

End-Users Insights on the Water JPI SRIA Theme I: Improving Ecosystem Sustainability and Human Well-being



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Improving Ecosystem Sustainability and Human Well-being

- “The key to sustainable development is to achieve a **balance between the exploitation** of natural resources for socio-economic development and **conserving** ecosystem services “.
- Policy context: **Sustainable Development Goals**, 7th Environmental Action Plan, **EU Biodiversity Strategy**, EU Strategy on Green Infrastructure, EU Action Plan for Nature, People and the Economy
-Directives



Integrating ecosystem services into decision making



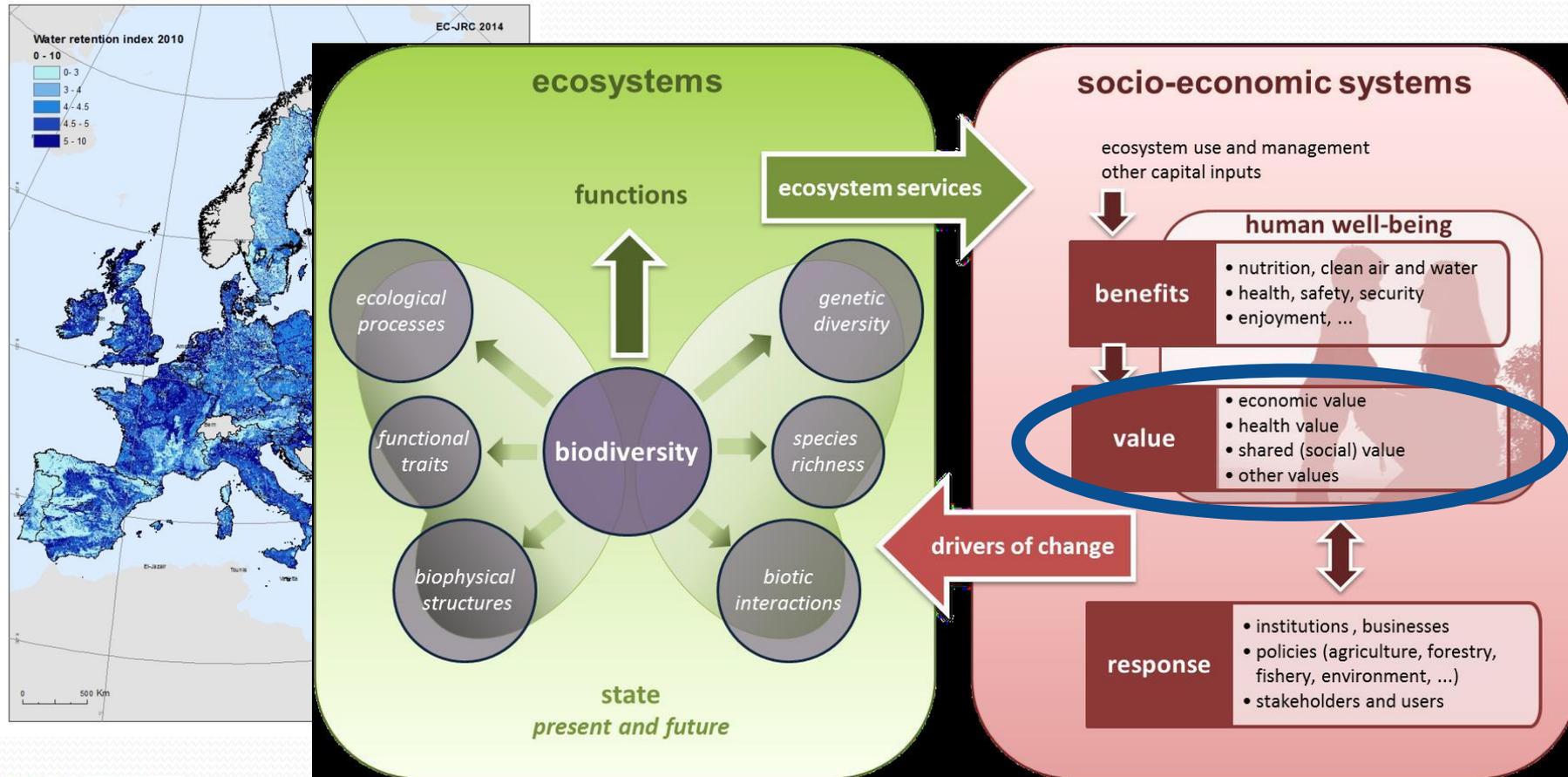
Improving Ecosystem Sustainability and Human Well-being

