Linking the EU Marine Strategy Framework Directive and ecosystem accounts

Soile Oinonen

Forum of Experts in SEEA Experimental Ecosystem Accounting 2018

18-20 June 2018, Glen Cove, New York

SYKE

Outline

- EU Marine Strategy Framework Directive
  - Data provider for the SEEA-EEA?
  - User of the SEEA-EEA?
  - Economic and social analyses (ESA)
    - Use of Marine Waters
    - Cost of Degradation
  - Regional cooperation in the Baltic Sea
    - From regional ESA to regional SEEA-EEA?
- National Biodiversity Indicators and the SEEA-EEA
- More questions than answers!

SYKE

Marine Strategy Framework Directive (MSFD)

- Objective: Good Environmental Status (GES) by 2020
  - Initial Assessment
  - Monitoring Programme
  - Programmes of measures
- 6-years management cycle
- 11 GES descriptors
  - Biodiversity, non-indigenous species, food webs, commercial fish, eutrophication, sea floor integrity, hydrographical conditions, contaminants, contaminants in seafood, marine litter, energy including underwater noise

http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm

MSFD as data provider for the SEEA-EEA?

- Status of the marine environment
  - 11 GES descriptors with over 100 indicators
    - Condition accounts?
      - Biodiversity, foodwebs, seafloo integrity
- Monitoring programmes
- The European Marine Observation and Data Network (EMODNET)
  - Sea bed habitats (extent accounts?)
  - Spatial distribution of species

SYKE

MSFD & Economic Analyses

- Use of Marine Waters
  - Identification of the users (human activities/economic sectors)
    - Ecosystem service demand account?
      - Physical
      - Monetary
- Cost of degradation
  - Economic benefits forgone if the GES is not achieved
    - Capacity account?

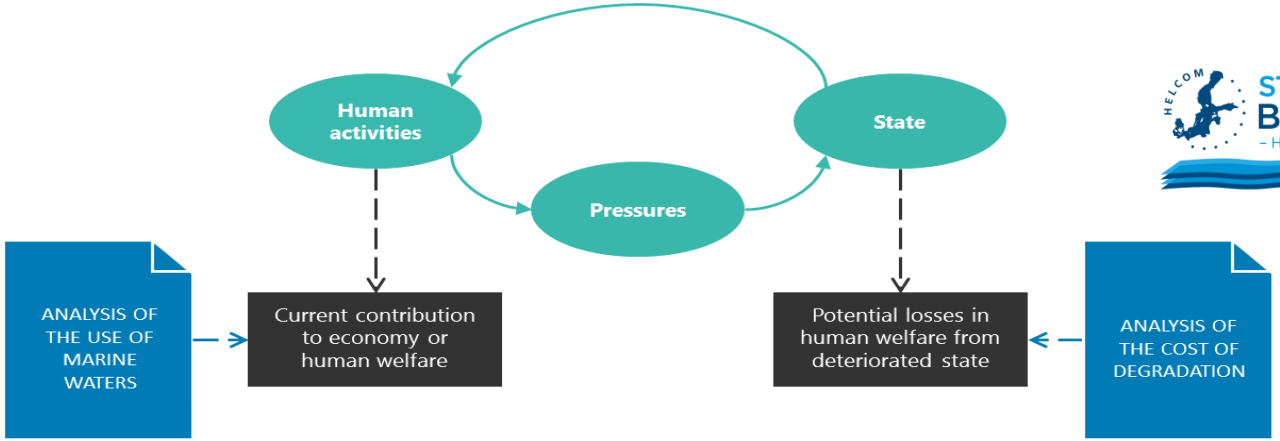
SYKE

Baltic Marine Environment Protection Commission – Helsinki Commission (HELCOM)

- Regional economic social analyses (9 countries)
  - Use of marine waters
  - Cost of degradation

SYKE

Economic and Social analysis in HELCOM



STATE OF THE BALTIC SEA
– HOLISTIC ASSESSMENT –

Demand of ecosystem services (physical and monetary terms
-> pressure to the marine state
-> potential degradation of the marine environment
->potential welfare loss

SYKE

Economic and Social analysis in HELCOM

B. USE OF MARINE WATERS ANALYSIS

Contribution of selected **activities** on regional and national economies

ACTIVITIES & SERVICES
1) Fish and shellfish harvesting
2) Aquaculture
3) Tourism and leisure
4) Energy production
5) Transport

