Ecosystems services under magnifying glass

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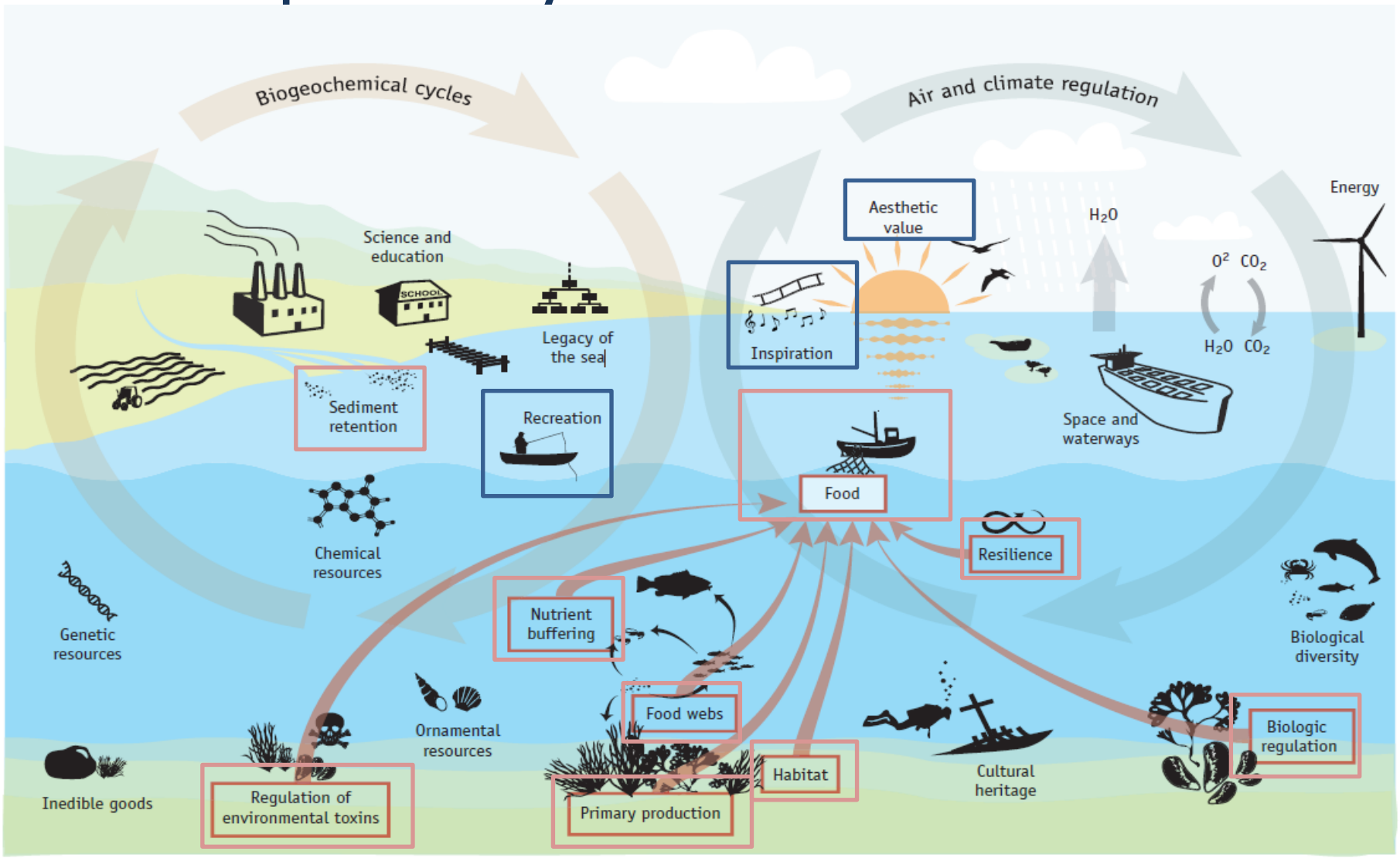
The diversity of ecosystem services (ES) & their values

