

New Marine RM's Value chain approach

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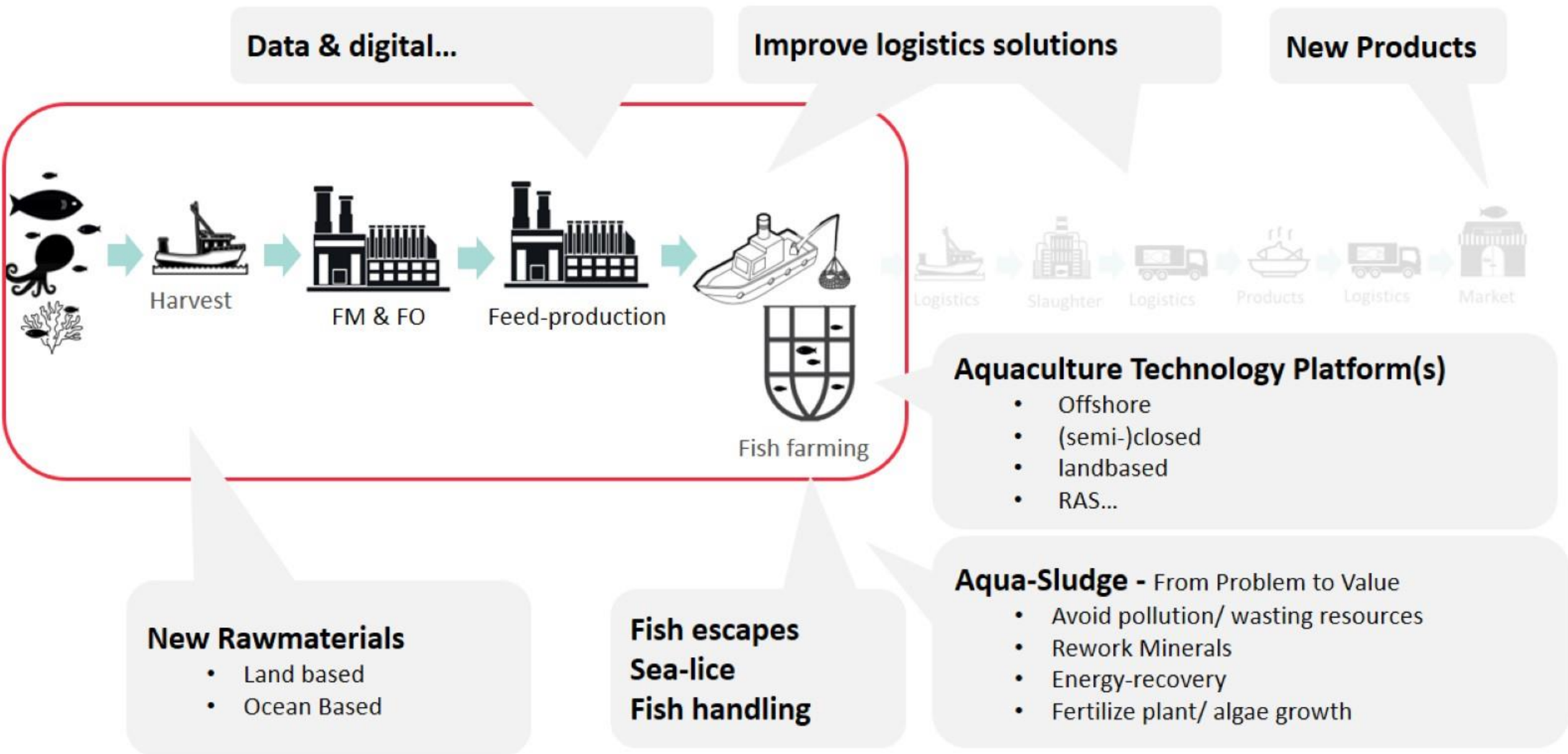
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**THINK BIG. MAKE YOUR
IDEAS VISIBLE.**

