

# WHAT IS THE ROLE OF AQUACULTURE IN THE TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS?

Nina Maria Saviolidis, Ingunn Ýr Guðbrandsdóttir and Guðrún Ólafsdóttir  
University of Iceland

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Towards a Sustainable EU Food System: Challenges and Conditions of a Protein Transition



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# Outline

- Background and motivation for this study
  - Food system sustainability and the role of seafood
  - Aquaculture in recent scientific and high-level reports
- Method
- Summary findings (preliminary)
- Future vision



# The need for food system transformation

- The food system contributes to the crossing of numerous planetary-level **biophysical limits** (Planetary Boundaries - PBs)
- Three changes to keep food systems within PBs:
  - Changing **diets** (reduce animal source proteins)
  - Reducing **food waste and losses**
  - Reducing **environmental impacts**



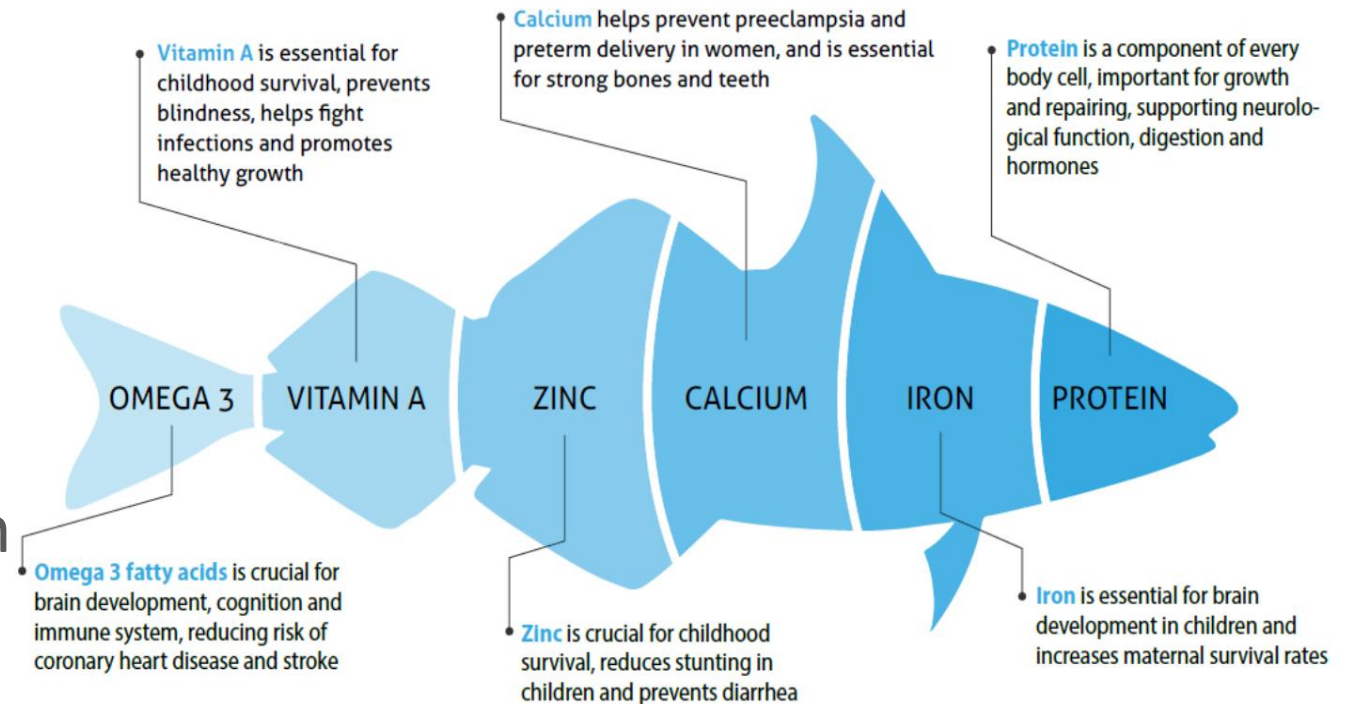
Healthy Diets From Sustainable Food Systems

