



Economic and social analysis for building Program of Measures

SEI Tallinn and AKTiivs

04.12.2013

Final seminar in Tallinn

Economic and social analysis

- Strategic focus:
 - To contribute to development of coordinated, cost-effective and efficient programs of policy measures to achieve GES.
- Partners: SEIT, LHEI/Aktiivs, MSI, MoE, MTT, SRC
- Overview of WP activities:
 - Analyzing countries ESA of water use, BAU, the costs of degradation (WT 5.1, 5.2, 5.3),
 - cost-efficiency, socio-economic impacts of measures (WT 5.4).
 - Workshops-seminars to harmonize methods for ESA (Dec 10-11 in Stockholm). Training-study visits; acquiring softwares and literature to build capacity (WT 5.5)

Planned results

Recommendations for:

- coherent assessments;
- coordinated methods for socio-economic analysis (ESA);
- ESA of programs of measures (PoM).
- Complemented valuation studies (EE, LV);
- information base for ESA to support PoM, and
- suggestions for further work.

The Economic and Social Analysis of the use of marine waters

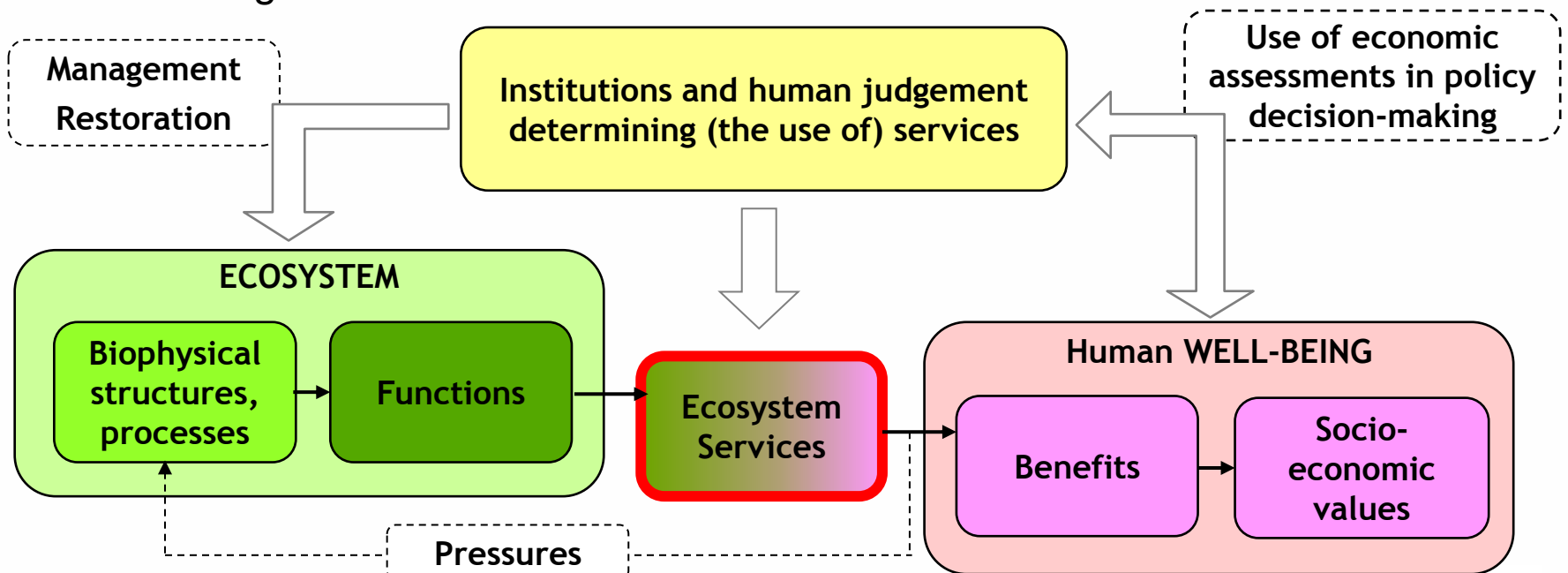
Purpose

- What was done
 - Comparison of ESA in IA of participating countries
 - LAT – study on ecosystem services classification
 - LAT – study on linking ecosystem services with NACE
 - EST – study on ecosystem services approach based on ‘provision of space’
 - Recommendations