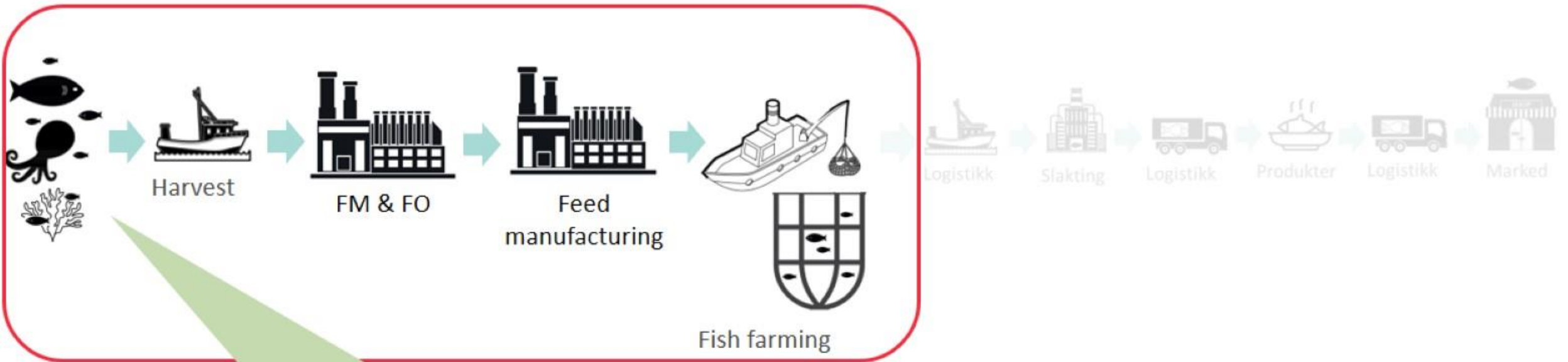


Sustainable growth of aquaculture; value chain approach



New Raw Materials is crucial for growing the fish farming industry

- Identify the value chain and attack the bottlenecks in parallel



New Marine Rawmaterials

- Bycatch & byproducts
- Mesopelagic fish
 - & lower trofic levels
- Makro Algae (seaweed & kelp)
 - Harvest and farming
- Filter feeders
 - Tunicates, bivalves, etc
- Mikroalgae
- Etc.

Expected growth in aquaculture equals a need for more than 30 million tons of additional feed and responsibly sourced raw materials

Sustainability and communication is key

«Loud and clear» message from all stakeholders!

The World need more nutritious food

- Marine protein and fat is a sustainable solution

Norway need new (industry) jobs for people

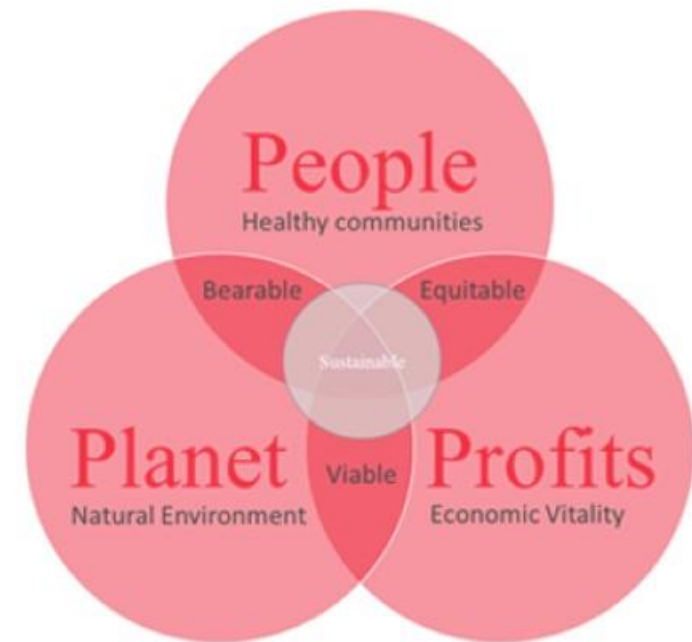
- Post O&G era: - 100% sustainable jobs
- Export value

Large untapped resources in the ocean

- Scientific proof of sustainability
- Regulatory authorities - international co-op
- Need political backing and communication
- .. Storytelling – One Message