# Food Planet Health



# The role of aquaculture

- A **food system** perspective
- Nexus of **human health** and **planetary health**
- Impact of **dietary shifts** between different types of protein

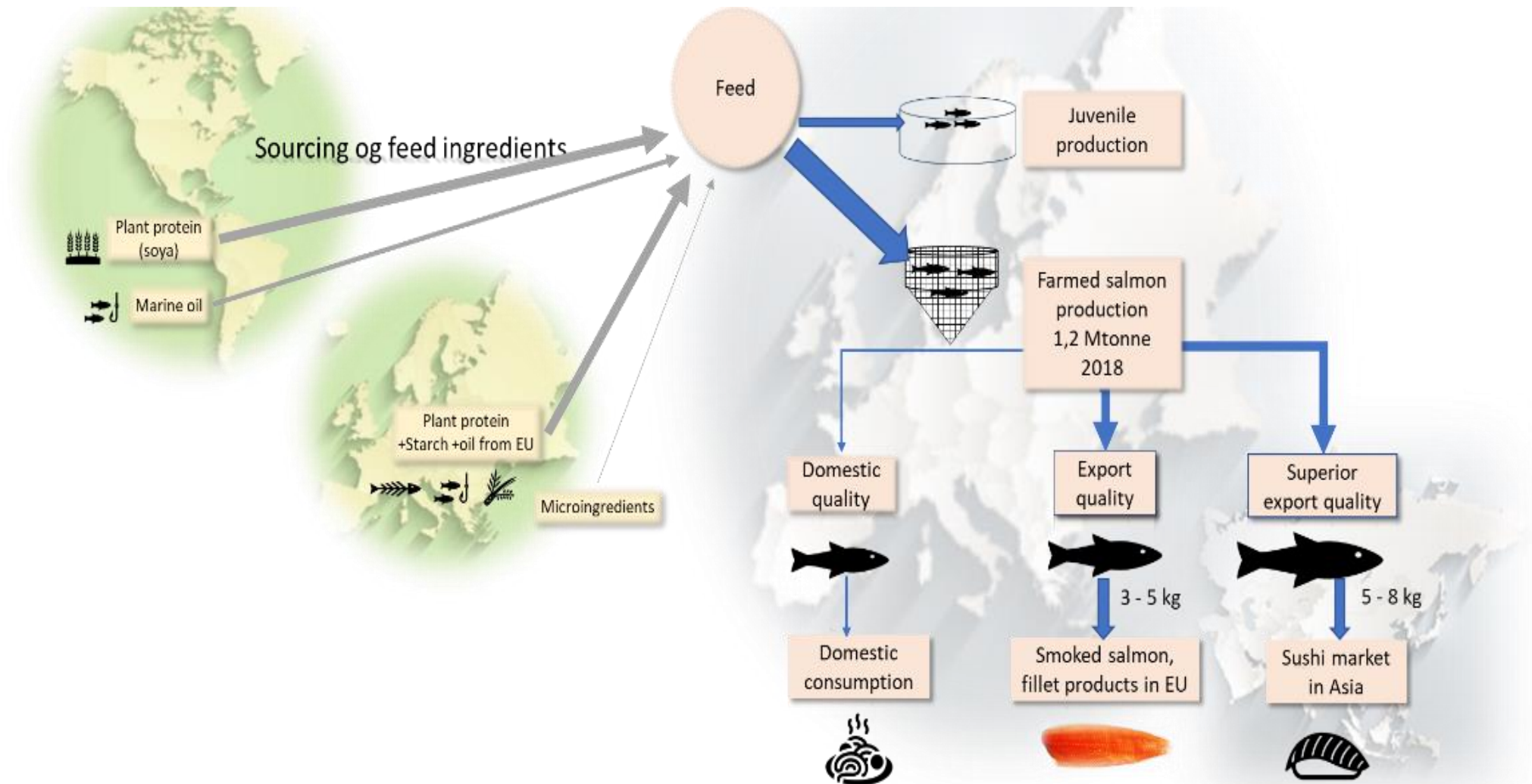


 **Toxins:** some seafood can accumulate heavy metals, dioxine, PCB, ciguatoxin and antibiotic residuals.

Fig 6. Fish provides important health benefits and remains an essential source of protein and micronutrients. Prevalence of high quality and easily accessible omega-3 fatty acids (DHA and EPA) has been identified as one of the main health advantages with seafood consumption. For some species caution should be taken due to accumulation of certain toxic compounds<sup>66</sup>.

Image source: Troell et al., 2019

# Feed connects aquaculture, fisheries & land



# Aim and method

- **Aim:**

- Explore salmon **industry representatives** and **expert perspectives** on the role of salmon aquaculture in the transition towards a sustainable food system