- The potential emerges from:
 - Substantial water resources and aquatic biomasses. Good skills to deal with water scarcity
 - High technical know how
 - Capacity to solve multi-disciplinary problems
- Can boost the economy, well-being and employment
 - provided that the water resources, their utilization and production potential are considered with more integrated approach



Mapping and valuing ecosystem services

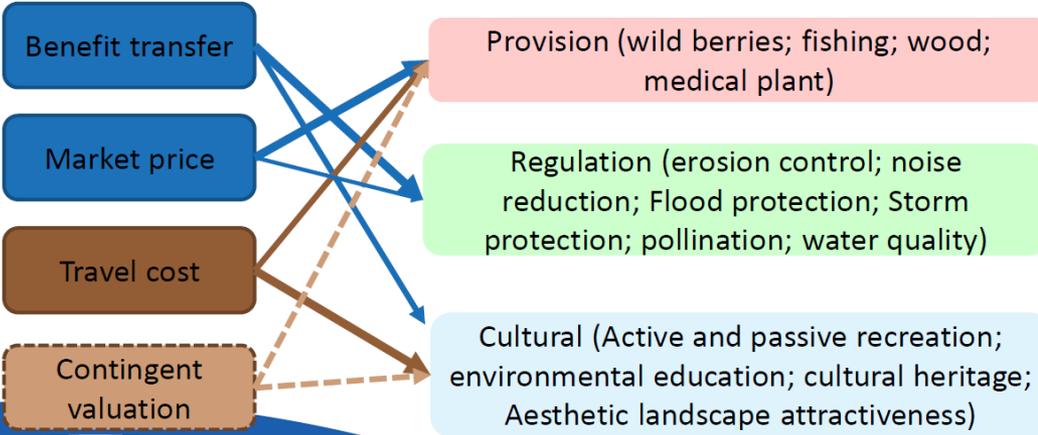
Common Implementation Framework (CIF)



Conceptual framework for EU wide ecosystem assessments (Maes Working paper 2013)