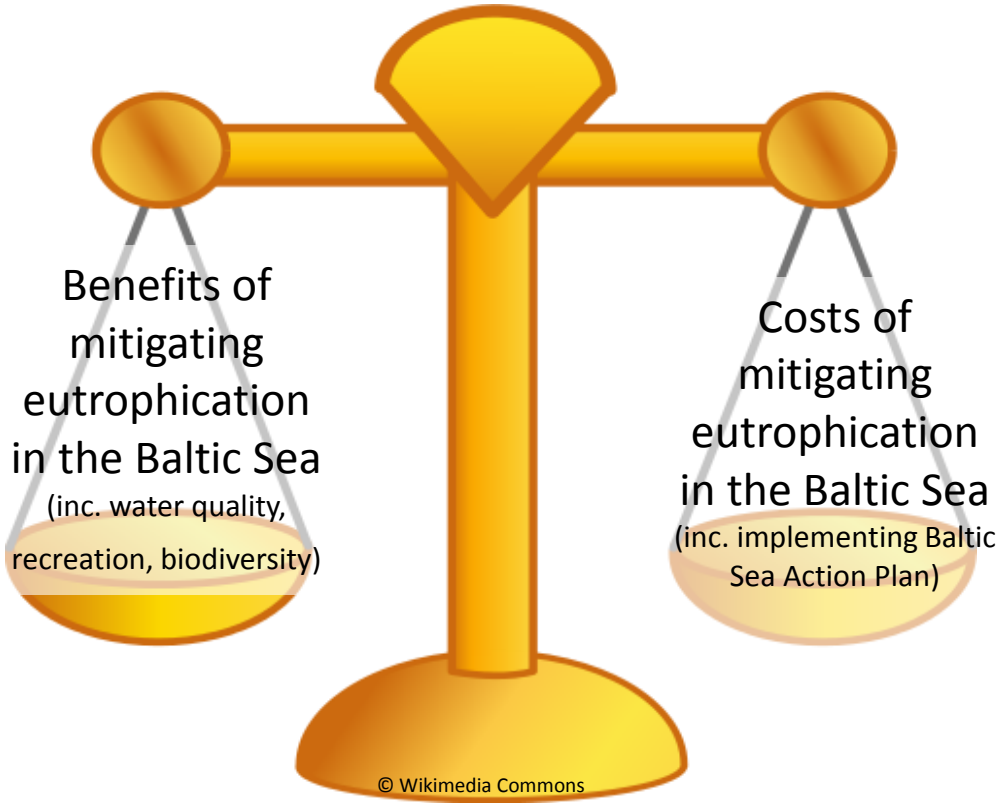
The ‘web’ of Baltic Sea ecosystem services, protected by the Baltic Sea Action Plan



Ecosystem services provided by the Baltic Sea, also illustrating (orange arrows) how one ecosystem service (food) is dependent on other ecosystem services. (Illustration: J. Lokrantz/Azote)

Source: Baltic Stern 2013

Estimated value of protecting / restoring Baltic Sea ecosystem services (BalticSTERN 2013)



People are willing to pay EUR 3 800 million / year for a better environment in the Baltic Sea with less eutrophication

This exceeds the costs for reaching eutrophication mitigation targets with EUR 1 000 – 1 500 million / year (net benefits).

People appreciate clean, well-functioning Baltic Sea and the ecosystem services it provides.

Source: Baltic Stern 2013

Value of fish(ing) in the Nordic countries

Commercial fishing (marine)

Value: economic

- Number of professional fishermen: 1,600 (Se), 2,088 (Dk), 2,195 (Fin) and 12,280 (No)
- Market value of commercial fisheries: EUR 27 mil. (Fin), EUR 110 mil. (Se), EUR 460 mil. (Dk) and EUR 2 bil. (No) / year

Recreational fishing

Value: socio-economic / wellbeing

- Estimated over 6 mil. recreational fishermen in the Nordic countries
- 30 - 50% of population / country / year engages with fishing (Fin, Se, No)
- Estimated economic value of recreational fishing in Sweden around EUR 80 mil