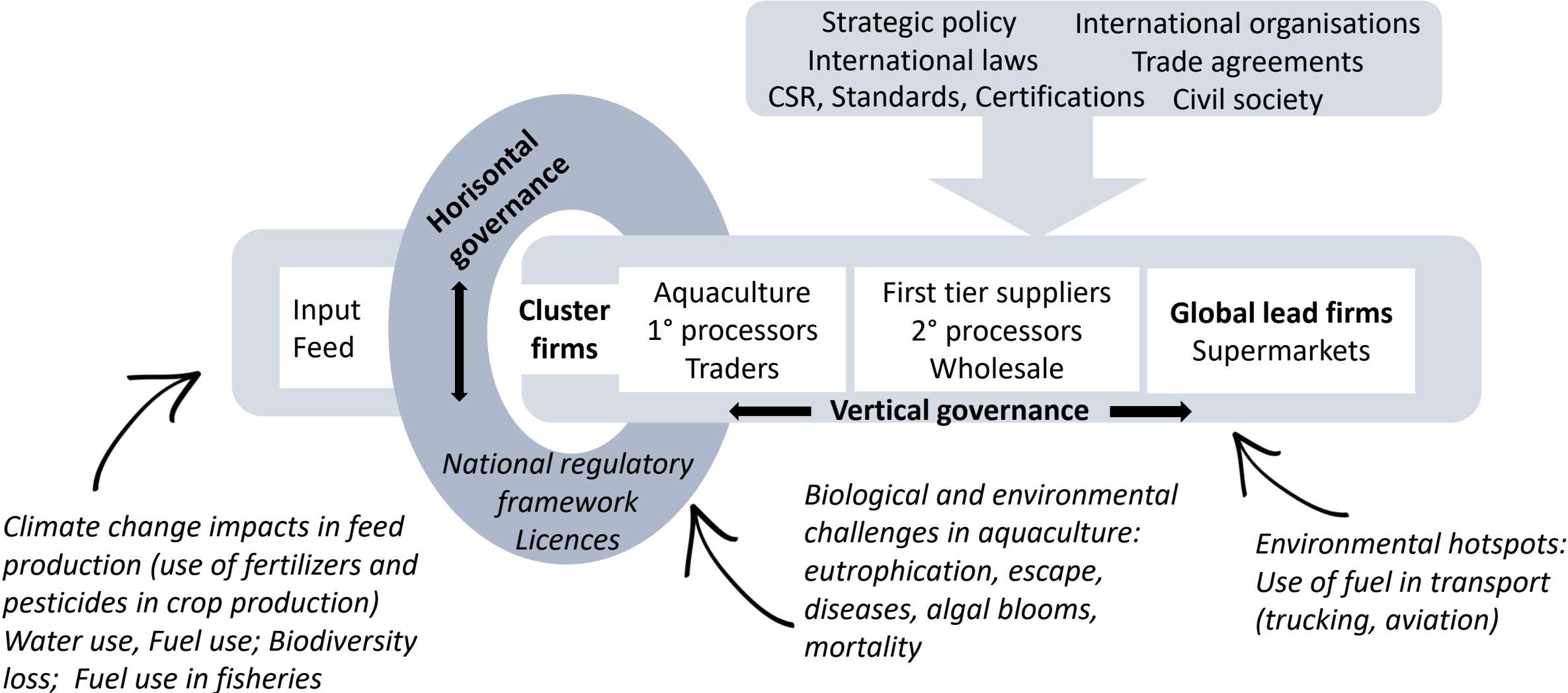
- **Method:**

- Focus groups and interviews
- Adapting theoretical frameworks and integrating **sustainability transitions theory** with **governance insights**

