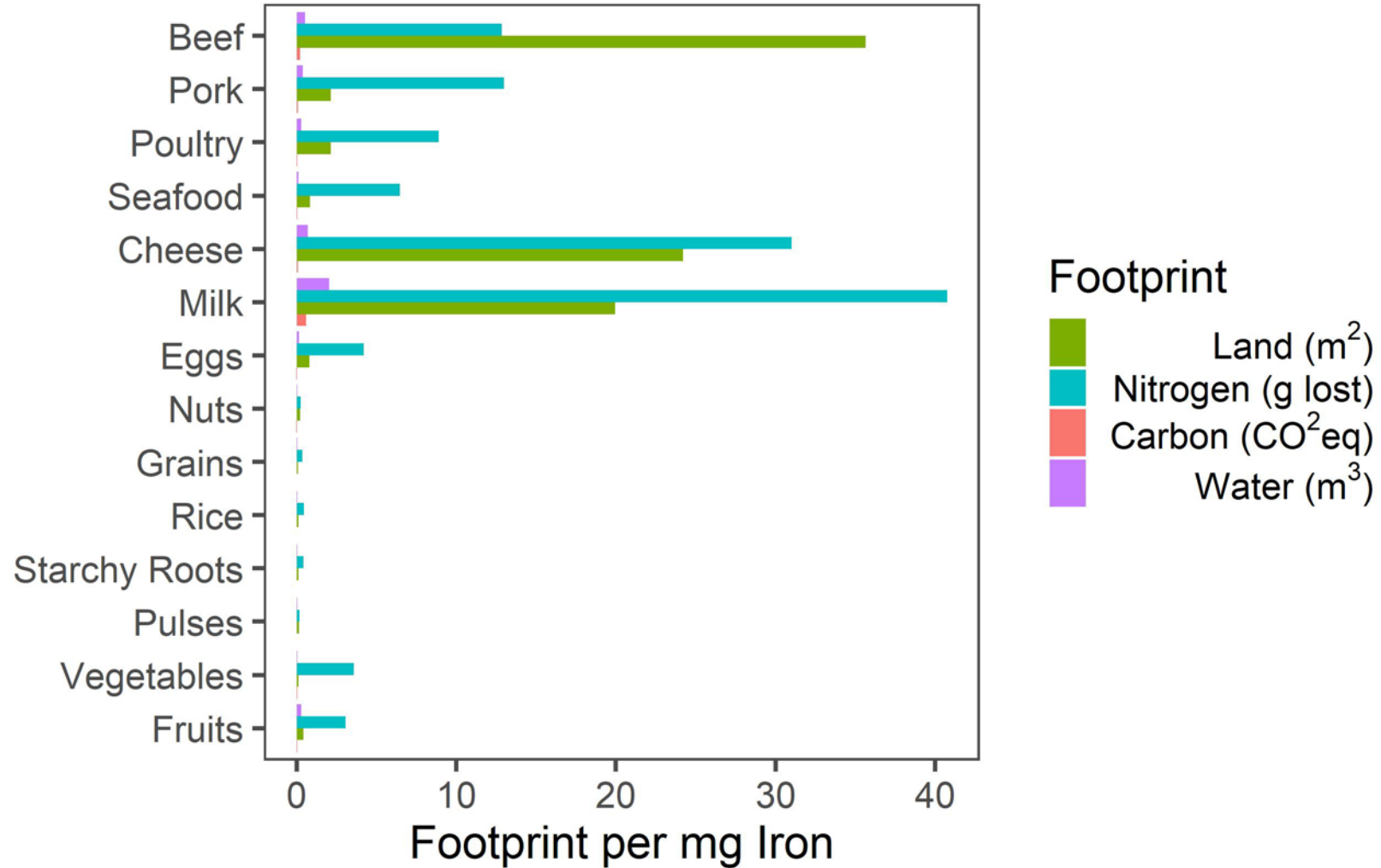
Data from Gephart et al. (2016)

How do foods compare?