Source: Kettunen et al. (2013) TEEB Nordic, including detailed references

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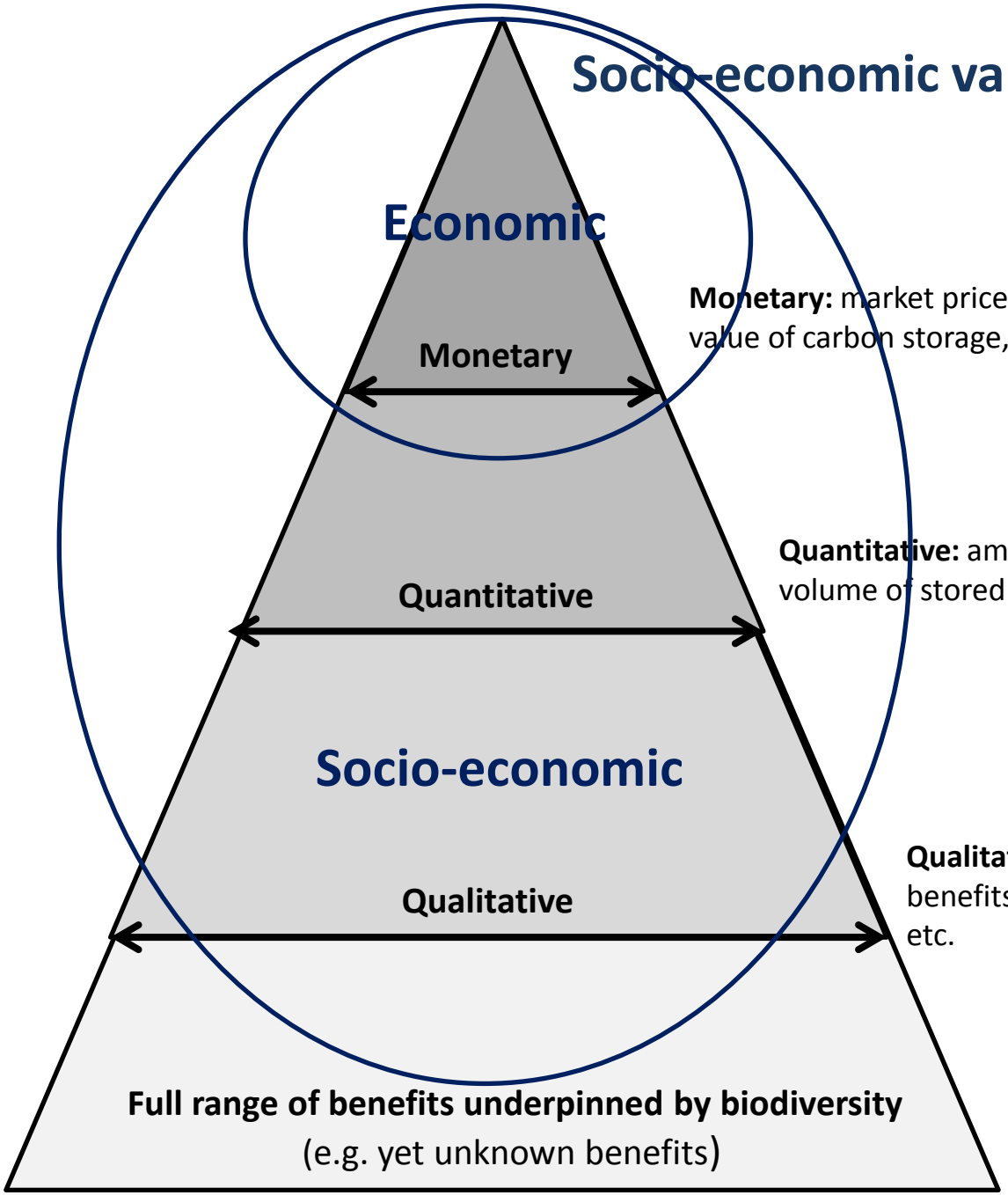
Socio-economic value of ecosystem services

