

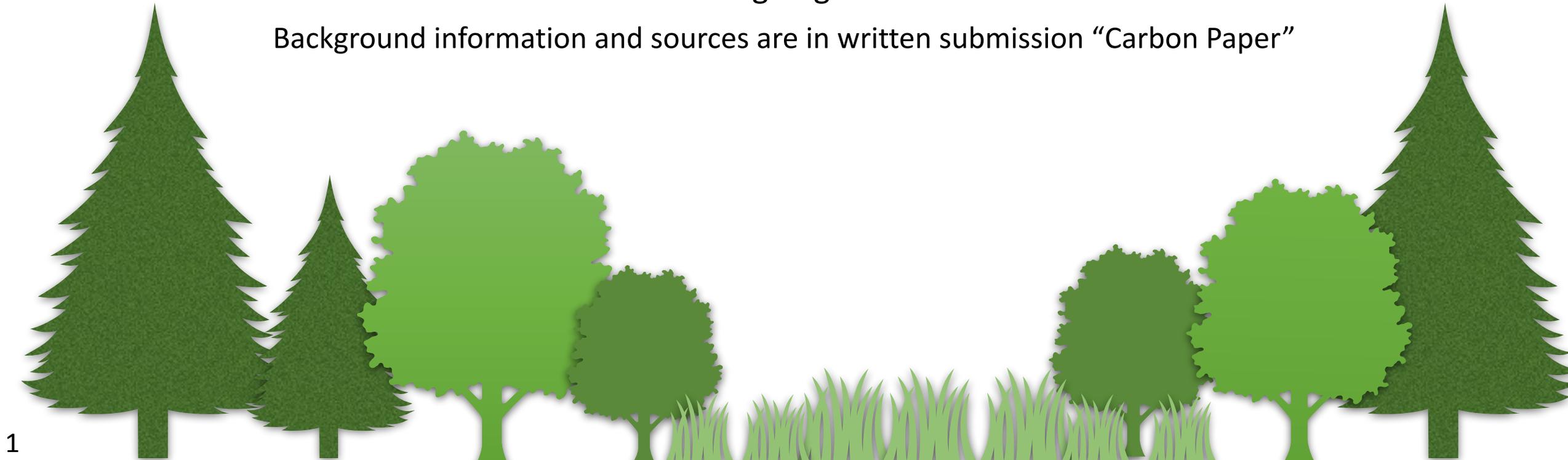
Carbon Emissions of Proposed Nordic Aquafarms Facility

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Background information and sources are in written submission “Carbon Paper”



FINDINGS:

- Nordic would add between 550,000 and 759,000 metric tons of carbon dioxide equivalents to the atmosphere each year.
- **Nordic would make meeting Belfast's climate commitment impossible.**
- Places unfair burden for reductions on residents and businesses.
- Nordic would represent 4.6 - 6.4 percent of Maine's 2030 GHG target.



Nordic's Carbon Footprint is Massive:

- Equivalent to adding 120,000 to 165,000 cars to the roads.
- Equivalent to adding 34,000 to 47,000 residents.
- **Would increase Belfast's carbon footprint 5 to 7 times.**

US per-capita carbon footprint: 16.14 tCO₂e (2018)