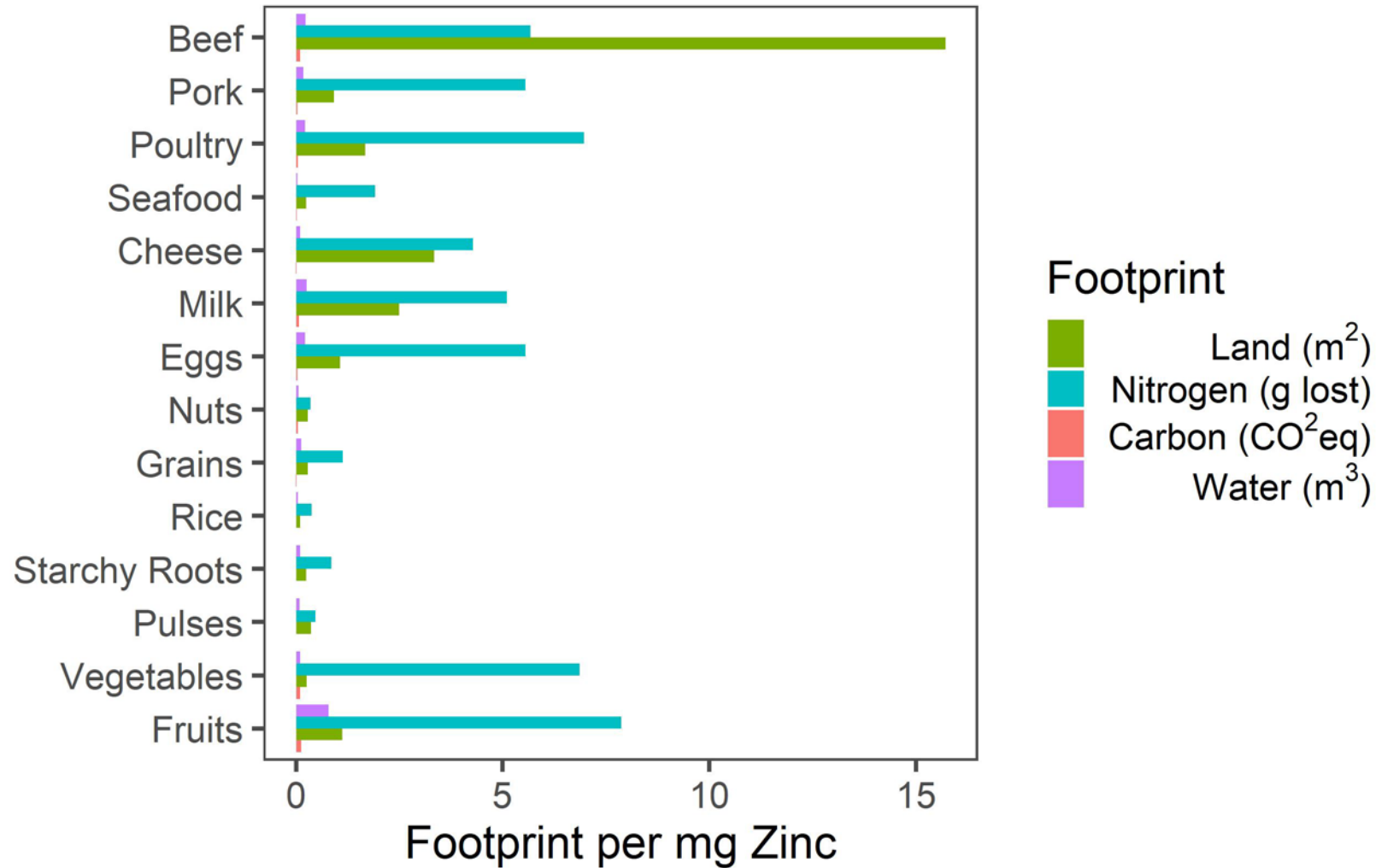
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