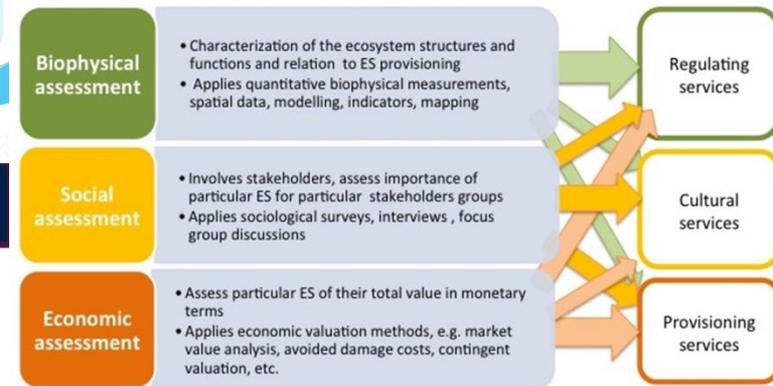
Valuation methods

Valuation method



EUR/ha per year

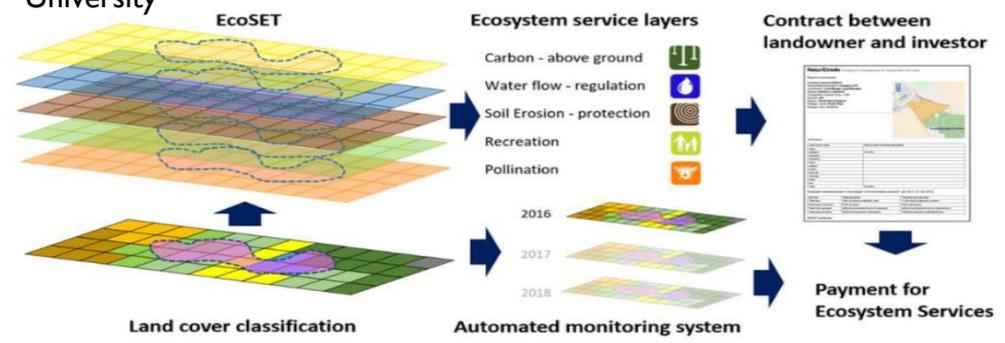
ES assessment methods



Inga Honavko,
LIFE EcosystemServices

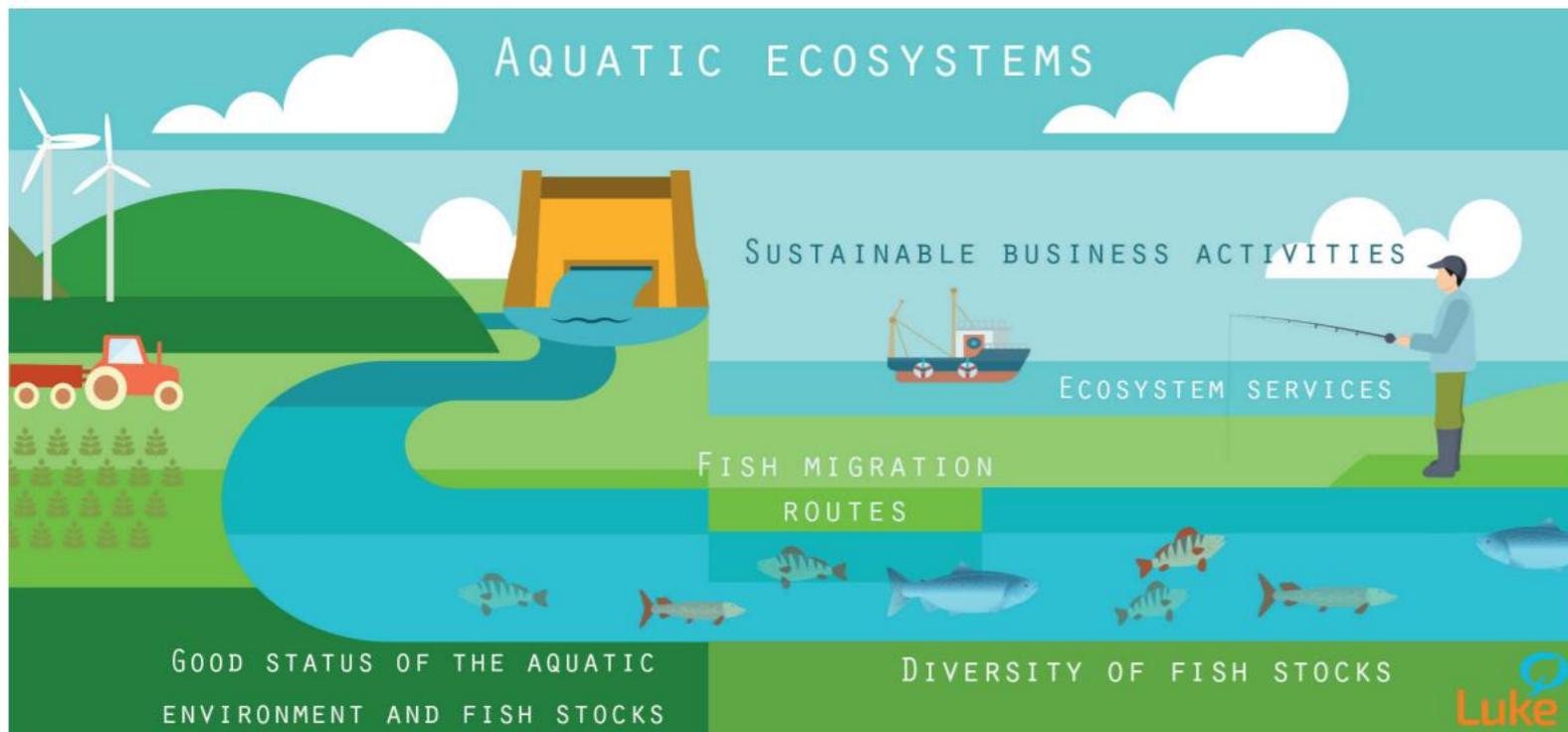


Naturetrade:
creating a marketplace for ecosystem services
Peter Long, Oxford University



Developing and Applying Ecological Engineering and Ecohydrology

-”safeguarding and restoring degraded water bodies and associated ecosystems.“



Hydropower — Important sources of Renewable Energy

Europe's river - Major source of biodiversity

Mitigation of adverse effects “without significant adverse effect on the water use” WFD

