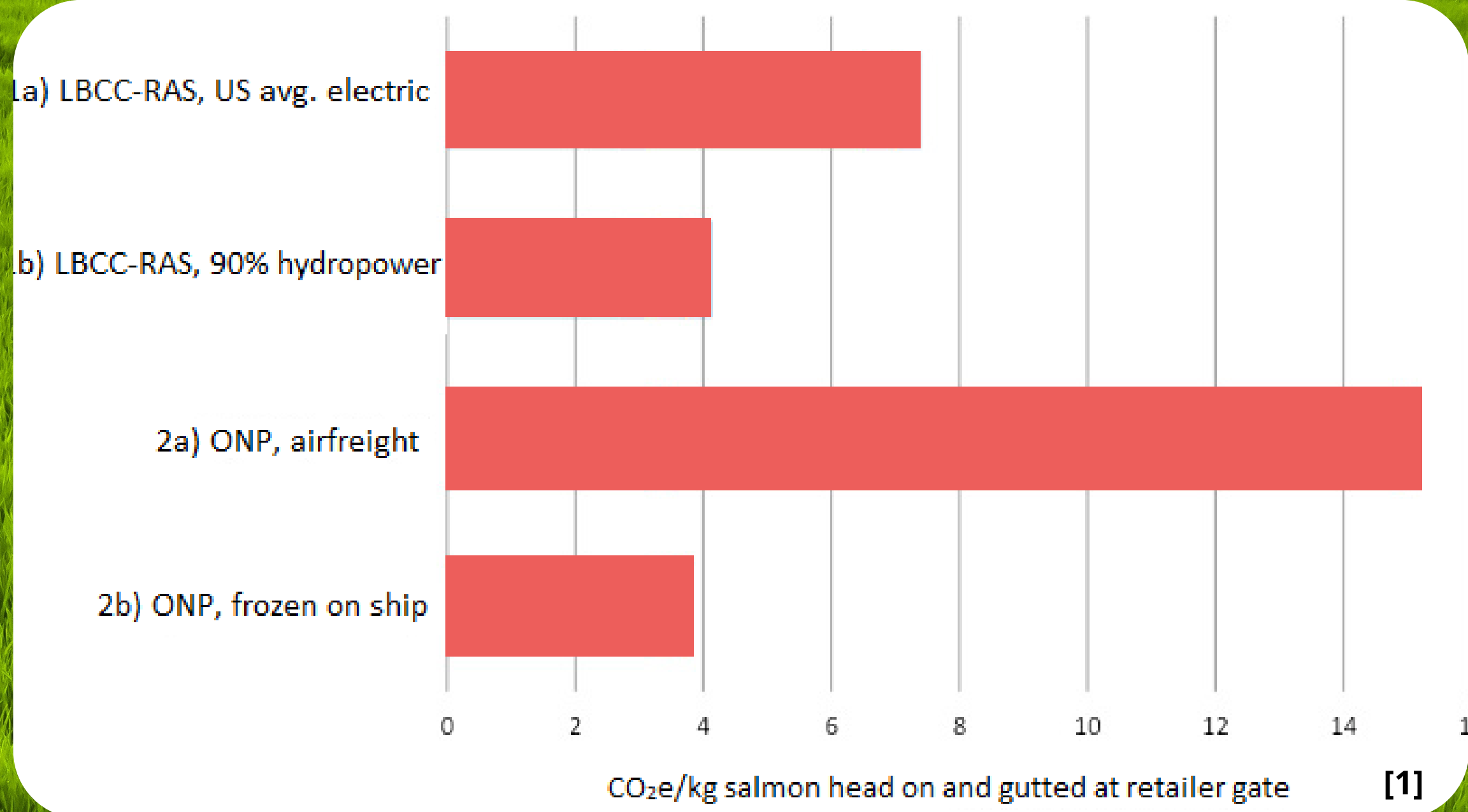




# When fish move to land

Marine salmon aquaculture is moving on land. What implications will this have on sustainability and economic growth?



## Benefits of land-based

- Lower carbon footprint - closer to market removes airfreight: 74% of CO<sub>2</sub> emission. Hydro-powered LBCC-RAS more efficient than airfreigh from ONP
  - Biosecure, closed system prevents leakage of feces, antibiotics and copper into environment
  - Site-independent - economic empowerment as land locked countries enter market
  - Greater animal welfare - removes salmon lice and increase water quality.
- [1]

## Concerns of land-based

- Carbon emission: less efficient than transporting fish frozen on ship from ONP, however transport by ship reduce freshness
  - Consume energy - LBCC-RAS need electricity to maintain water at 8-14 °C.
- [1]



## SDG 2, 6 and 9

The link between moving salmon to land and SDG2 of ending hunger is found in how making more salmon farms means there will be more salmon for consumption – more mouths can be fed and food resources can keep up with population growth.