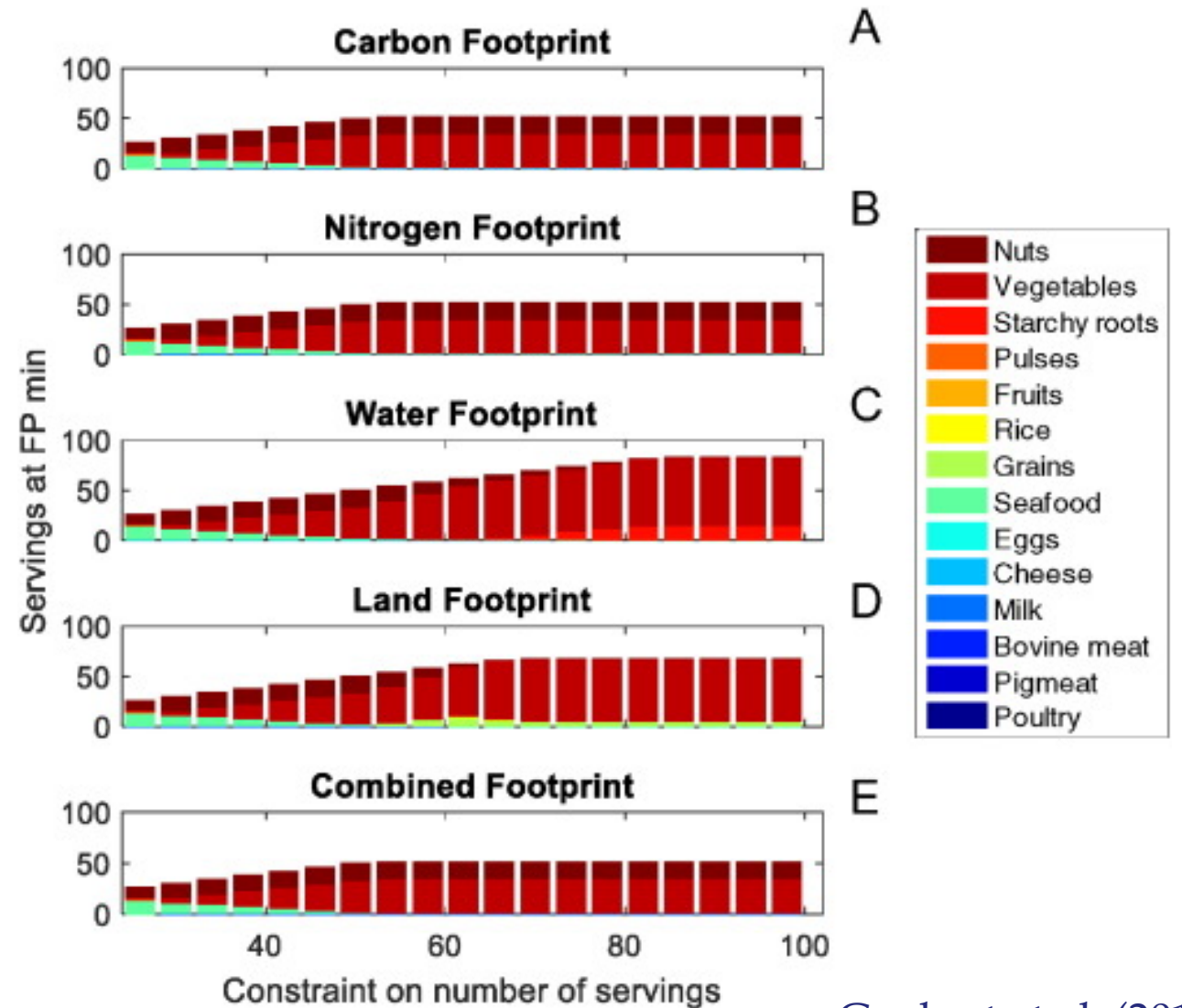
Data from Gephart et al. (2016)

