BLUES

Co-funded by the European Union

HELCOM BLUES – Activity 1

17th January 2023

aplinkos apsaugos politikos centras
center for environmental policy

Swedish Agency for Marine and Water Management

ifw KIEL INSTITUTE FOR THE WORLD ECONOMY

AKTiiVS
Economic Research and Consultancy for Water and Biodiversity Protection Policies

Luke
NATURAL RESOURCES INSTITUTE FINLAND

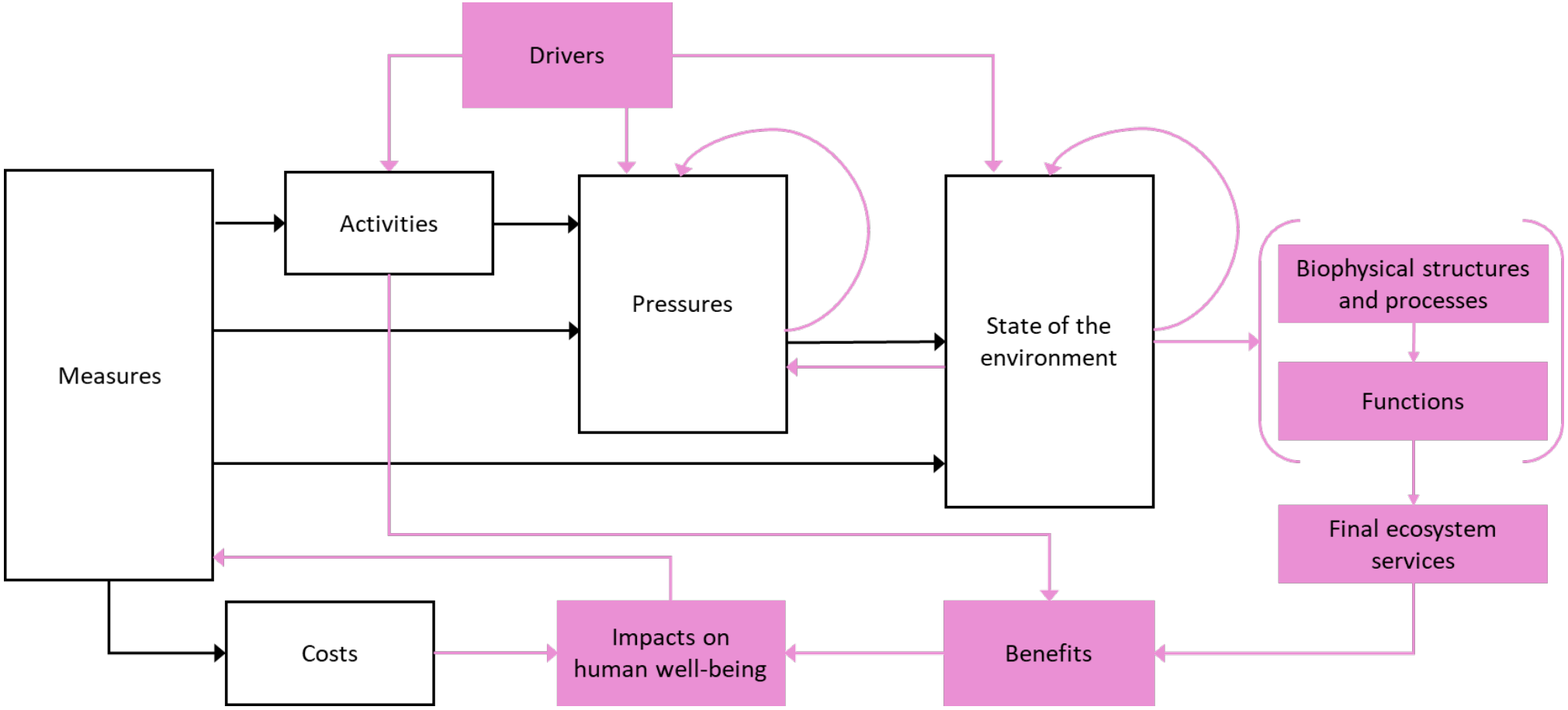
HELCOM

Activity 1 – Support effective regional measures

Task	Deliverable
1.1 Develop the assessment framework	1. Description of improved assessment framework for sufficiency, effectiveness and economic impacts of measures
1.2 Improved data for the assessment	2. Data for assessing the effectiveness and costs of regionally coordinated actions
1.3 Estimation of benefits	3. Results of a literature review 4. Improved approach for assessing regional benefits 5. Regional benefit estimates of achieving GES
1.4 Economic effectiveness of policies and measures and policy-support	
1.4.1 Conduct use of marine waters analysis	6. Results on the use of marine waters
1.4.2 Carry out improved effectiveness of measures analysis	7. Results for improved sufficiency and effectiveness of measures analysis
1.4.3 Conduct cost of degradation analysis	8. Results on the cost of degradation
1.4.4 Conduct cost-benefit analysis for selected topics	9. Approach and results for a cost-benefit analysis of achieving good status for 1-2 environmental topics
1.4.5 Incentives and implementation of measures	10. Description of incentives and regulations around the Baltic Sea countries to mitigate nutrient loading