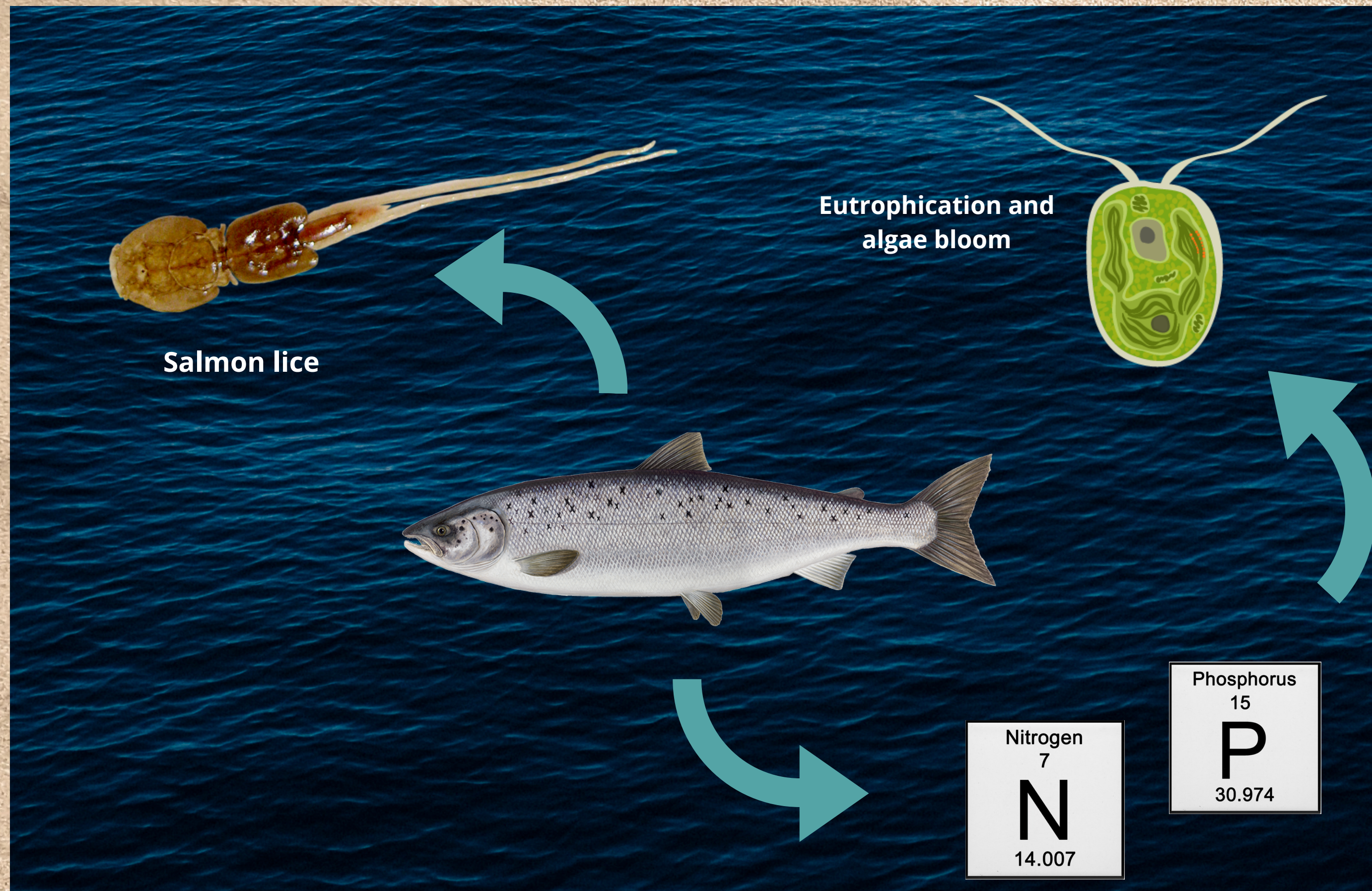
SDG9 industry, innovation and infrastructure is represented through the salmon industry innovating its processes to recreate the biological needs for salmon growth on land.

Linking salmon to SDG6: clean water and sanitation is how moving salmon farms to land will help reduce the ocean pollution that open net pens produce (like copper pollution), helping keep the oceans clean.

*Benefits of marine-based*

- Makes five countries more competitive on global market - need right environmental conditions
- Does not occupy land - there is a shortage of available land globally

[1]



*Concerns of marine-based*

- Escaped salmon mixing with wild
- Feces from fish leaking into the ocean result in eutrophication and algae bloom
- Salmon lice challenging to control in marine aquaculture

[1]

[1] Liu, Y., Rosten, T. W., Henriksen, K., Hognes, E. S., Summerfelt, S., & Vinci, B. (2016). Comparative economic performance and carbon footprint of two farming models for producing Atlantic salmon (Salmo salar): Land-based closed containment system in freshwater and open net pen in seawater. Aquacultural Engineering, 71, 1–12. h

[2] Baklien, A. T. (2019, October 11). Nytt toppår for oppdrettslaks - SSB.