Combining nutrition and environmental impacts

Goal: Minimize each
environmental footprint while
meeting all nutrient constraints

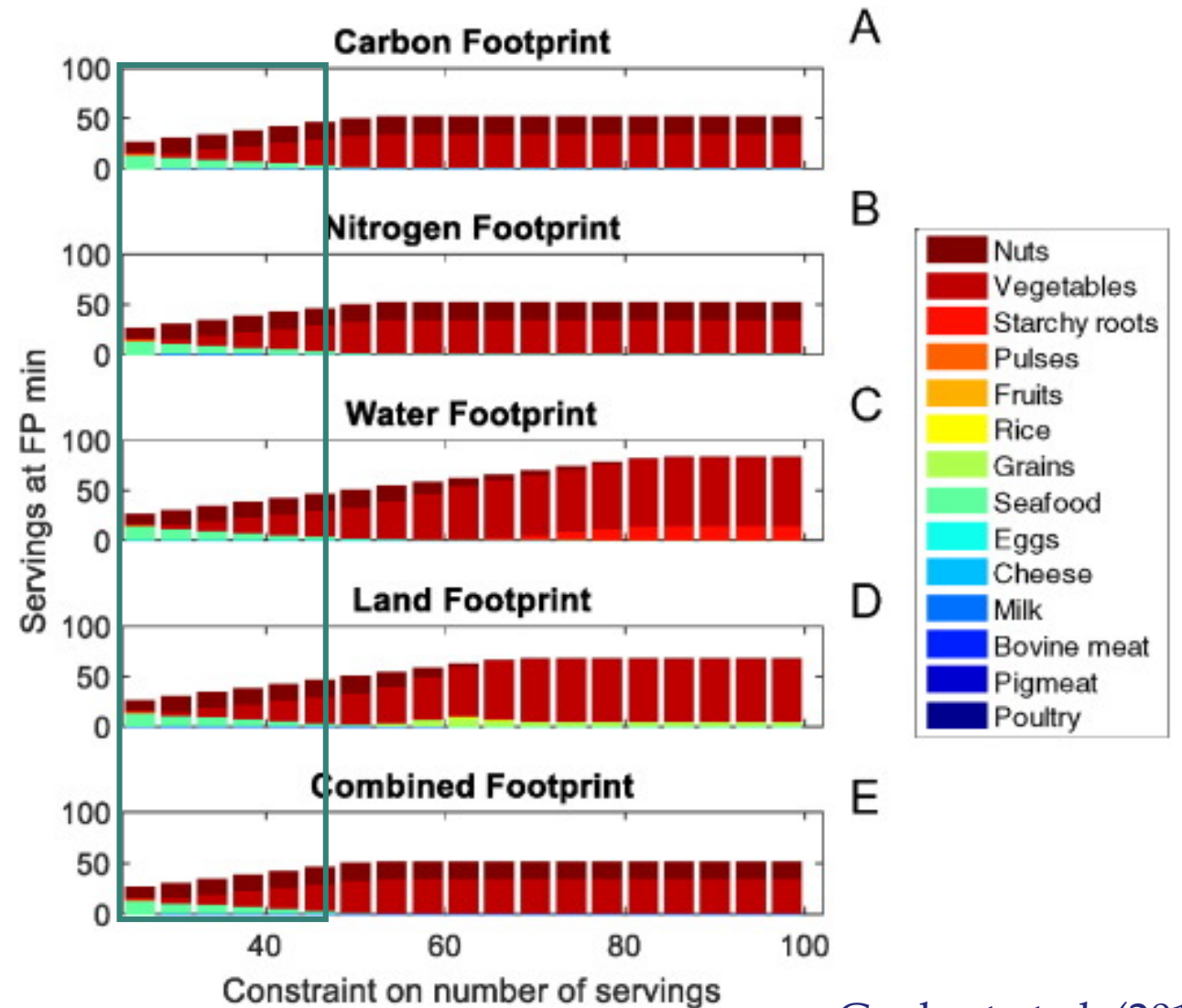
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Combining nutrition and environmental impacts