Habitat restoration/mitigation

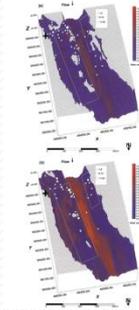
-instream

-catchment restoration

Connectivity

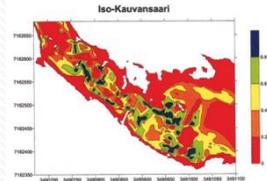
-up- and downstream

-lateral connectivity



Compensation habitats

Sediment management



Flow management

-ecological flow

-environmental flow

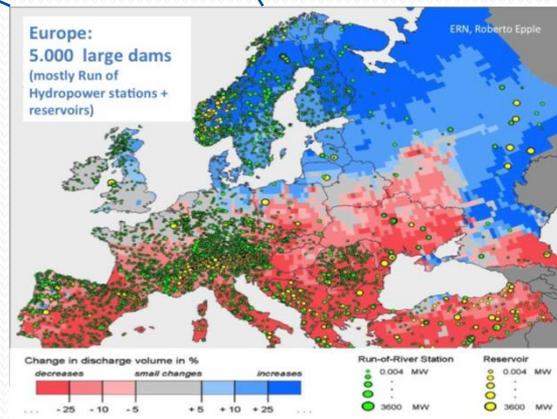
-minimum flow

Fisheries management

-fish stocking

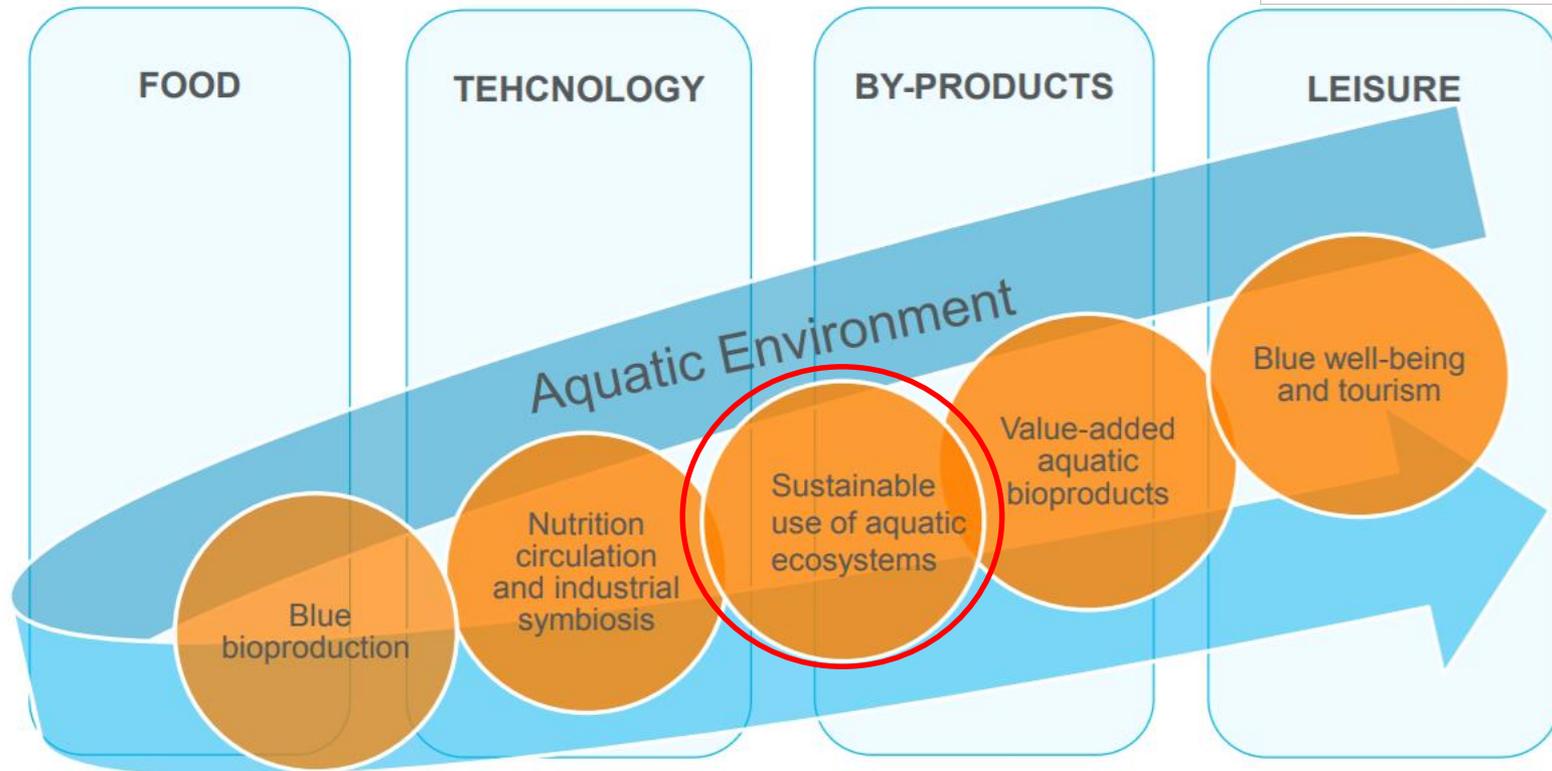
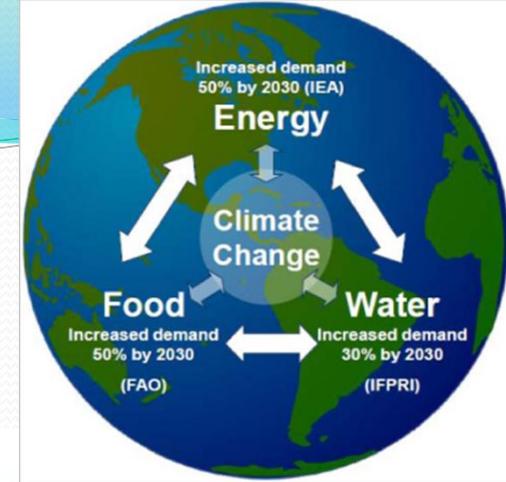
-fisheries regulation

