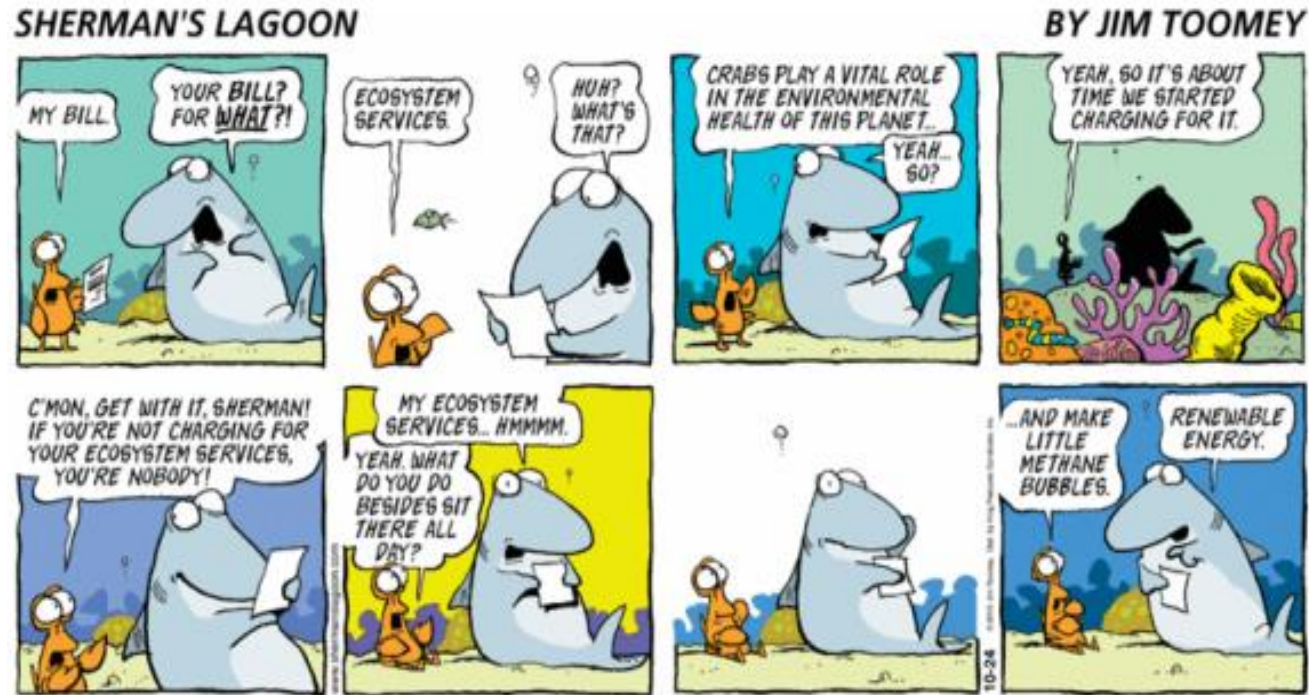


Ecosystem services provided by European aquaculture

TAPAS stakeholder workshop, Edinburgh 23.09.2016

Presented by Trine Dale, NIVA

What are ecosystems services ?



.....many people have an intuitive idea about the concept:

- it has something to do with the goods our ecosystems can provide
- the services can somehow be valued

= **all benefits humans derive from ecosystems.** They are often grouped in four categories; provisioning, regulating, cultural and supporting services. Concept became popular with the “Millennium Ecosystem Assessment” (2005).

PROVISIONING SERVICES

Products obtained from ecosystems

- Energy
- Seafood
- Biomedical
- Transportation
- National defense

.....

REGULATING SERVICES

Benefits obtained from the regulation of ecosystem processes

- Flood prevention
- Climate regulation
- Erosion control
- Control of pests and pathogens

.....

CULTURAL SERVICES

Nonmaterial benefits obtained from ecosystems

- Educational
- Recreational
- Heritage
- Spiritual

.....