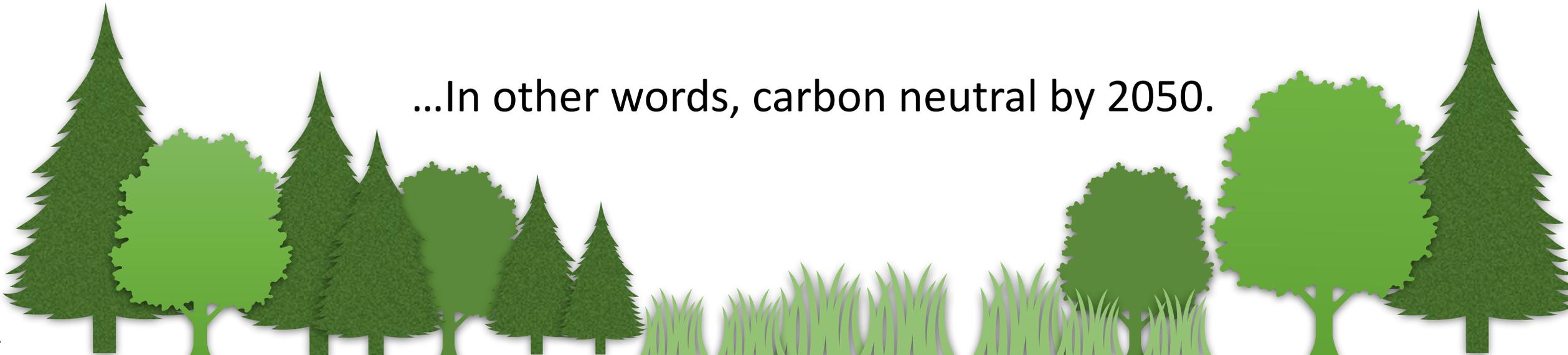
(<https://knoema.com/atlas/United-States-of-America/CO2-emissions-per-capita>)



Belfast Climate Commitments:

- June 12, 2018, Belfast City signed “WE ARE STILL IN:”
“...declare that we will continue to support climate action to meet the Paris Agreement.”
- Article 4 of the Paris Agreement:
“...to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century”

...In other words, carbon neutral by 2050.



State Climate Commitments:



Maine Statutes have specific targets:

- 45% below 1990 levels by 2030.
- 80% below 1990 levels by 2050.

(Chapter 3A of Title 38, statute §576-A.)

September 23, 2019, before the United Nations, Governor Janet Mills stated:

“By Executive Order, I am pledging that Maine will be carbon neutral by 2045.”

“We all have what it takes to combat climate change, to protect the irreplaceable earth we share and care for...”

“What is more precious than water, air, soil, the health and happiness of our children and our children’s children and yours?”

Nordic's Impact to Existing Uses:

- The liquidation of 34 acres of secondary growth mature pine and hardwood trees, and the removal of between 15 and 48 feet of soil totaling an estimated 215,000 cubic yards, destroying 10 wetlands has carbon impact.
- This site stores 13,465 metric tons of carbon above and below ground.
- Left intact, this forest's sequesters 42.9 metric tons of carbon/year.
- If this site is destroyed and replaced by a massive carbon-intensive industry, it will be impossible for Belfast to achieve its carbon targets.
- Nordic could not build this in Norway because of Norway's carbon targets.



Assessing Nordic's Impact:

Carbon Emissions in Building:

'Upfront' Embodied Carbon and Operational Carbon



'Upfront' Embodied Carbon

Manufacture, transport and installation of construction materials

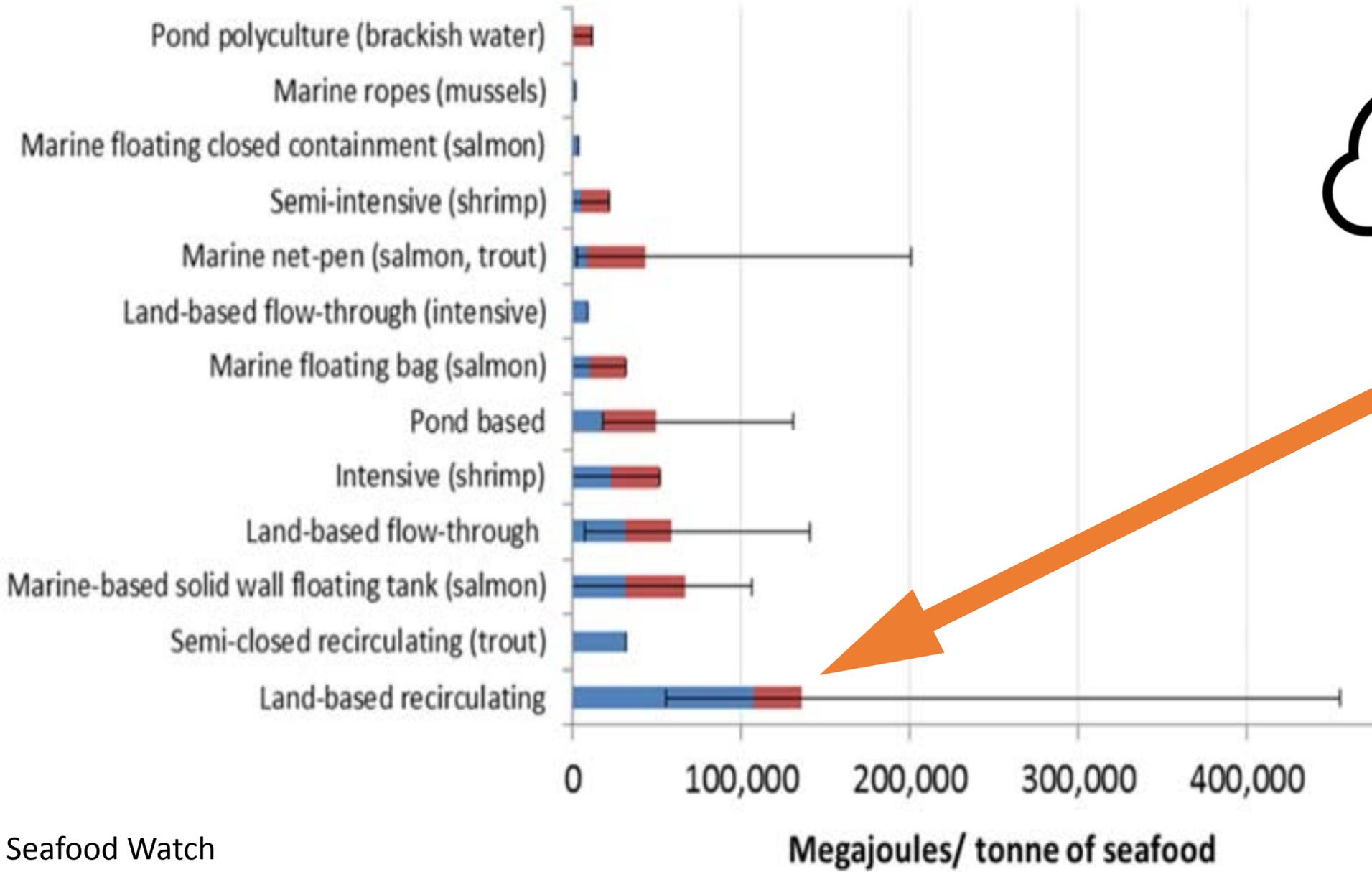
Operational Carbon

Building energy consumption

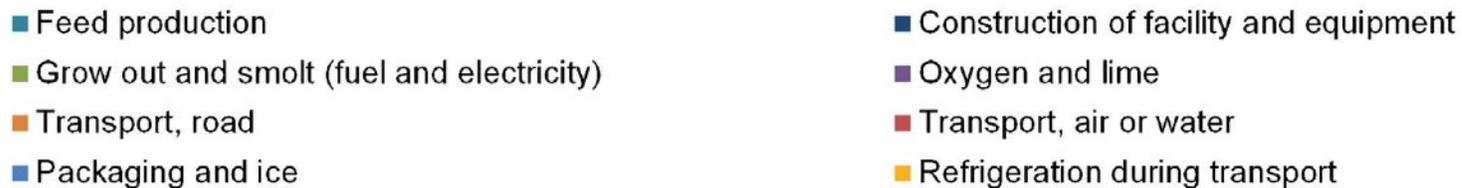
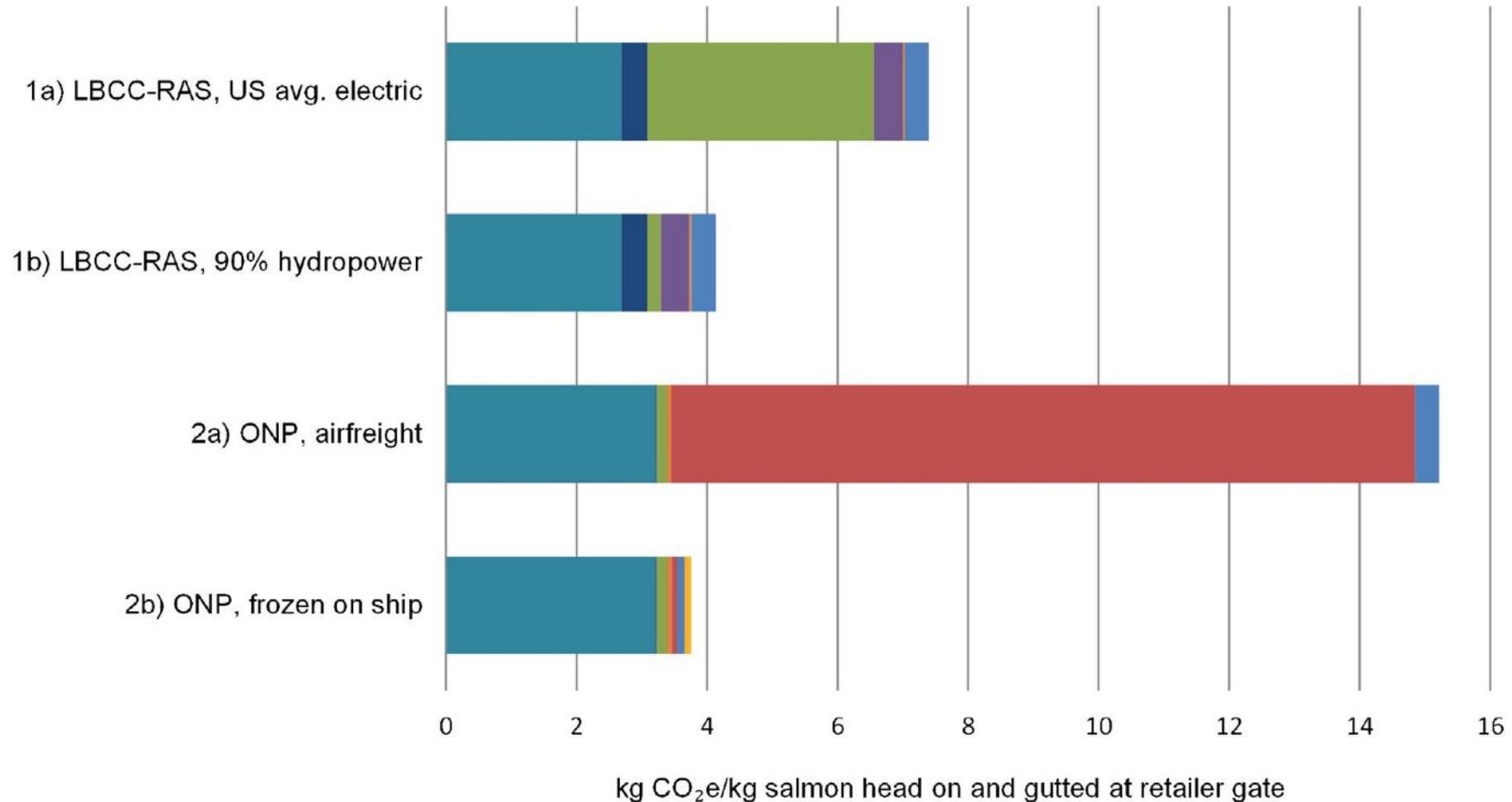
Total Carbon = Embodied Carbon + Operational Carbon

$$TC = EC + OC$$

2015 RAS Identified as Carbon Intensive:



The 2016 Marketing Study Nordic Quotes



Study Flaws:

- Compares farmed fish from Norway vs. “concept-level” land-based system.
- Calculates air freight, Norway to Seattle (7328 km) not Oslo to Boston (5,639 km.)
- Calculates frozen salmon shipped by sea to Seattle through Panama Canal (16,473 km vs. 5,639 Oslo to Boston).
- No evaluation of local or wild fish.
- Considers only concrete, steel and fiberglass in embedded carbon analysis.