-aquaculture



Continuous need for innovative solutions – Cooperation between policy makers, stakeholders and research community essential Raimund Mair, DG Environment

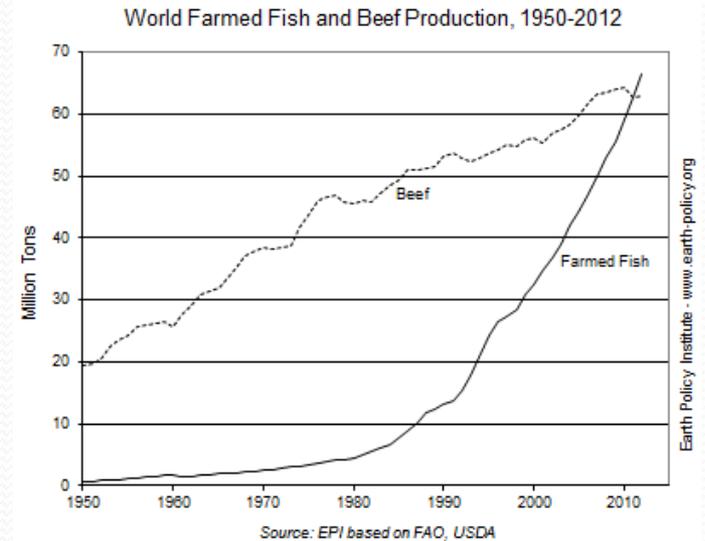
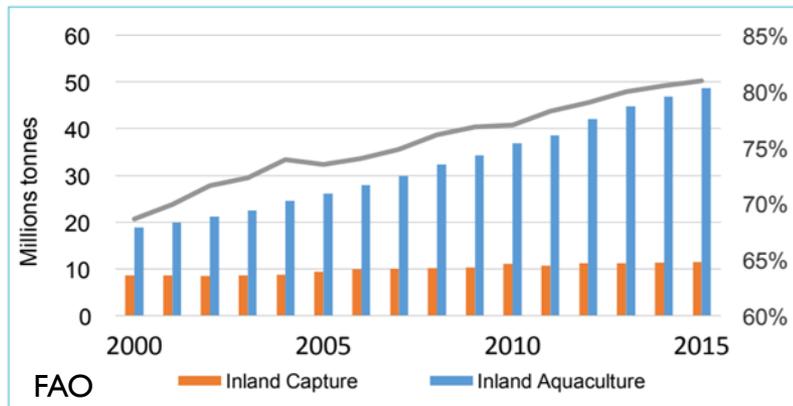
Sustainable use