SUPPORTING SERVICES

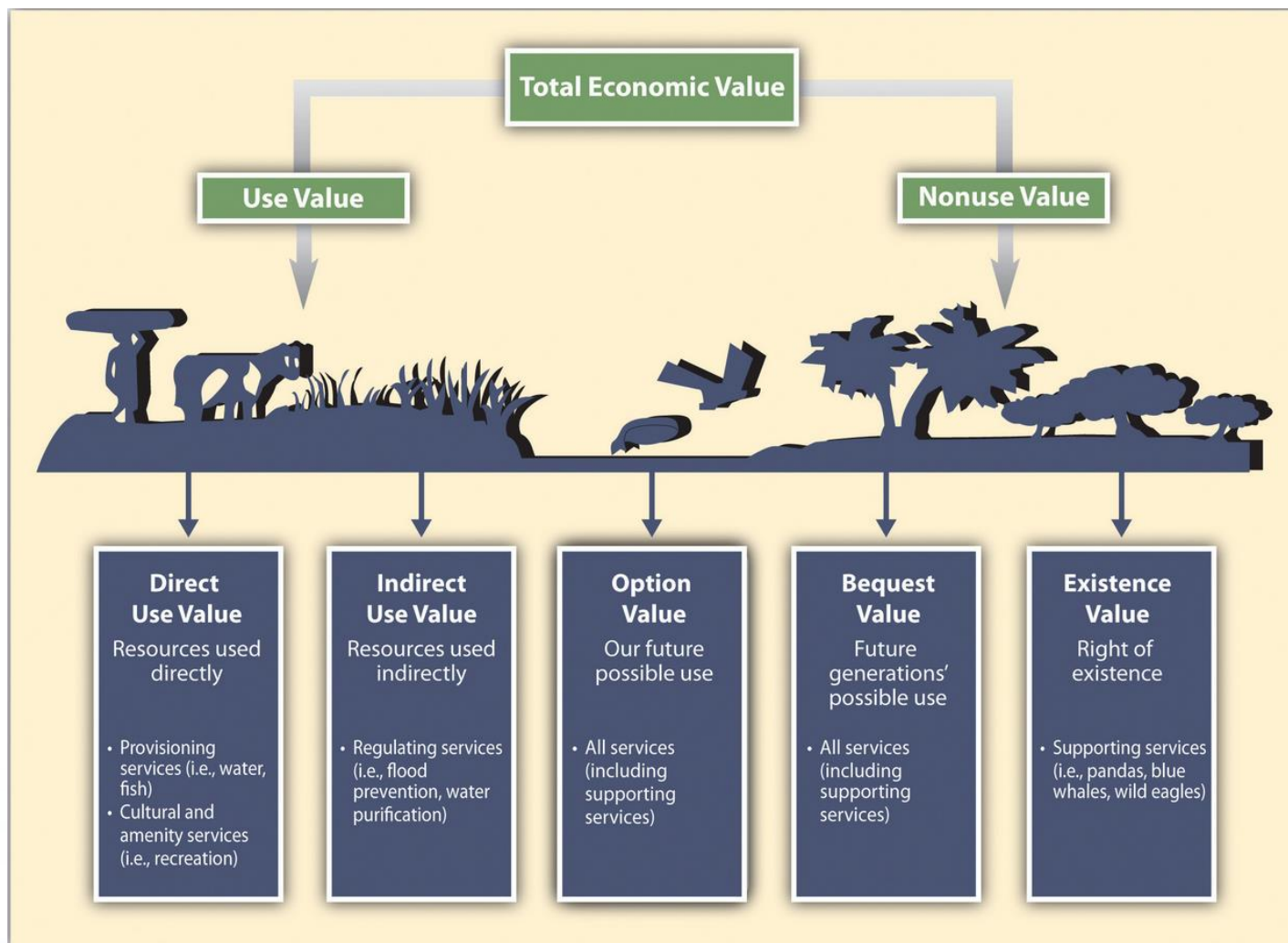
Services necessary for the production of all other ecosystem services

- Biological diversity maintenance
- Nutrient recycling
- Primary productivity

.....