Harmonising classification of marine ecosystem goods and services

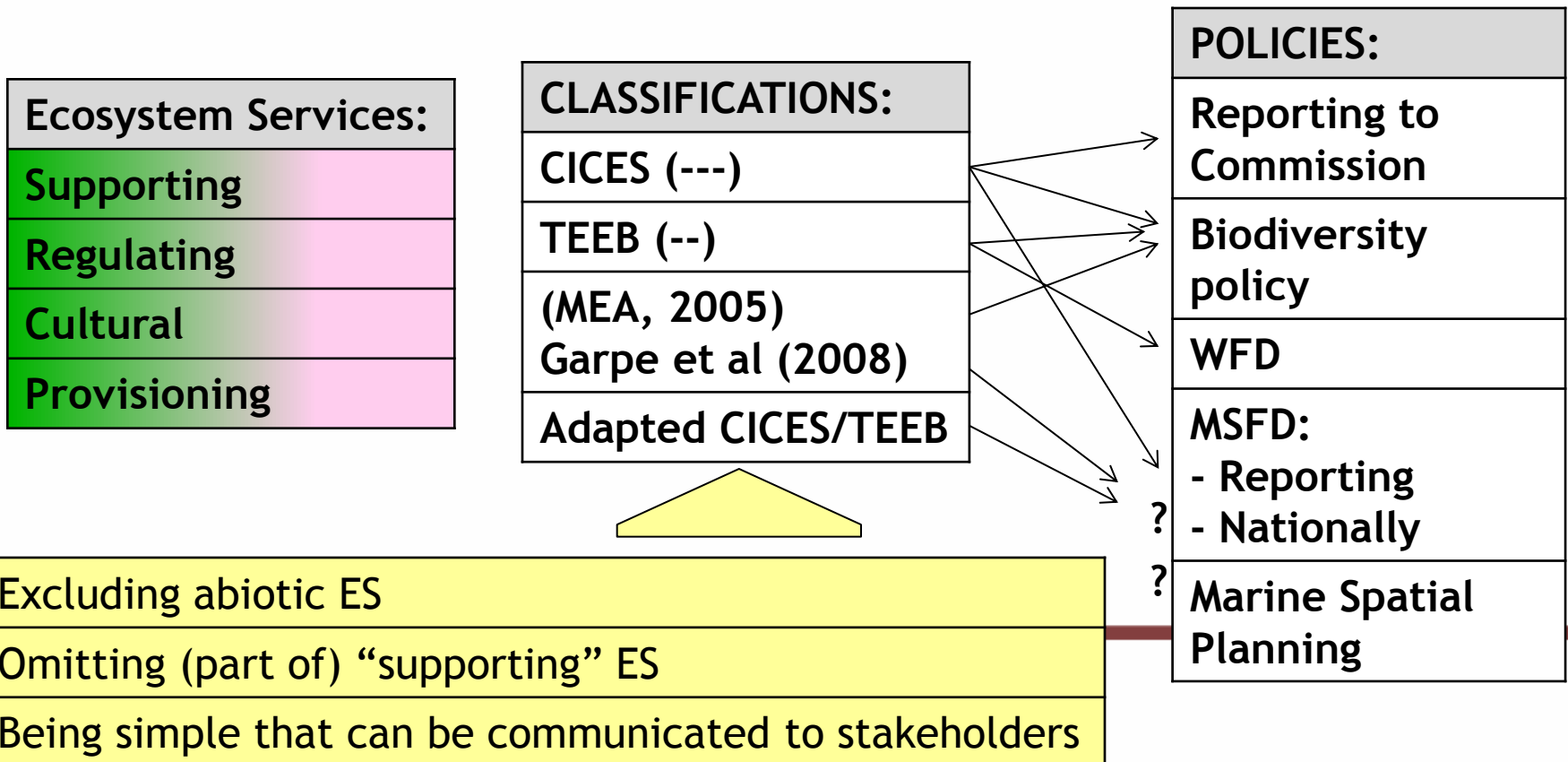
Why we need it?

- Increasing demand for applying “Ecosystem services approach” for environmental policy-making and (strategic) decision-making.
- Purpose:
 - To show the link between (state of) marine environment and human well-being (communications with stakeholders).
 - To demonstrate socioeconomic value of the ecosystem for humans.
 - To provide socioeconomic assessments for (strategic) decision-making.