Sustainable bioproduction

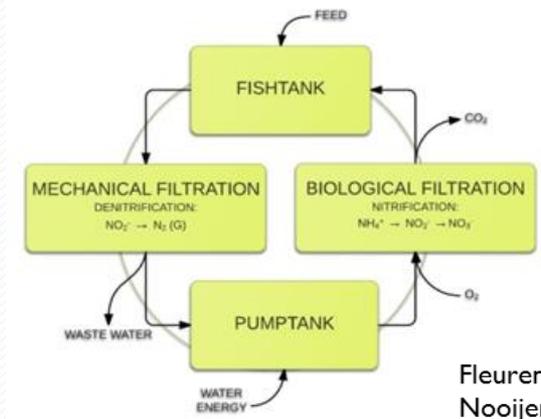
Fish farming has become more environmentally friendly. The nutrient load per tonne of fish is around a third of the level prevailing in the 1980s.

Figure 4 – Comparison of World Capture and Aquaculture in the production of aquatic animals from inland water (excluding algae)



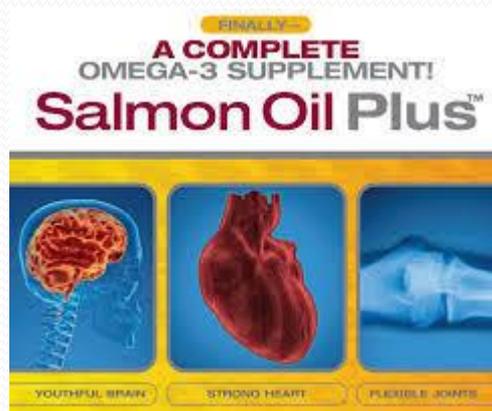
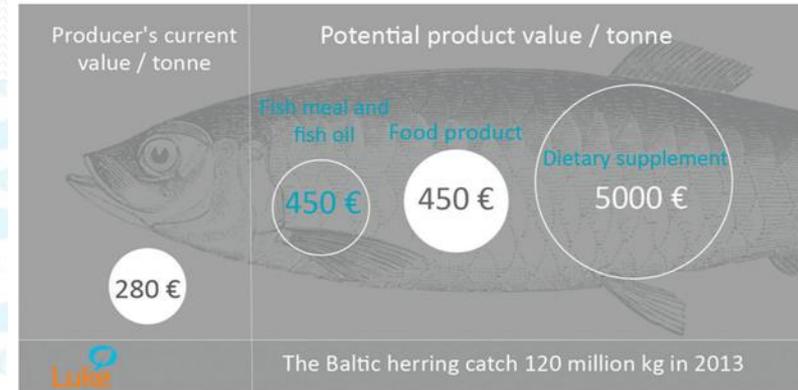
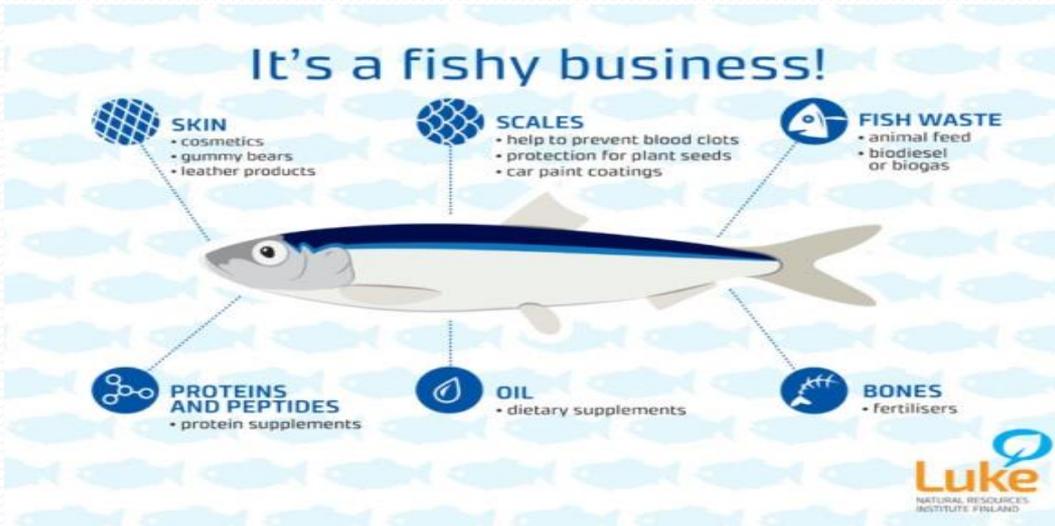
“Much of the world’s grassland is stocked at or beyond capacity, and most of the world’s fisheries are fished to their limits or already crashing.” Janet Larsen and J. Matthew Roney

RAS, Recirculating Aquaculture Systems



Added value

The most added value is gained by combining traditional fish know-how, technological know-how and the chemical know-how related to food science. Then, one plus one equals more than two.