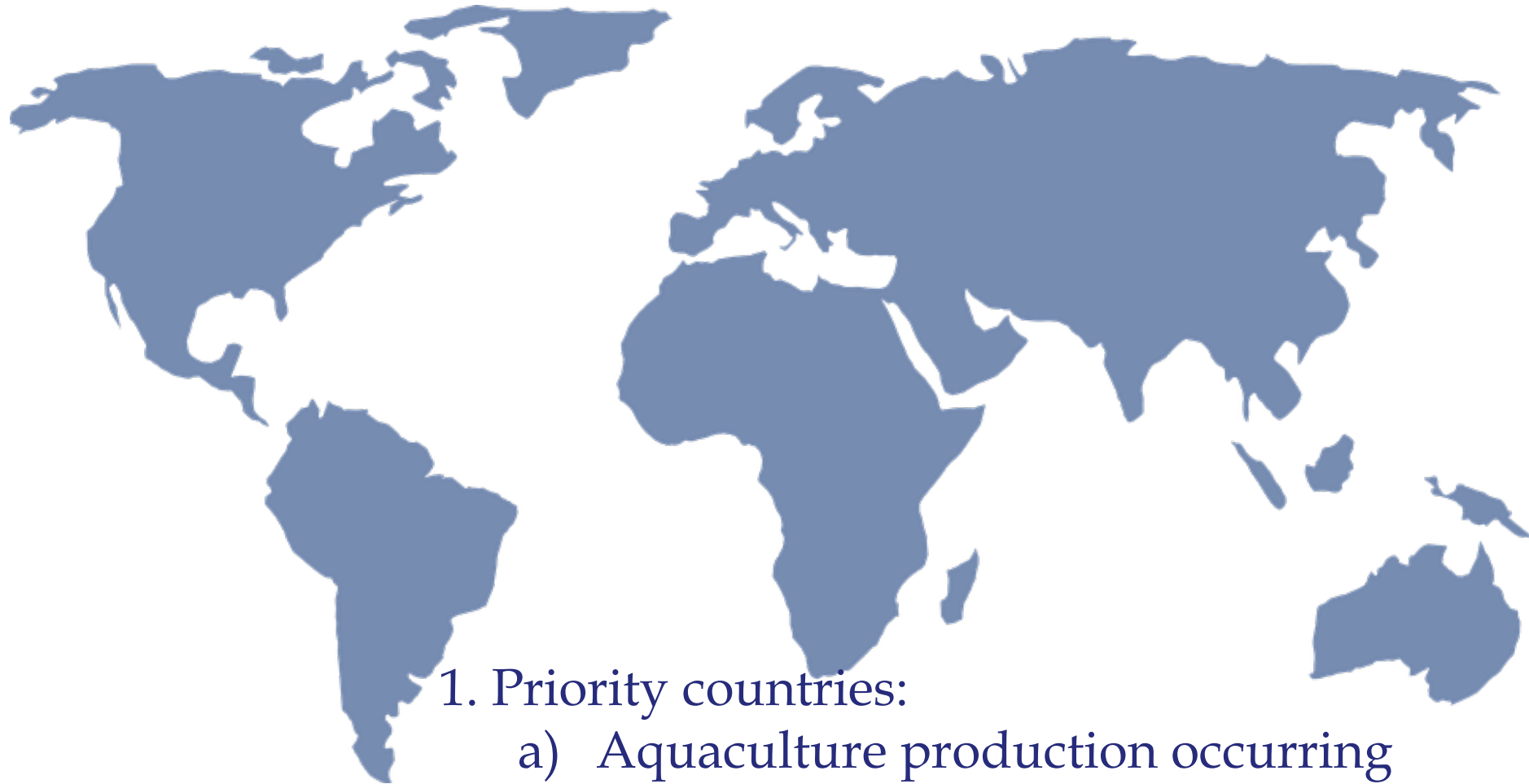
Goal: Minimize each environmental footprint while meeting all nutrient constraints



Upcoming work with The Nature Conservancy

How can we improve nutrition with minimal environmental impacts?