MAIN INDICATORS
1) Gross value added
2) Employment
3) Consumer surplus

C. COST OF DEGRADATION ANALYSIS

Contribution of the **good environmental status** on citizens' well-being

THEMES & SERVICES
1) Eutrophication
2) Recreation

INDICATORS
1) Willingness to pay
2) Consumer surplus

Example of ecosystem services approach in the use of marine waters analysis

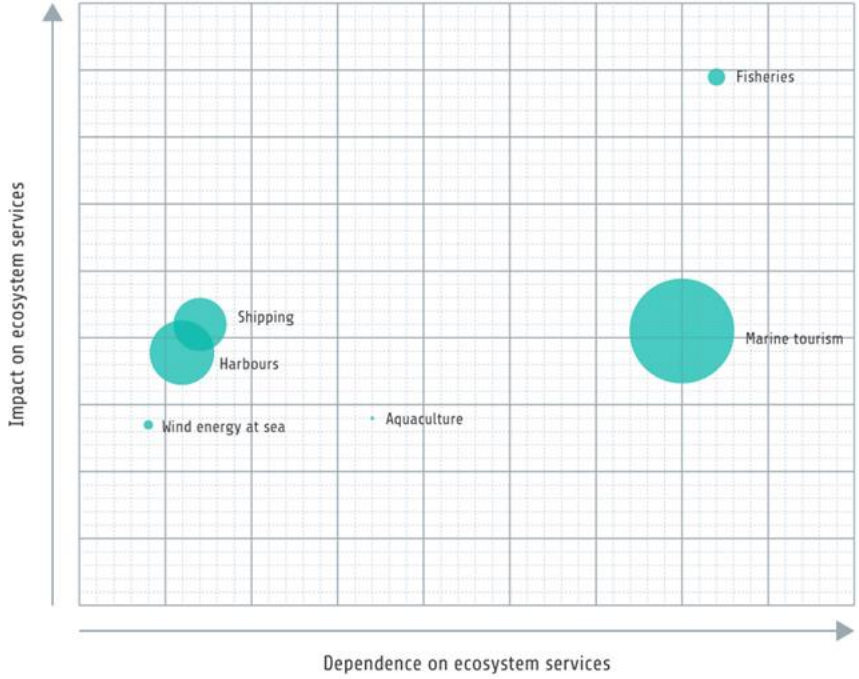


Figure B.3.1.1. Example on how human activities benefit from an impact on the environment. The bubble sizes represent the value added of each activity. The vertical axis represent the total environmental impact of human activities on the ecosystem services, and the horizontal axis represent the activities dependency on the state of ecosystem services. Economically and ecologically sound marine management would shift the location of the bubbles downward and increase the size of the

HELCOM Ministerial declaration 2018

- WE RECOGNIZE that knowledge on the relationship between the state of the marine environment and human well-being is essential for applying the ecosystem approach to management of human activities and in maritime spatial planning in the region, as well as for implementation of the UN Sustainable Development Goals and the Convention on Biological Diversity;
- To this end, WE AGREE to further develop and carry out coordinated regional economic and social assessments, including mapping, valuation, and analysis of ecosystem services and natural capital accounting, taking advantage of improved methods and comparability of data;

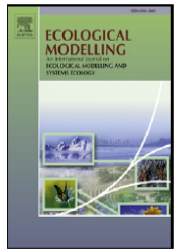
SYKE

Ecological Modelling 377 (2018) 51–65

Contents lists available at ScienceDirect

Ecological Modelling

journal homepage: www.elsevier.com/locate/ecolmodel



Bridging the gap between ecosystem service indicators and ecosystem accounting in Finland

Tin-Yu Lai[a,*], Jani Salminen[b], Jukka-Pekka Jäppinen[c], Saija Koljonen[d], Laura Mononen[c,e], Emmi Nieminen[f], Petteri Vihervaara[c], Soile Oinonen[f]