Our Analysis Used Two Calculators:

1. The recently released Embodied Carbon for Construction Calculator (EC3).
2. Industry standard LCA (life-cycle assessment) spreadsheet.

And Included These Items:

Embodied CO₂e:

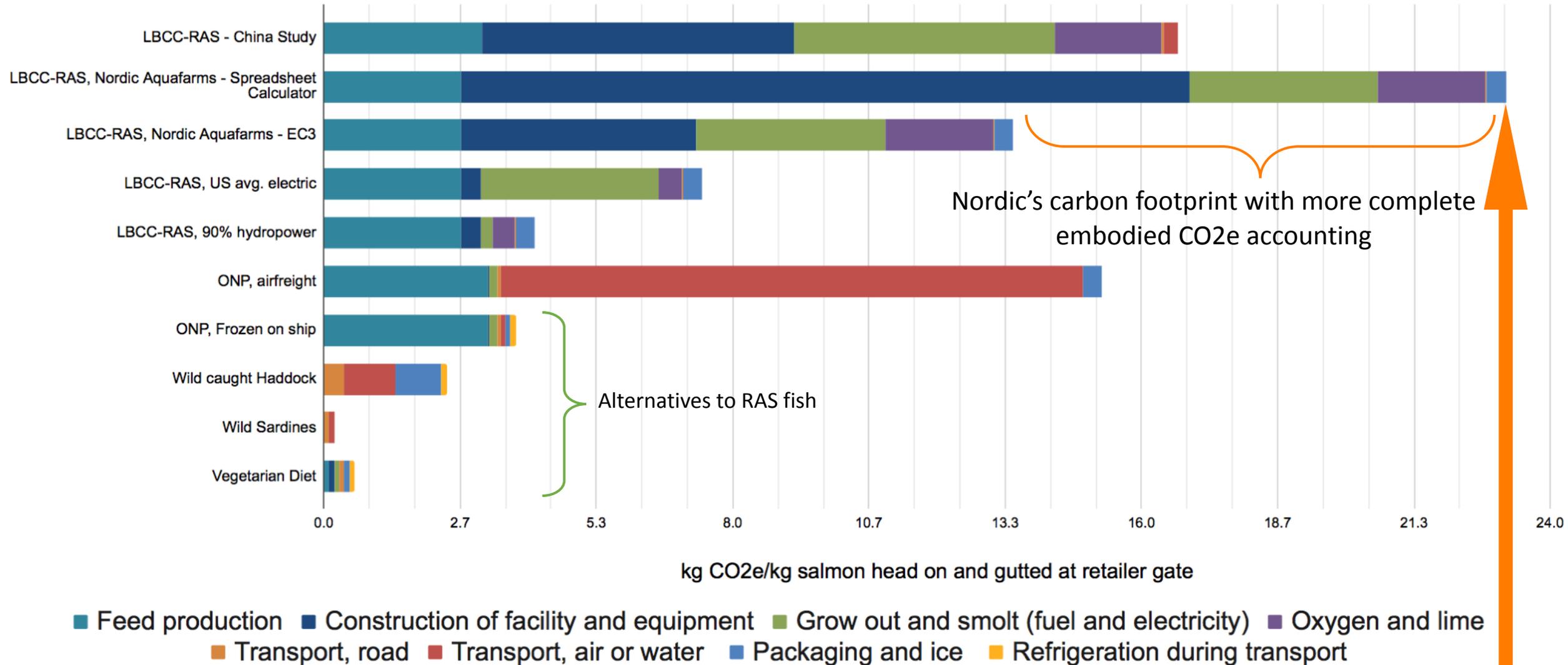
- Site preparation including soil removal, import of aggregate, road building
- Pipeline construction
- Loss of forest sequestration and storage
- Buildings, tanks, piping, motors, filters, backup generators

Operational CO₂e:

- Electricity, diesel, glycerine,
- Fish food

RESULTS:

Fish Farm Carbon Footprint Comparisons



RECOMMENDATIONS:

- Applicant be required to demonstrate carbon neutrality using solar and wind for both embedded and operational CO₂e.
- Applicant be required to find a brownfield site with stable soils and use a completely closed system.