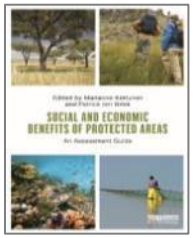


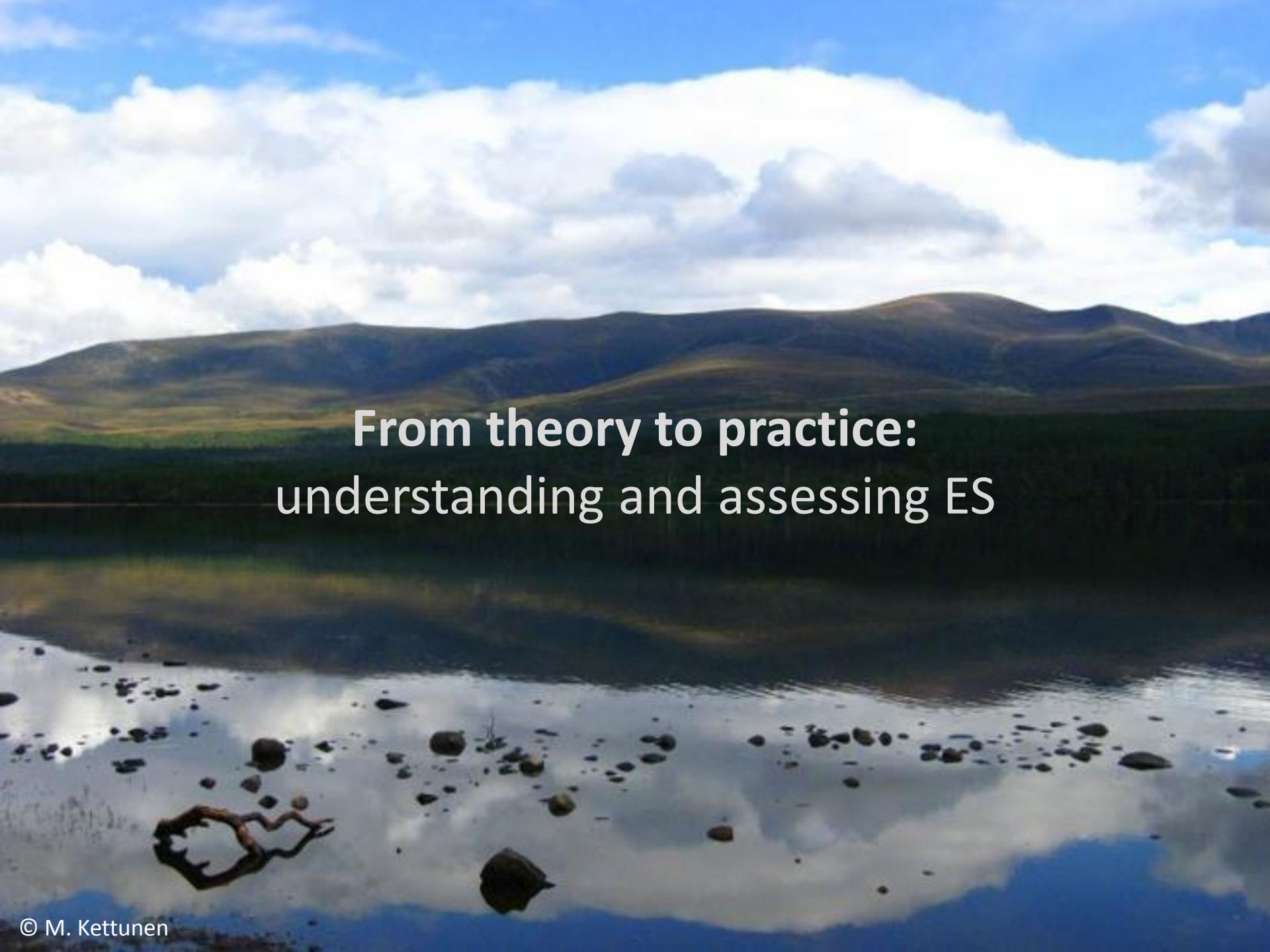
Monetary: market price of products,
value of carbon storage, avoided costs of water purification etc.