Classification and description of ecosystem services (ES)

- 4 categories of ES, more than 20 ES.
- Differences among and disadvantages of various classifications.
- Different classifications used internationally and nationally for various environmental policies – no agreed single classification.



EST case study: Users of **provision of space**

Economic sectors NACE	Space for waterways	Space for underwater infrastructure	Space for offshore wind parks	Space for marine infrastructure	Space for coastal infrastructure
Ship-building (including engines and turbines)	X		X		
Harbours and ports	X				X
Renewable energy		X	X		
Cables and pipeline transport		X			
Marine passenger transport	X				
Marine freight transport	X				
Bridges, dams, tunnels, artificial islands				X	x

Provision of space & economic sectors

			P7.1	P7.2	P7.3	P7.4	P7.5
Economic sectors	NACE ver 2 sectors	NACE code	Space for water-ways	Space for underwater infrastructure	Space for offshore wind parks	Space for marine infrastructure	Space for coastal infrastructure
Ship-building	Manufacturing of engines and turbines	28.11	X		X		
	Building of ships and floating structures	30.11	X				
	Building of pleasure and sporting boats	30.12	X				
	Repair of machinery	33.12	X		X		
	Repair and maintenance of ships and boats	33.15	X				
	Renting and leasing of recreational and sports goods	77.21	X				
	Renting and leasing of commercial boats and ships	77.34	X				
Harbours and ports	Building of ships and floating structures	30.11					X
	Construction of water projects	42.91	X				X
	Warehousing and storage	52.10	X				X
	Service activities incidental to water transportation	52.22	X				X
	Cargo handling	52.24	X				X
	Other transportation support activities	52.29	X				X
	Manufacturing of engines and turbines	28.11	X		X		
	Repair of machinery	33.12			X		

EST – Ecosystem services case study

- Lack of socio-economic data about ecosystem services, except provisioning services
- Data about cultural services related to tourism only
 - Need for more studies and systematic collections of socio-economic data related to ecosystem services
 - Need to collect marine specific data or carry out studies to produce marine related data
- Economic activities related to provision of space have impact on many ecosystem services.
 - Need to take into account the cumulative effects of activities that use marine space for waterways and infrastructure

Preliminary recommendations

- Minimum list of economic activities (marine accounts approach)
- Common methodology to determine the marine related share of non-marine specific economic sectors (marine accounts approach)
- Common classification of ecosystem services
- Linking ecosystem services with economic sectors

Business-as-usual (BAU) scenario development

BAU development

Main elements of the BAU:

Development trends of the **marine uses**

“Existing” **policies** with an impact on uses and the marine environment (except the MSFD)

Expected changes in the pressure (how pressures would change for 2020)

Changes in the state of marine environment (for 2020) and “**policy gap**” analysis

“Additional” measures for closing “gap”?

Issues studied more closely:

- Use of existing scenario studies (for the Baltic Sea) for the MSFD BAU development nationally (for nutrients pollution & eutrophication).
- Inventory “BAU policies and measures”
- Linkages between [pressures ↔ state (descriptors, indicators) ↔ “ecosystem services”]

Cost of degradation

What was done?

- Comparison of COD of project countries
- Valuation studies
 - LAT – MSFD
 - national costs of degradation (or benefits of reaching GES) in relation to the most relevant marine environment problems
 - EST – MSFD
 - national costs of degradation (or benefits of reaching GES) in relation to the most relevant marine environment problems
 - EST – Apollo & Western Shoals
 - Value of marine protected area vs offshore wind park/ eco wind park

LAT MSFD study

The main objective – to estimate national costs of degradation (or benefits of reaching GES) in relation to the most relevant marine environment problems

- maintenance of **biodiversity** (Attribute 1)
- reducing **eutrophication** - recreational quality of waters (Attribute 2)
- reducing impact of **alien species** (Attribute 3)

Implementation:

- Developing environmental “attributes” and scenarios for valuation
- “Focus group” discussion
- Developing “valuation instrument” (questionnaire, survey materials)
- Pilot survey - testing the “instrument”
- Main survey – 1200 interviews (nationally representative sample)
- Data analysis, incl. statistical modelling
- Study report