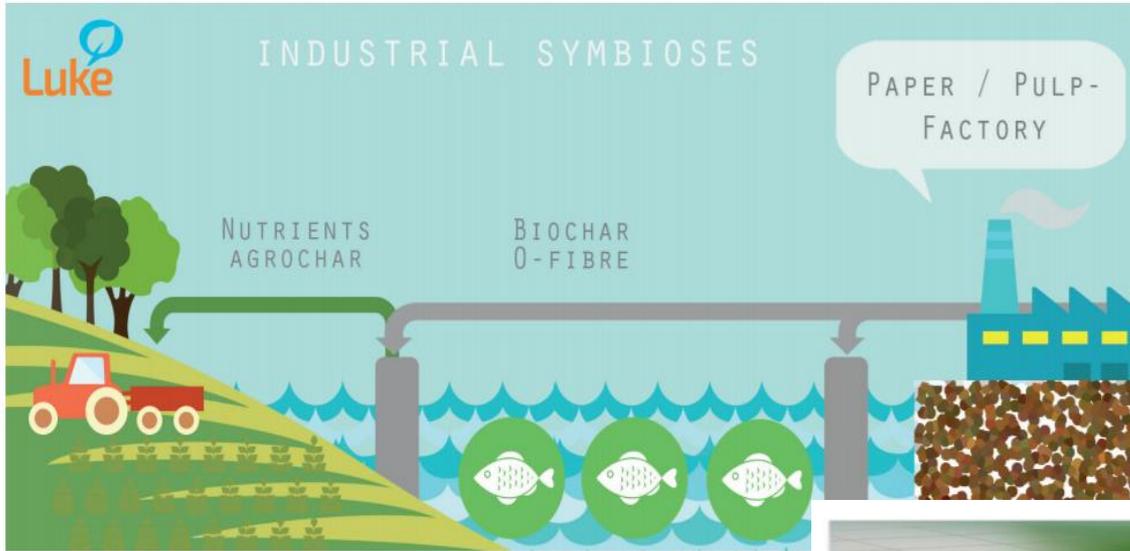
Sangherb SHAANXI SANGHERB BIO-TECH INC

Fish collagen

- *Anti Wrinkle
- *Anti Aging
- *Whitening
- *Moisturizing

Free shipping

Nutrient recycling and industrial symbioses



Recycled nutrients can replace traditional fertilizers

The total amount of recyclable phosphorus

26 000 t / year



26 000 t =

The portion of recyclable phosphorus would easily cover the amount needed for all of Finland's annual plant production.

>100%



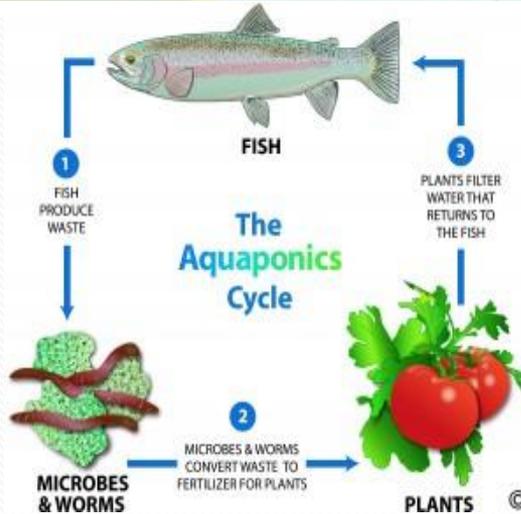
The agricultural consumption of traditional inorganic phosphorus in 2015 was

11 000 t.

What is phosphorus?

Phosphorus is an element mined from the ground, used as a fertilizer to improve plant growth. Phosphorus becomes a problem when it flows into water bodies, where it causes algal blooms and increases eutrophication.

SOURCE: Marttinen et al., "Towards a breakthrough in nutrient recycling - State-of-the-art and recommendations for developing policy instruments in Finland: Natural resources and bioeconomy studies, Luke 45/2017."