Quantitative: amount of people enjoying given products,
volume of stored carbon, volume of purified water etc.

Qualitative: description of the range of various benefits, dependency of people on these benefits etc.

Modified from Kettunen and ten Brink (2013)




From theory to practice:
understanding and assessing ES
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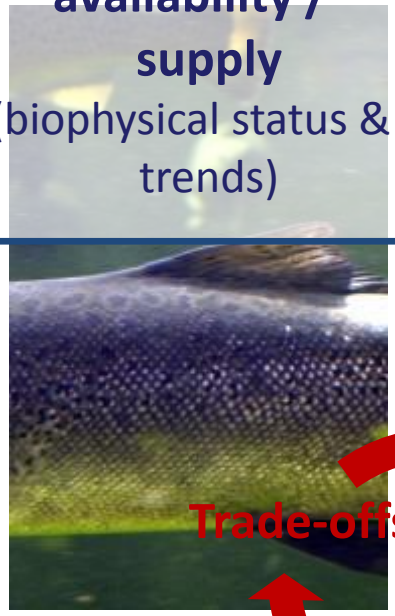
Understanding & systematically assessing ecosystem services

Ecosystem service availability / supply
(biophysical status & trends)



Ecosystem service "flow"
(who benefits and where?)

Ecosystem service value
(current & potential)

- Qualitative
- Quantitative
- Monetary

Trade-offs

Trade-offs

Trade-offs

Biodiversity (status & trends) Indication of resilience !


From theory to practice:
using ES to create “win-win” solutions
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Wetland construction / restoration:
cost-effective solution for water and biodiversity (south coast of SE)

Regulation of water quality (N retention):

- Annual N removal at least 1000 kg N / ha / individual wetland (minimum) → Individual wetlands cost-effective solutions for managing water quality
- N removal levels and cost-effectiveness depend on the design and location of constructed wetland → achieving benefits on a large scale requires careful planning !

Biodiversity conservation:

- Species numbers and population sizes of birds and amphibians ↑ → positive impact on species in the national Red List
- Species numbers high also on nutrient removal wetlands → 'win-win' management for biodiversity and ecosystem services

→ **Information on 1) biodiversity and 2) ecosystem services can support biodiversity conservation and water management**

Source: Strand and Weisner (2013) Ecological Engineering 56: 14-25

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MPAs:
protecting biodiversity & ecosystem services

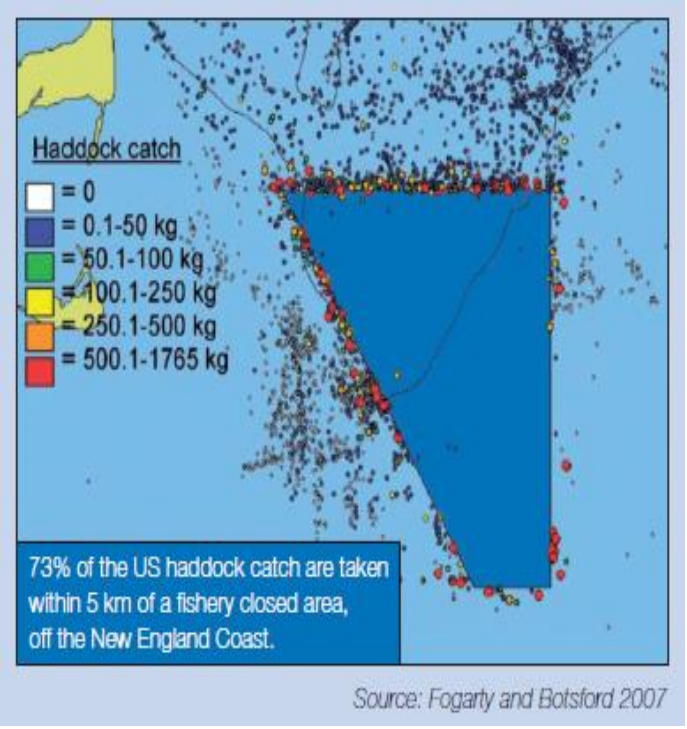
MPAs supporting local fisheries globally