LAT Marine environment problems analysed

Attributes	Scenarios	No additional actions	BAU (MSFD)	GES (MSFD)
Reduced number of native species [“natural areas” - where species naturally should be present]		on Large areas [30 % of the “natural areas”]	on Small areas [10-20 % of the “natural areas”]	No such areas [0 % - species are present in all their “natural areas”]
Water quality for recreation at the sea [explained by: - visual quality (clarity) - algae washed ashore]		Bad	Moderate	Good
		[in each scenario - specification for clarity, frequency and amount of algae ashore]		
New harmful alien species' establishing [1 new species on average]		Frequently [in 5 years]	Rarely [in 15-20 years]	Not introduced [not more often than (in) 50 years]

«Choice experiment method»

- We present various combinations of environmental quality levels and “price” for each combination (12 different combinations – situations)
- People make their choice in each situation on most preferred option
- Since “price” is specified – we elicit **willingness to pay for various levels of environmental quality.**

Preliminary results

- The highest WTP for improving water quality for recreation, very low WTP for improving situation with biodiversity.
- Difficulties to value biodiversity – marginal changes (difference between the current state & GES), “intangible” environmental feature for people.
- Avoiding overlap of “attributes” when including various marine environment problems in the same valuation study (overlap of the Descriptors).

Importance of valued environment problems
1. Water quality for recreation at the sea
2. New harmful alien species' establishing
3. Reduced number of native species (size of such areas)
Willingness to pay for reaching GES for all valued problems:
Per person per year: ... EUR
For whole (adult) population: in range of ... mil EUR

Differences in LV & EE MSFD studies

Latvian	Estonian
Reduced number of native species	Massive oil and chemical pollution of marine waters
	Massive oil and chemical pollution of coast
Water quality for recreational use	Water quality for recreational use
Establishment of new harmful alien species	Introduction of new non-indigenous species

EE MSFD attribute: oil & chemical pollution

Cases of large-scale marine pollution (on average)	very often (state if no additional actions taken)	often	sometimes	rarely
	more often than 1 time in 2 years	1 time in 10 years	1 time in 150 years	1 time in 300 years

Probability that pollution reaches the coast	very high (state if no additional actions taken)	high	average	low
	99%	75%	50%	25%

Attribute Water quality - Similar LV & EE

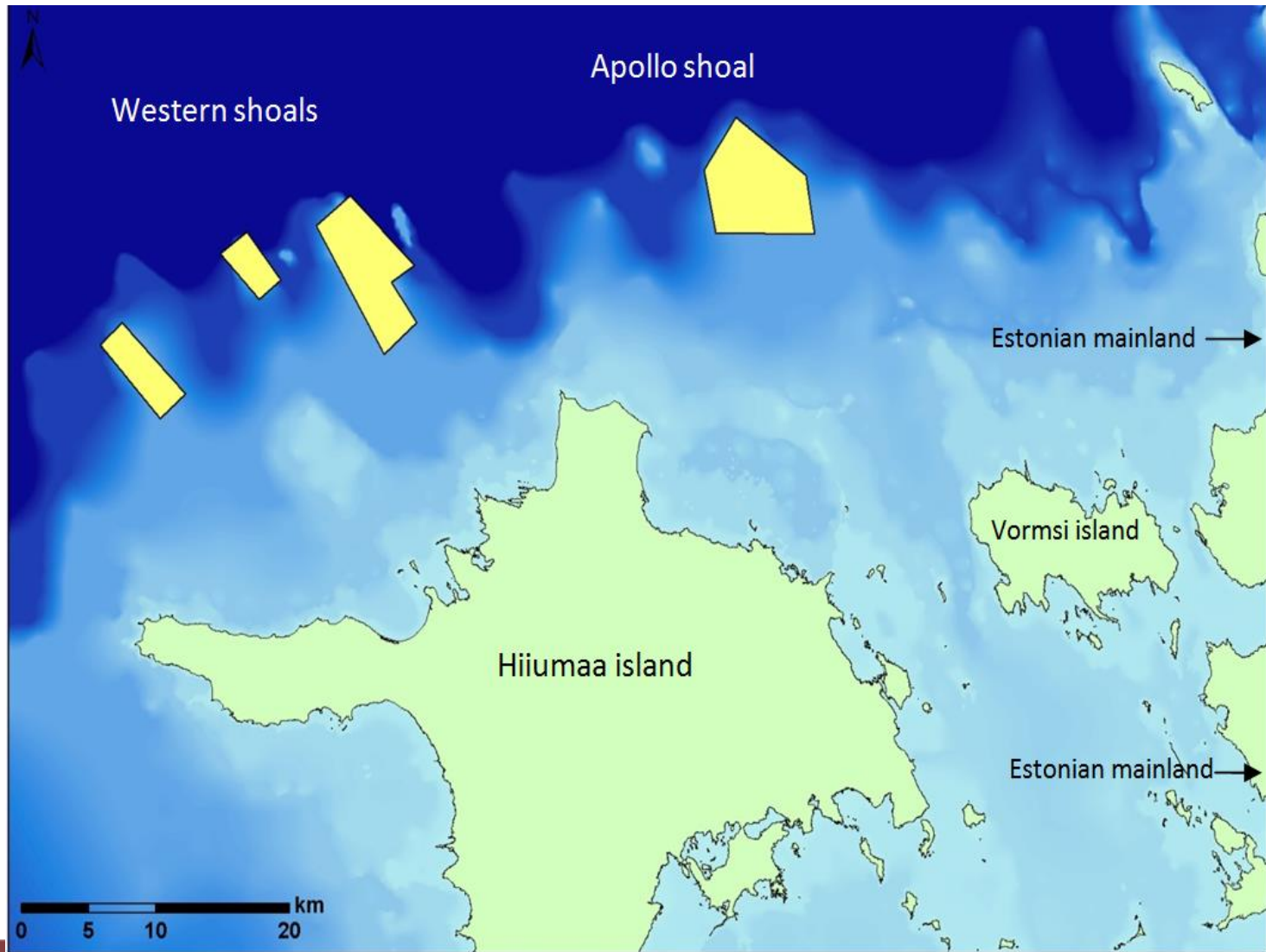
Water quality for recreation (coastal waters in summers)	bad (state if no additional actions taken)	moderate	good
Water transparency (on average)	<p>Water is unclean every summer.</p> <p>Pärnu Bay – less than 1 m; Tallinn Bay - 3 m; open parts of Gulf of Finland – 4 m.</p>	<p>Water is unclean every 2-3'rd summer.</p> <p>Pärnu Bay – less than 1,5 m; Tallinn Bay - 4 m; open parts of Gulf of Finland – 5 m</p>	<p>Water is rarely unclean</p> <p>Pärnu Bay – less than 2 m; Tallinn Bay - 5 m; open parts of Gulf of Finland – 6 m</p>
Algae washed ashore	Every summer in large amounts.	Every 2-3'rd summer in small amounts.	Only after large storms.