Large scale farming of the ocean is the ultimate goal

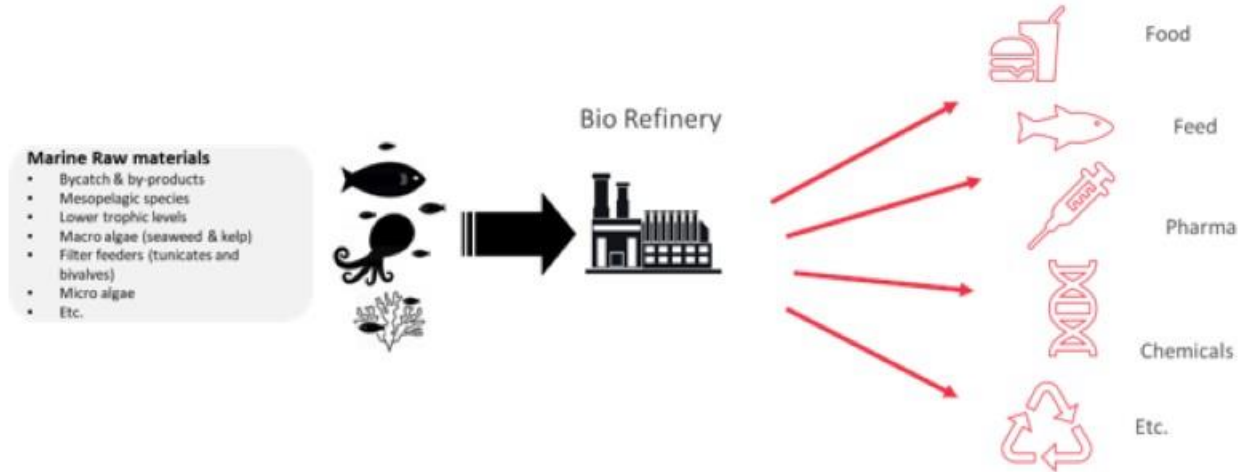
- Stationary species such as algae and filter feeders



Bio-Refineries – creating new opportunities?

Farming & Harvesting marine resources

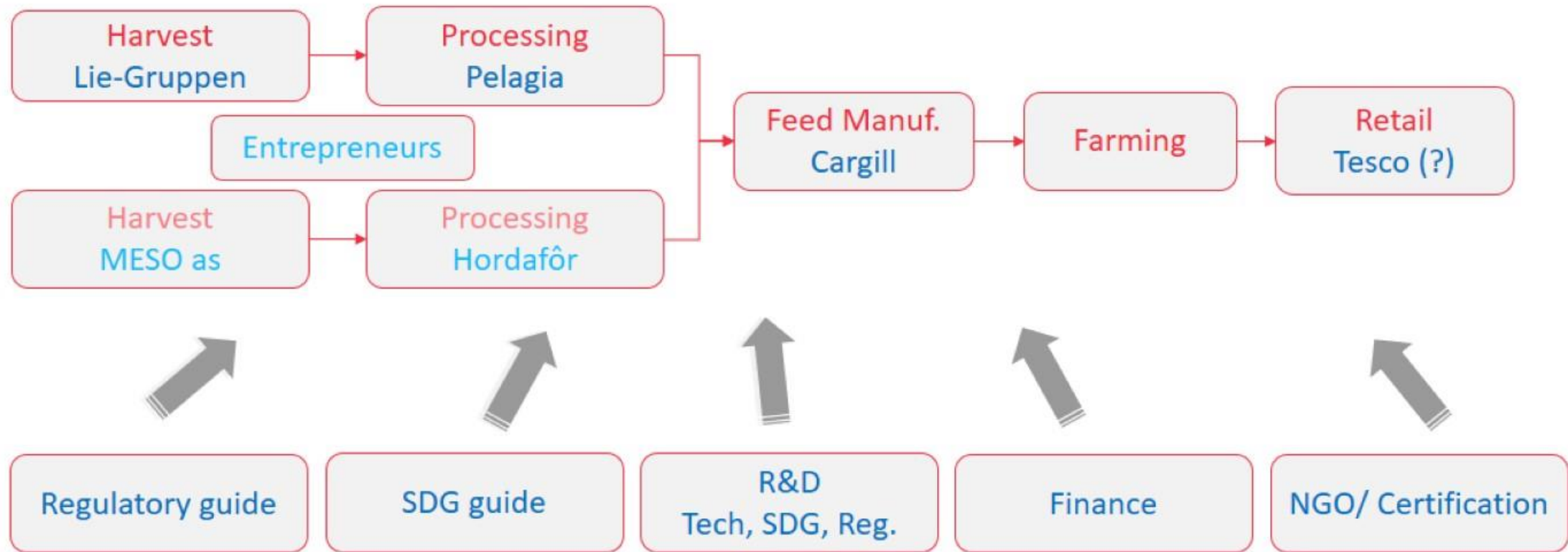
- The World need more nutritious food
 - **Marine protein and fat is a sustainable solution**
- Norway need new (industry) jobs for people
 - **Post O&G era: - 100% sustainable jobs**
- Large untapped resources in the ocean
 - **Scientific proof of sustainability**
 - **Regulatory authorities - international co-op**
 - **Need political backing and communication**
- Large scale farming of the ocean is the goal
 - **Stationary species such as algae and filter feeders**
- Technical issues can be solved
 - **it can be done with hard work and funding...**