Closed Circulation Concept **Sybimar**

The closed circulation concept is our own innovation and it combines food and energy production into a unit where nutrients, water, waste heat and CO2 are recycled back to the energy and food production.



Cultural ecosystem services

Uses cultural ecosystem benefits

-Dimensions of well being associated with cultural spaces and practices

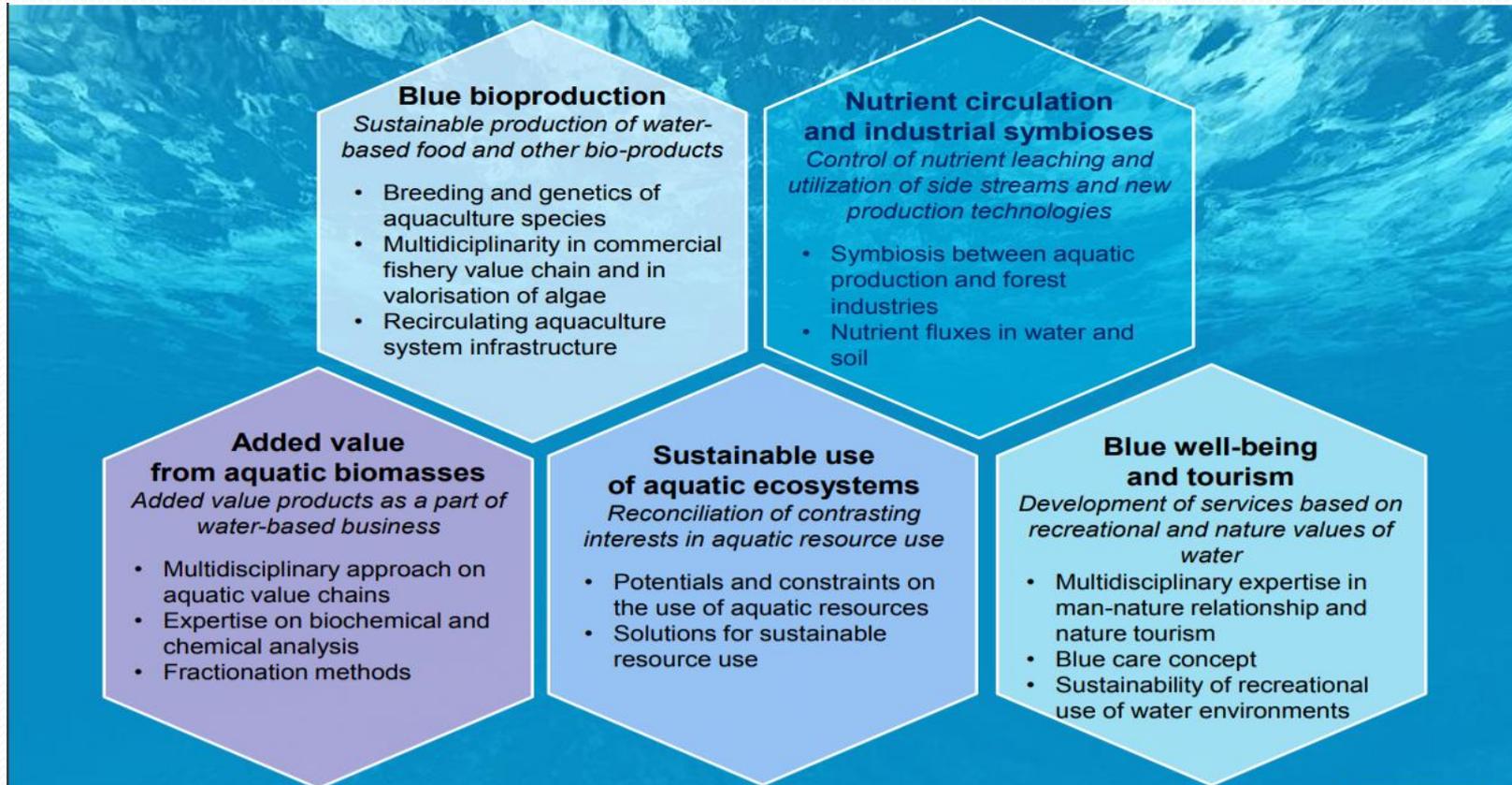
Nature based well-being services



The National Green Care coordination project

Green Care activities are social welfare, health, educational and other well-being services that make use of the natural environment responsibly, professionally and purposefully.

Sustainable production



Thank you!