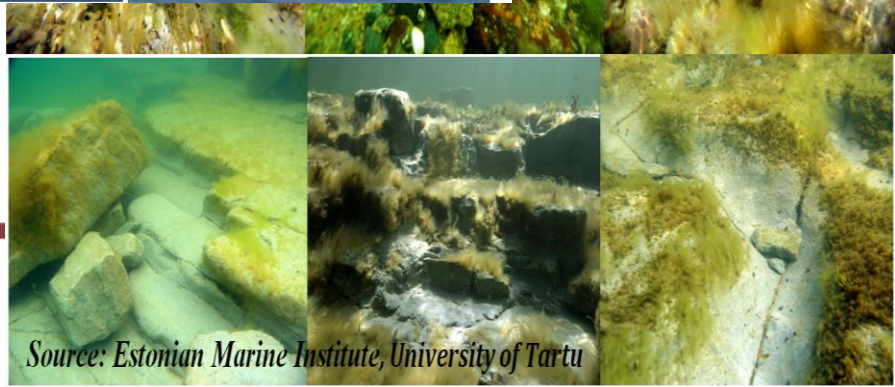
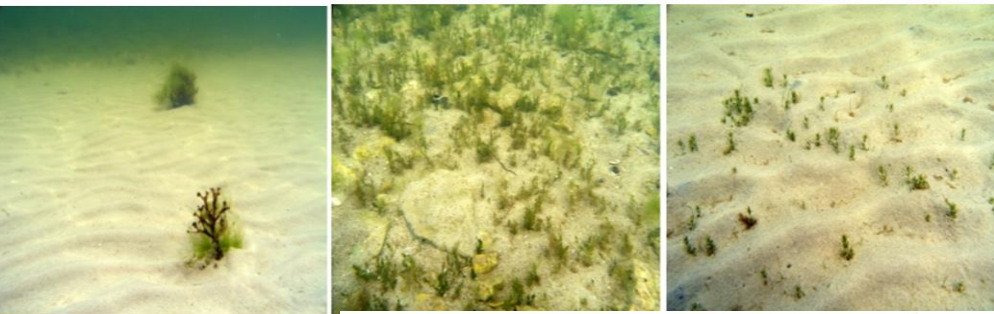
Valuation scenarios