source: *Final Recommendations of the Interagency Ocean Policy Taskforce, 2010*

Ecosystems services valuation

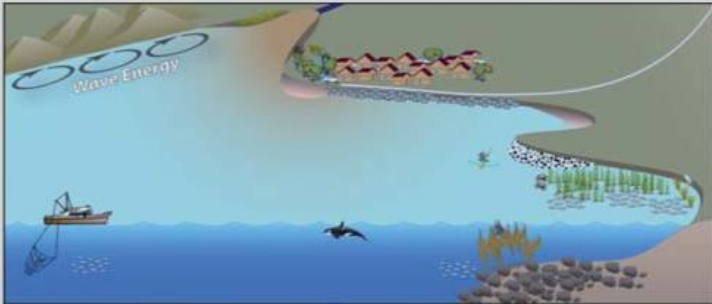
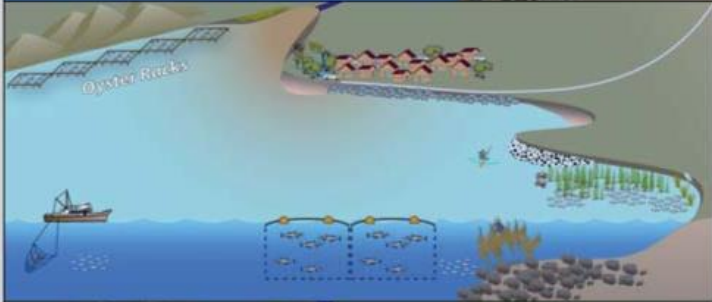
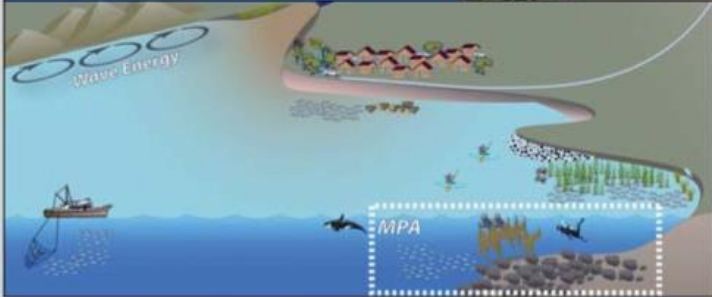


There is a range of different methods out there to perform ecosystems services valuation

Source: UN Food and Agricultural Organization, "What Are Ecosystem Services,"

<http://www.fao.org/es/esa/pesal/aboutPES3.html>.

Trade-offs and synergies

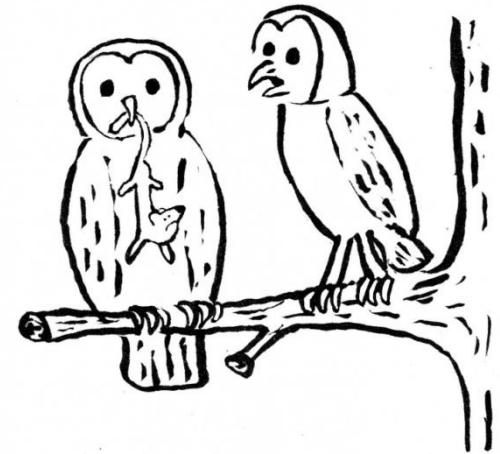
Current Conditions and Alternative Future Scenario (Model Input)		Change in Ecosystem Services (Model Output)			
		Aquaculture Yield	Coastal Protection	Fisheries	Recreation
Current conditions		---	---	---	---
Scenario 1 Aquaculture: add netpens and oyster racks		↑	---	---	↓
Scenario 2 Restore and Protect: add MPA; remove armoring to restore beach		↓	↑	↓	↑

Source: Silvestri, S., Kershaw, F. (eds.), 2010. Framing the flow: Innovative Approaches to Understand, Protect and Value Ecosystem Services across Linked Habitats, UNEP World Conservation Monitoring Centre, Cambridge, UK