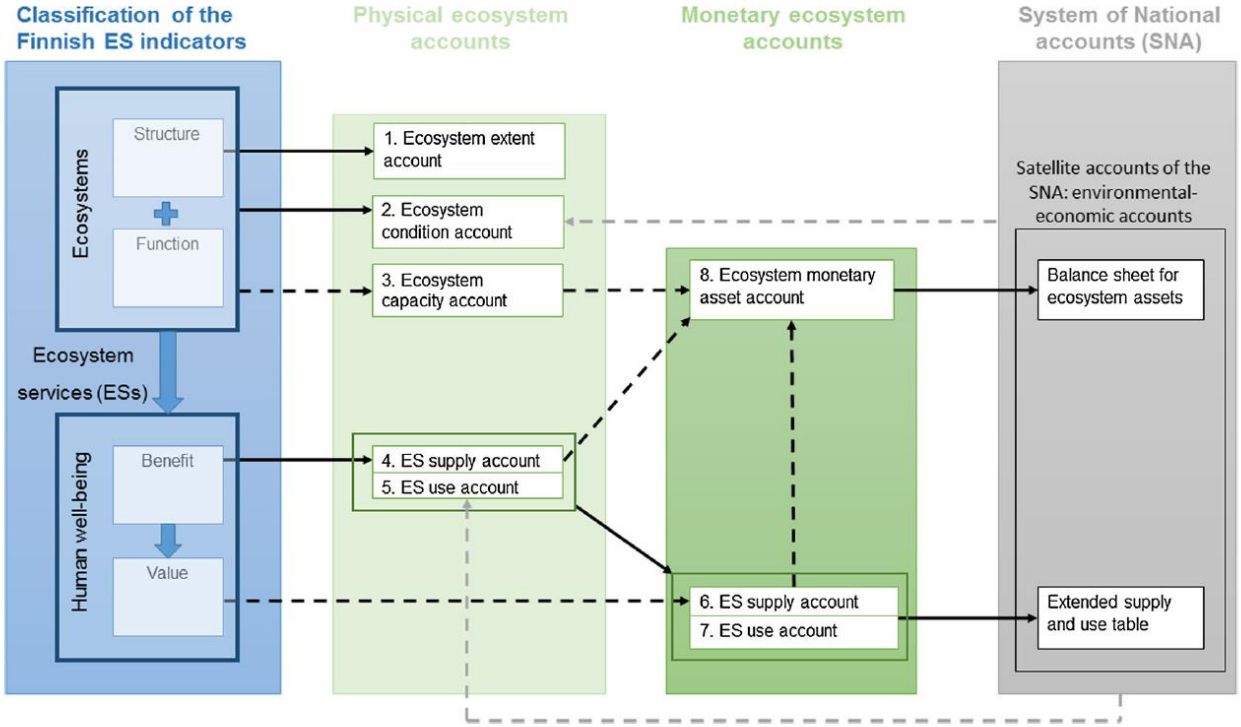


Fig. 1. Framework for integrating Finnish ES indicators into environmental-economic accounts.

Table 6
Asset accounts of Finnish marine ecosystems in 2012.

		Indicator		Units of measure	Value	Reference
Ecosystem extent		Area of EEZ cover		km^2	81 000	Claus et al. (2016)
Ecosystem condition	Water quality	Overall status of coastal water		% of coastal water area with good and high quality	25 (2013)[a]	Finnish ES indicators
		Nitrogen concentration in surface water		µmol/l (Gulf of Finland/Gulf of Bothnia/ Archipelago Sea)	190/133/203	Biodiversity.fi (2014)
		Phosphorus concentration in surface water			31.3/6.2/31.0	
	Finnish share of fish stock	SSB	Herring	thousand tons	863–1165	See Table A3 in Appendix A
			Sprat		33	
			Cod		4	

[a] Data not available for 2012.

SYKE

Table 7
ES supply and use account for marine fish (herring, sprat, and cod) provisioning services for 2012.

NACE	031	93
Sectors that use fish provisioning ES	**Fishing (herring/sprat/cod)**	**Sports and leisure activities (herring/sprat/cod)**
Actual supply of fish provided from marine ecosystem	128 (thousand tons) (117/8.96/1.67)[a]	735 (tons) (720/13/3)[b]
Monetary value of the ES	3.6 (million EUR)	Value as recreational services

Table A4
Expected ES flows of Finnish fish provisioning ecosystem services.

	Physical term of expected ES flows (Unit: ton)				Monetary term of expected ES flows (Unit: EUR)	
year	Cod	Herring	Sprat	Total	Resource rent of future expected ES flows (considering inflation rate, without discounting)	NPV of expected ES flows (value of the asset)
2013	1 329	116 386	14 540	132 254	3 784 594	90 761 845
2014	1 241	115 599	16 017	132 856	3 885 459	
2015	1 348	111 263	16 736	129 347	3 866 042	
2016	1 345	107 493	17 312	126 149	3 853 422	
2017	1 288	105 671	17 857	124 816	3 896 585	
2018	1 268	104 952	18 284	124 504	3 972 346	
2019	1 271	104 505	18 617	124 394	4 056 151	
2020	1 258	104 499	18 829	124 585	4 151 756	
2021	1 235	104 057	18 998	124 291	4 233 067	
2022	1 224	104 003	19 130	124 357	4 328 503	
2023	1 216	103 981	19 228	124 425	4 426 135	
2024	1 203	104 049	19 310	124 562	4 528 487	
2025	1 190	104 193	19 382	124 765	4 635 663	
2026	1 180	104 377	19 443	125 000	4 746 559	
2027	1 170	104 584	19 497	125 251	4 860 740	
2028	1 160	104 814	19 546	125 520	4 978 346	
2029	1 150	105 058	19 592	125 800	5 099 240	
2030	1 141	105 315	19 636	126 091	5 223 470	
2031	1 132	105 576	19 676	126 384	5 350 797	
2032	1 123	105 840	19 715	126 679	5 481 278	
2033	1 115	106 106	19 753	126 974	5 614 886	
2034	1 107	106 369	19 788	127 265	5 751 583	
2035	1 100	106 630	19 823	127 552	5 891 380	
2036	1 092	106 886	19 856	127 834	6 034 307	
2037	1 085	107 138	19 888	128 111	6 180 391	

Next steps

- Eurostat grant 2017 – Pilot SEEA-EEA in Finland
  - Finnish Environment Institute & Natural Resources Institute Finland
- Arctic Freshwater Natural Capital 2016-2018
  - Project funded by the Nordic Council of Ministers
  - Final seminar in Helsinki 7 September (UArctic Congress 2018)
- Application sent for Eurostat grant 2018
- Application sent for H2020 project

SYKE

Thank you!