Problem		MSFD BAU	GES	BAU
Massive pollution with oil and chemicals	Cases of massive pollution of marine waters	often	rarely	very often
	Probability that pollution reaches the shore	high	low	very high
Water quality for recreation		bad	good	bad
Establishment of new non-indigenous species		often	in exceptional cases	often
Yearly payment of your household (euros)		X EUR	X EUR	0 EUR

Preliminary results indicate that people are willing to pay for the better marine environment; more willing to pay for reducing the risks of oil & chemical pollution and the least for reducing the introduction of new non-indigenous species. The survey is ongoing and the results are not final.

EST - Apollo and western shoals





EST- Apollo case study

- Method: discrete choice experiment (DCE)
- Sample: 100+700 respondents, representative of Estonian population
- Research questions:
 - Is the value of using the marine areas for wind-energy production higher of the value of preserving habitats and biodiversity that the marine ecosystem can provide?
 - Is the society willing to pay extra for the wind park with minimal environmental impact?
- Choice card:

	Status quo	Alternative A	Alternative B
Apollo shoal	No change	ECO-WP	MPA
Western shoals	No change	ECO-WP	No change
Cost to your household (EUR per year)	0	10	5
YOUR CHOICE			

Preliminary results

- Generally, people are not willing to pay for any change. Though, there are certain preferences:
 - Apollo shoal: respondents oppose the construction of ordinary WP and prefer ECO-WP or MPA
 - Western shoal: respondents are indifferent to the construction of WP and would rather support ECO-WP and MPA
- DCE method can be applied
- Further scenarios /studies should be developed
 - WTP in the case local people or communities would become share holders or beneficiaries of the association wind park

Choice of methods

Criteria	Ecosystem service approach	Thematic approach	Cost based approach
Main starting point	Ecosystem services	Themes	Economic activities or sectors
Financial resources	high	moderate	low
Time (resource)	high	moderate	low
Competence (human resource)	high	moderate	low
Time scale	Future costs	Current costs	Current costs
GES	yes	No	No
Recommended	XXX		

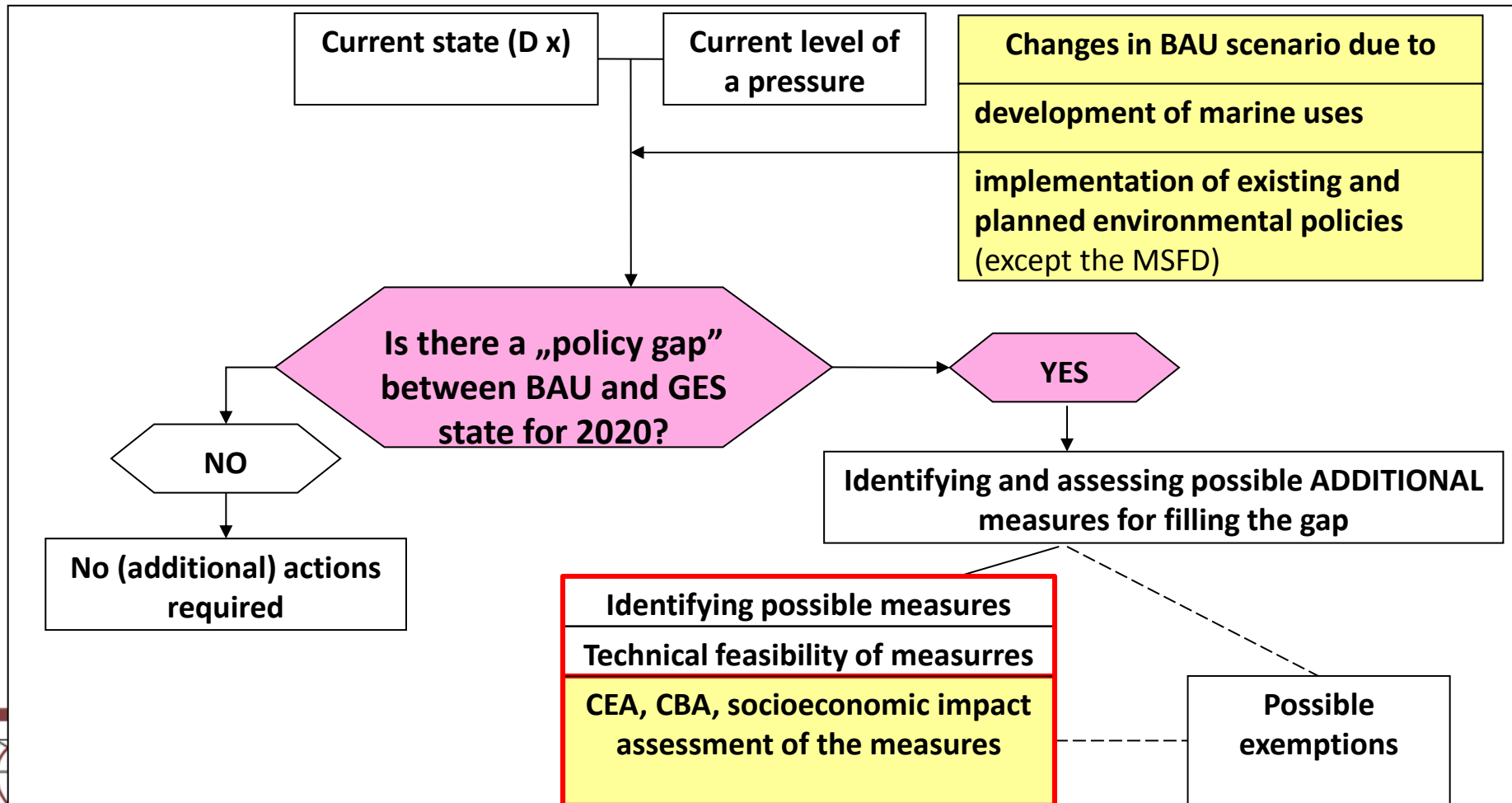
Preliminary conclusions and recommendations