- Fish populations, size & biomass all dramatically increased inside reserves, allowing spill-over to nearby fishing grounds
- A review of 112 studies in 80 MPAs (Halpern 2003)

MPAs supporting local fisheries in south Europe

- Income for local commercial fishing industry, generated by the use of MPA EUR 720 000 / MPA / year
- Local commercial fishing generates around 54 jobs / MPA
- 12 MPAs reviewed (Roncin et al. 2008)

→ **(Spatial) Information on 1) biodiversity and 2) ecosystem services important for fisheries can support MPA planning and management**



Source: Roncin et al. (2008) Jounal of Nature Conservation 16: 256-270: Halpern (2003) Ecological Applications 13:1

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From theory to practice:
Integrating nature-based solutions
to spatial planning
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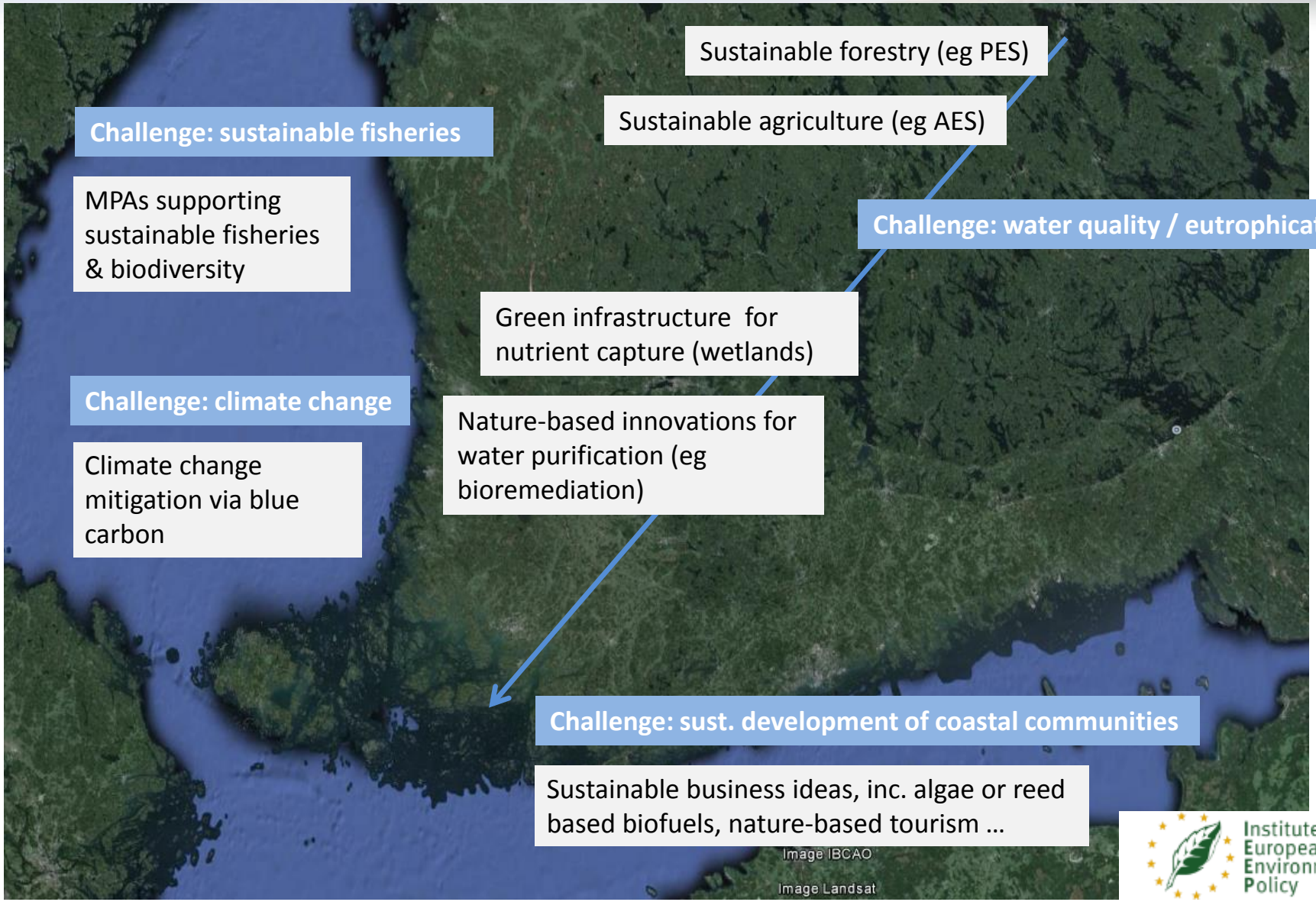
Nature-based solutions and (marine) spatial planning