Upcoming work with The Nature Conservancy

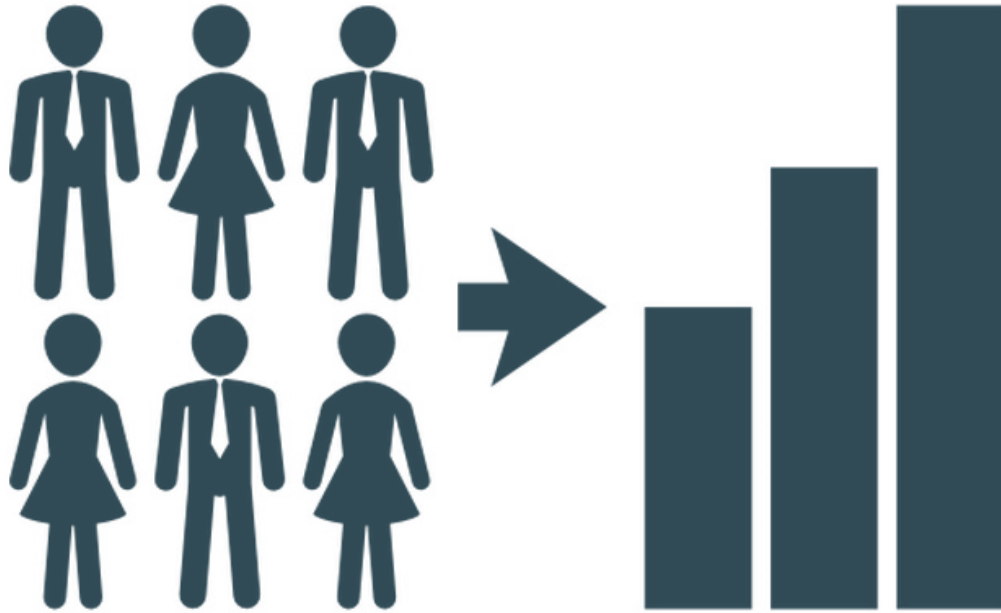


1. Priority countries:

- a) Aquaculture production occurring
- b) Seafood important to nutrition
- c) TNC connections

Upcoming work with The Nature Conservancy

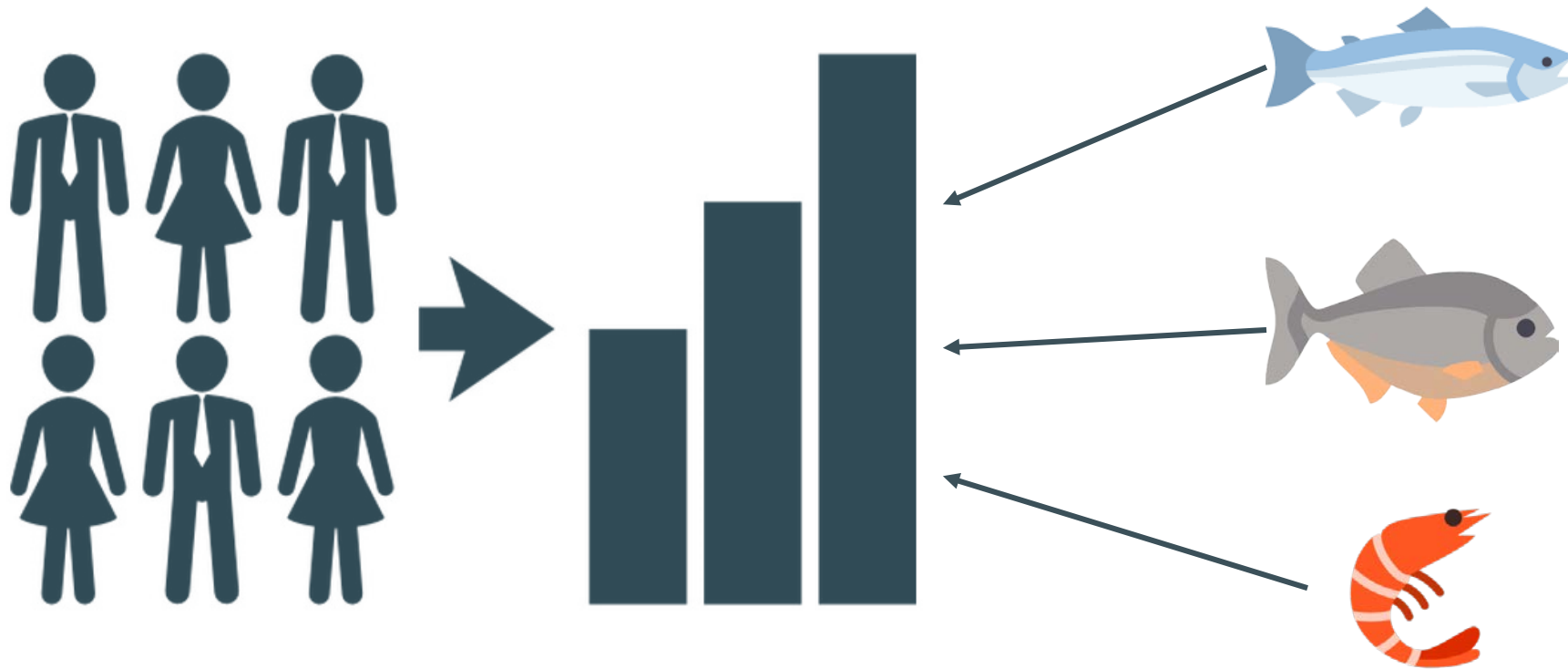
2. Calculate nutrition requirements and shortages