Strengths of ecosystems services approach

- Clear and logical framework organised into four categories
- Is interdisciplinary; gives meaning to both natural and social sciences
- Provides a benchmark for analysing synergies and trade-offs between environmental conservation and economic development
- Is helpful developing and communicating interdependencies between politics, conservation goals, human uses and well-being

"YOU CAN'T EAT HIM DAVE, HE'S WORTH £4.37 TO THE LOCAL ECONOMY"



@CartoonRalph

....and weaknesses

- Has an anthropocentric focus and exclude the intrinsic value of different entities in nature
- Comprise economic valuation..... and leads to commodification
- Logic in theory- but vague in practise. Becomes popular "catch-all" phrase

Why spend time talking about ES here today ?

Important tasks in TAPAS:

- **To assess the combined environmental and social impacts of aquaculture**
- **To identify the economic instruments, management tools and farm practices that will support and incentivize the sustainable development of European aquaculture.**

A key concept in the TAPAS approach to sustainable development is ecosystems services.

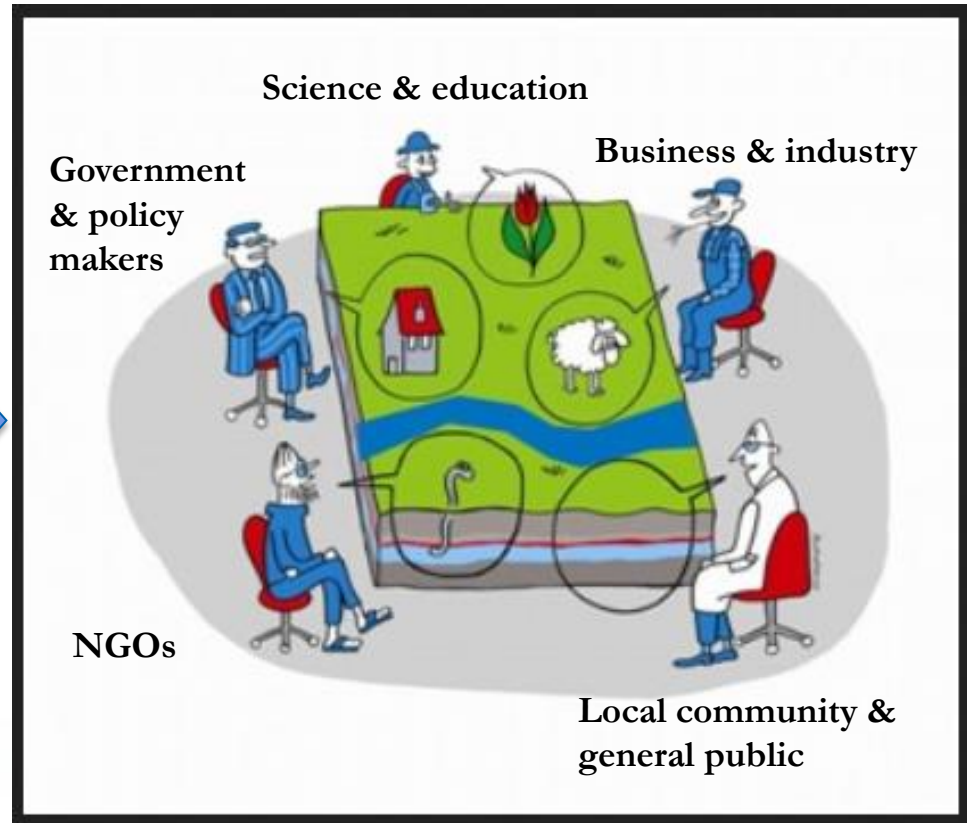
- **To identify the ecosystems services provided by different segments of European aquaculture**
- **To develop tools for the quantification of these services is a stated goal in the project.**



General framework used in selected case studies

Stakeholder engagement

Ecosystem Services inherently involve people whose values define the benefits of nature's services.



We need stakeholder involvement in TAPAS

?

for part II discussions:

How can we get you as potential stakeholders involved

Source:<http://www.vechtstromen.nl/projecten/projecten/ecosystem-services/the-vecht-river/>

Thank you for your attention