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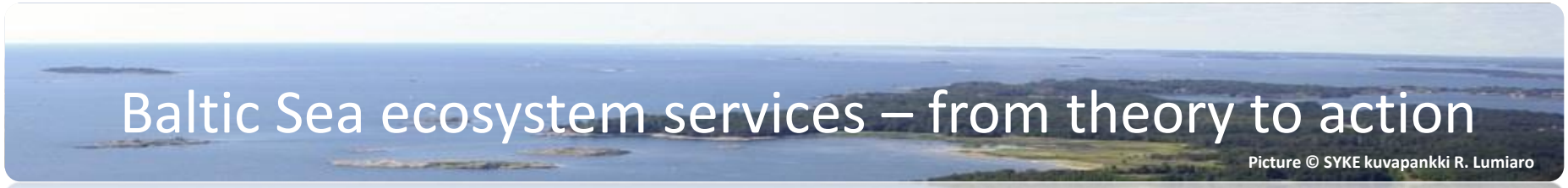
Baltic Sea ecosystem services – from theory to action



Picture © SYKE kuvapankki R. Lumiaro

1. **Understanding the value** even when the values are not market-based or economic

2. **Integrating the value** systematically into the foundations of decision-making at all levels (developing and adopting indicators, marine spatial planning and impact assessments ...)

3. **Providing the right economic signals** – removing harmful subsidies and creating incentives for sustainable use

4. **Investing in green / blue -** green / blue infrastructure & creating green / blue jobs

→ **Truly 'green' economy for the Baltic Sea region**

→ **Building on the implementation of the Baltic Sea Action Plan**

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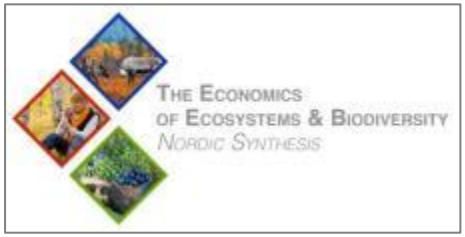
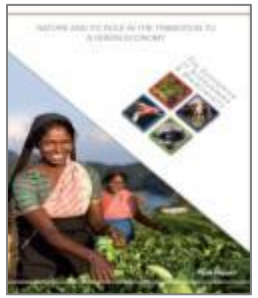
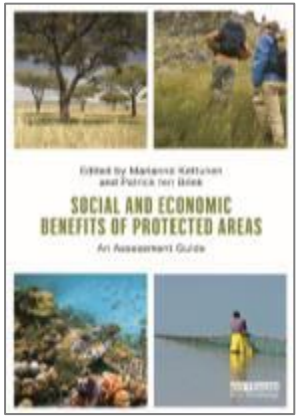
Further information

- The Economics of Ecosystems and Biodiversity (TEEB) (2008 -)
- Kettunen et al. (2012) TEEB Nordic
- Guidance Manual for TEEB Country Studies (2013)
- TEEB Water and Wetlands (2013)
- TEEB Green Economy (2012)
- Kettunen & ten Brink (2013) Social and Economic Benefits of Protected Areas - An Assessment Guide







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Thank you !

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