- Cost of degradation analysed carried out in 2012 were uncomparable among the project countries
- In order to guarantee the comparability in the future the harmonisation is required for the choice of methods as well as the choice of themes/ descriptors/ pressures/ ecosystem services to be focused on.
- It is especially important to harmonise between these countries that share the waterbody (Gulf of Riga, Gulf of Finland).

Economic and Social Analysis of programs of measures

Main outcome – Recommendations

To build common understanding on the analytical process of building the PoM, incl., (i) sequential steps, (ii) building ESA on environmental assessments.



Main outcome – Recommendations

- To build common understanding on the analytical process of building the PoM.
- To identify practical approaches for the ESA (CEA, CBA) of possible additional measures.

Implementation of the Task:

- Identifying the marine environment problems with likely “policy gap” in the project countries.
- Identifying possible additional (technically feasible) measures
- Then we know for which environmental problems/measures to estimate the costs and benefits.

Practical approaches for the ESA may differ for various environmental problems.

The process is not far enough in the countries to do ESA.

Implementation

MSFD descriptors	For Estonia	For Latvia
Biological diversity (D1)	? X (Impacts of new infra)	Status of marine biodiversity (failing GES?)
Non-indigenous species (D2)	? X (Impacts of new infra)	Negative impacts of alien species
Fish and shellfish (D3)		
Food webs (D4)	? X (Impacts of new infra)	
Eutrophication (D5)	? X (Impacts of new infra)	?
Sea floor integrity (D6)	? X (Impacts of new infra)	Negative impacts on bottom biology
Hydro-graphic conditions (D7)	? X (Impacts of new infra)	
Contaminants (D8)	Risk of massive pollution of marine waters and coast with oil, oil products and chemicals	
Contaminants in fish/shellfish (D9)	? X (Impacts of new infra)	
Marine litter (D10)	Marine litter	
Energy introduction (incl. noise) (D11)	? X (Impacts of new infra)	
Other	? X Insufficiently known impacts of new infrastructures	

Capacity building

Overview

- Training sessions on environmental monetary valuation methods (DCE)
- Study visit: Statistics of the Netherlands on **NAMWA**
 - System of National Accounts (SNA)
 - National Accounting Matrix including Environmental Accounts (NAMEA)
 - **National Accounting Matrix including Water Accounts (NAMWA)**
- MSFD WG ESA meetings
- Marine ecosystem services valuation in the Baltic Sea workshop
- Literature and books
- Licenses for CVM and DCE analysis



Thank you!