Using GENuS database (see Smith et al. 2016)

Upcoming work with The Nature Conservancy

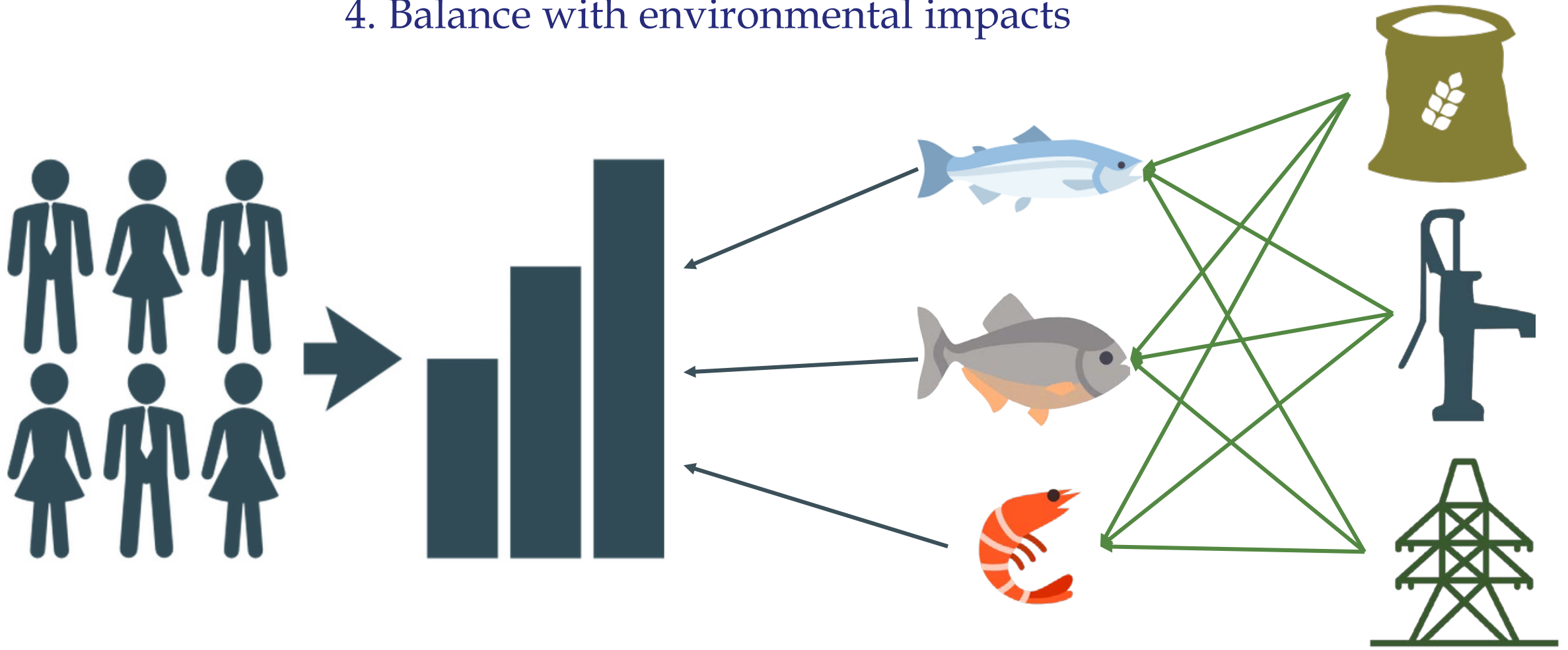
3. Compare requirements to seafood nutrient composition



Using GENuS database (see Smith et al. 2016)

Upcoming work with The Nature Conservancy

4. Balance with environmental impacts



Using GENuS database (see Smith et al. 2016)

Acknowledgements



Robert Jones, The Nature Conservancy



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