- Biorefineries could be developed into a large industry WW
 - **tap into natural bio-resources in the ocean**
 - **develop farming of the ocean**
 - **solve the worlds need for nutritious food**
 - **...and multiple other opportunities**

Fast-track consortium 2020 Autumn

Muellers Pearlside (Maurolicus muelleri)

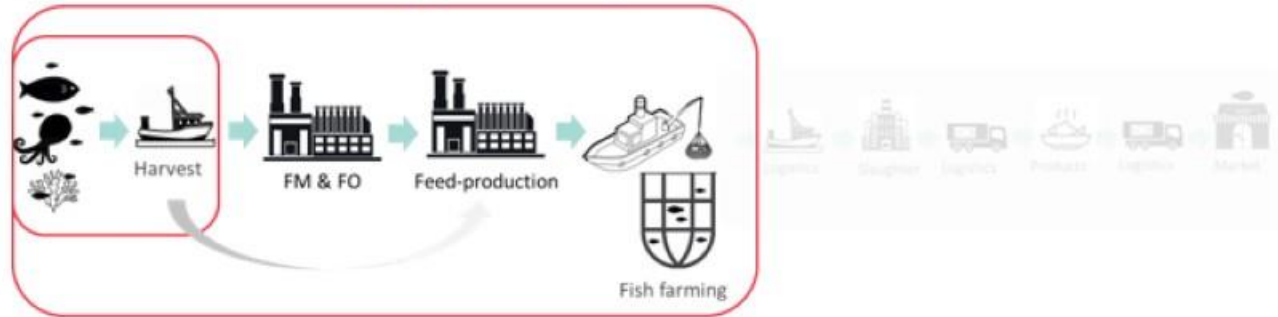


Value Chain Approach

Marine Innovation Arena

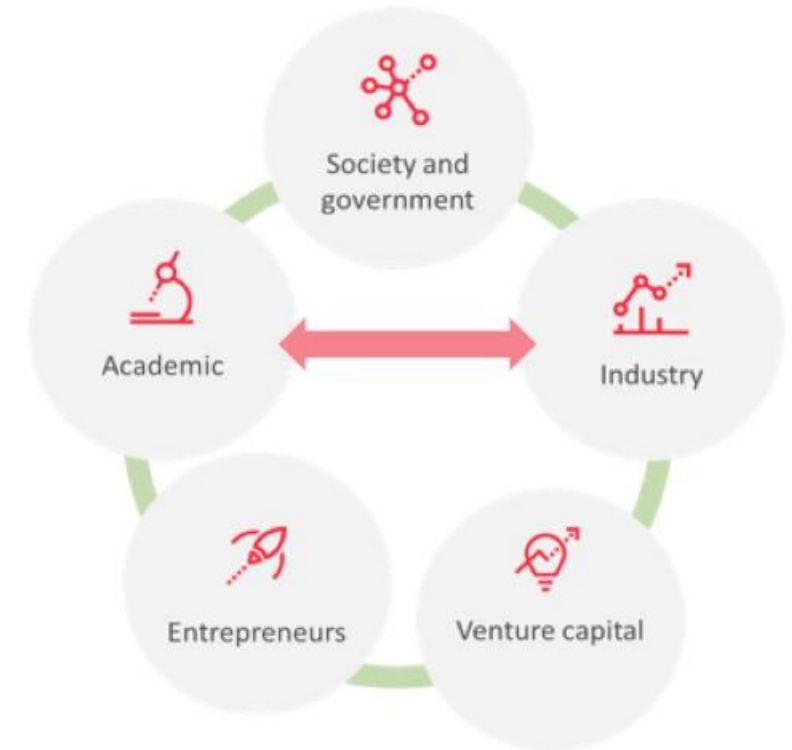
1. Methods & Tools

- Bridging the gap between R&D and Industry
 - Involving all other stakeholders – incl authorities, entrepreneurs, capital, etc
- Value Chain Approach w/ all stakeholders



2. Pilot – Sustainable New Marine RawMaterials

- Harvest & Farming
 - Bycatch & byproducts,
 - **Mesopelagic & lower trophic levels**
 - Macro algae, filter feeders, micro-algae, etc.



Collaboration to solve bottlenecks in the value chain!