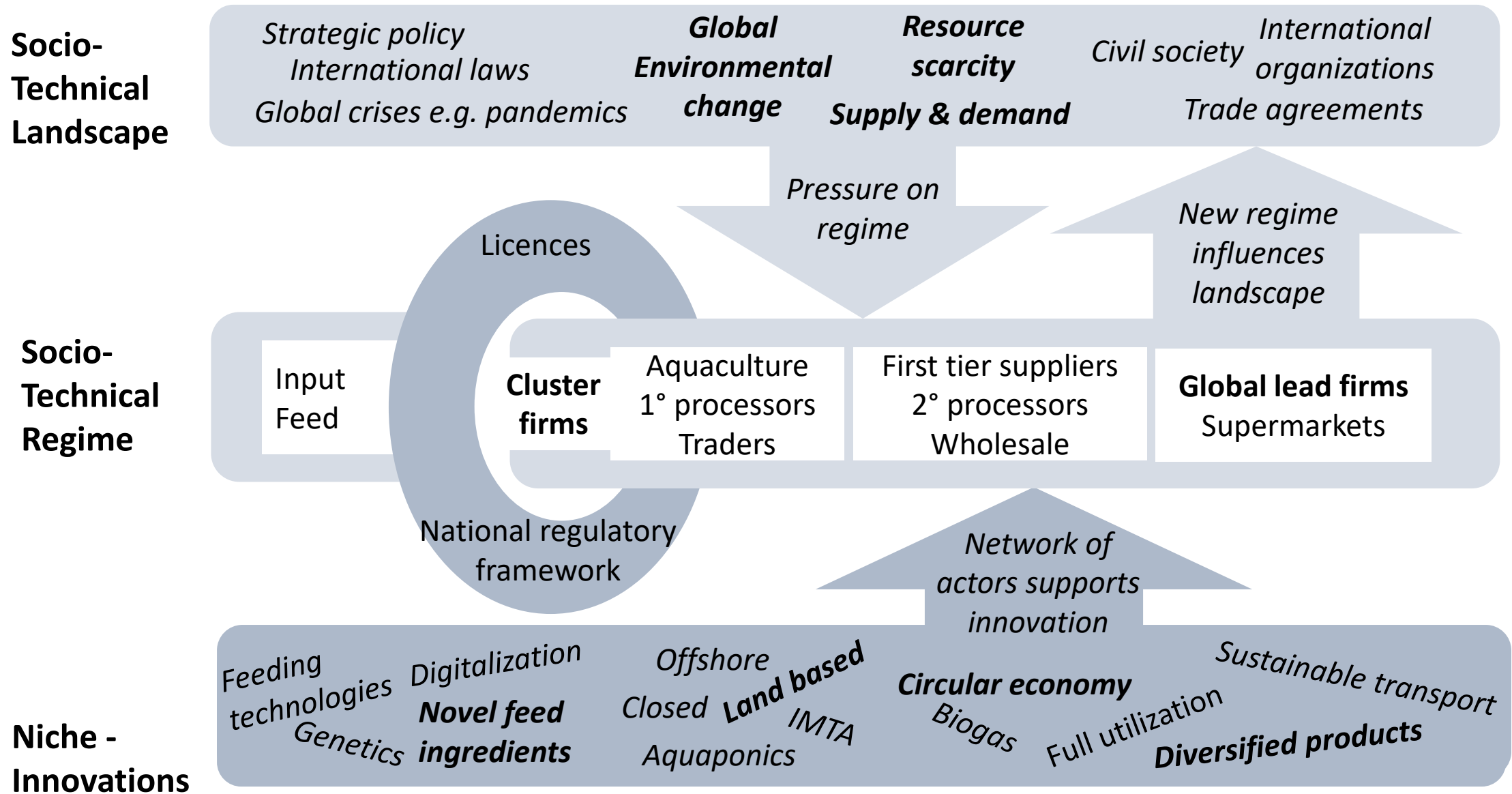


# Current status: Global Salmon Value Chain

## Socio-technical regime - governance aspects and challenges



# Summary findings: integrated framework

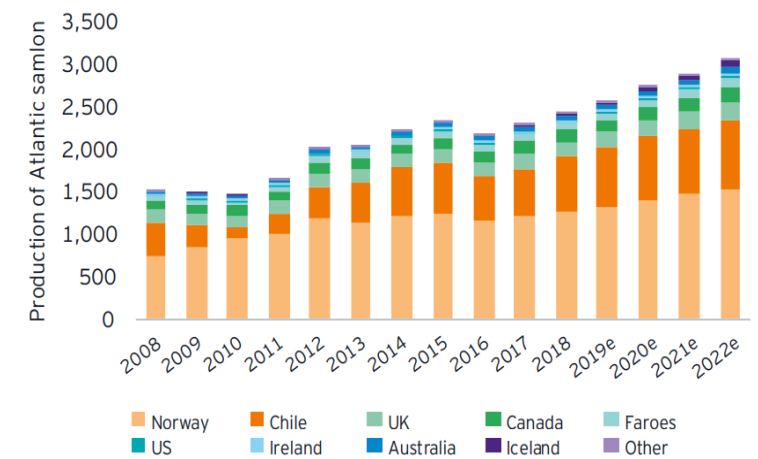


# Future vision for salmon aquaculture in a sustainable food system

## Hybrid governance and diversity in production methods, products and species

- **Continuous growth and expansion**
- Production efficiency
- Economic profitability
- Sea cage farming will be more sustainable
- Innovative farming technologies
- Seafood as part of sustainable and healthy diets
- Job provision and regional development
- **Sustainability will not be a choice but rather a demand**
- Role and responsibility of actors
- Knowledge transfer
- Strong support for sustainable technology
- **Provision of healthy and nutritious food**
- **Public image and transparency**
- Animal welfare

World production of Atlantic salmon (RW 1,000)



Source: Pareto, Kontali 2019

# Sustainability transition for salmon value chain

## Low hanging fruit:

- Transport emissions: optimized logistics and product form
- Circular bioeconomy and waste reduction
- Value-added activities

## Key challenges:

- Sustainable feed and land-ocean systems interactions
- Animal protein provision shift: seafood as alternative protein source
- Fish and food policy integration

# THANK YOU FOR YOUR ATTENTION



**For more information contact:**

Nína M. Saviolidis: [nms@hi.is](mailto:nms@hi.is)

Ingunn Guðbrandsdóttir: [iyg1@hi.is](mailto:iyg1@hi.is)

Guðrún Ólafsdóttir: [go@hi.is](mailto:go@hi.is)

**Affiliation:**

Applied Supply Chain Systems Research Group (ASCS), Industrial Eng.  
Mechanical Eng. and Computer Science, University of Iceland

**VALUMICS coordinator:** Sigurdur G. Bogason: [sigboga@hi.is](mailto:sigboga@hi.is)

[www.valumics.eu](http://www.valumics.eu)



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