Results A1.1

Aim: Develop the assessment framework



Results A1.2

Aim: Improved data for the assessment

- New expert surveys for…
  - Marine mammals
  - Zooplankton
- New literature review and data integration approach developed for…
  - Marine mammals
  - Waterbirds
- Data linking nutrient input to eutrophication states
- Marine litter abatement cost database

Results A1.3

Aim: Estimation of benefits

- Updated benefit estimate studies
  - published literature
  - grey literature
- Benefit estimates generated suitable for assessment framework (via collected valuation studies)
- Benefit estimates on a regional scale, value transfer methods developed and applied

Results A1.4.1

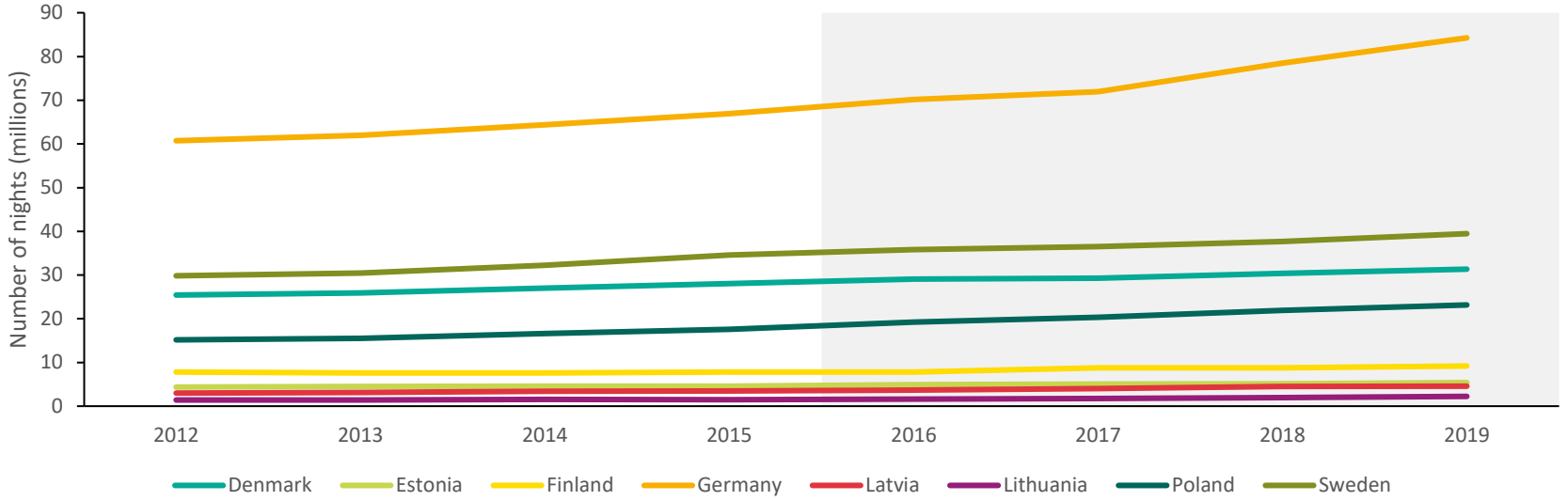
Aim: Conduct use of marine waters analysis

- Use of marine waters analysis completed for…
  - Fish and shellfish harvesting
  - Aquaculture
  - Tourism and leisure **Example**
  - Marine Transport
  - Renewable energy generation HOLAS now includes economic data
  - Extraction of oil and gas NEW to HOLAS
  - Extraction of minerals NEW to HOLAS
  - Waste treatment and disposal NEW to HOLAS

Results A1.4.1 Use of marine waters analysis – Tourism

Country	Share of the number of nights spent at tourist accommodation establishments in coastal areas (% of the total national number of nights)	Number of nights spent at tourist accommodation establishments in coastal areas (million nights)	Annual value added at factor cost from coastal tourism accommodation sector (million €)	Nr of persons employed in coastal touris accommodation (thousand FTE)
Denmark	91%	31.3	907.2	12.7
Estonia	78%	5.4	111.5	4.7
Finland	40%	9.2	200.5	3.5
Germany	19%	84.3	3302.7	76.6
Latvia	83%[b]	4.6	85.0	4.4
Lithuania	25%	2.2	37.2	1.8
Poland	25%	23.1	451.3	15.5
Russia[a]	no data	no data	no data	no data
Sweden	62%	39.5	1455.8	24.0
Total	30%	199.6	6551.2	143.3

Nights spent at tourist accommodation establishments in coastal areas



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Results A1.4.2

Aim: Carry out improved effectiveness of measures analysis

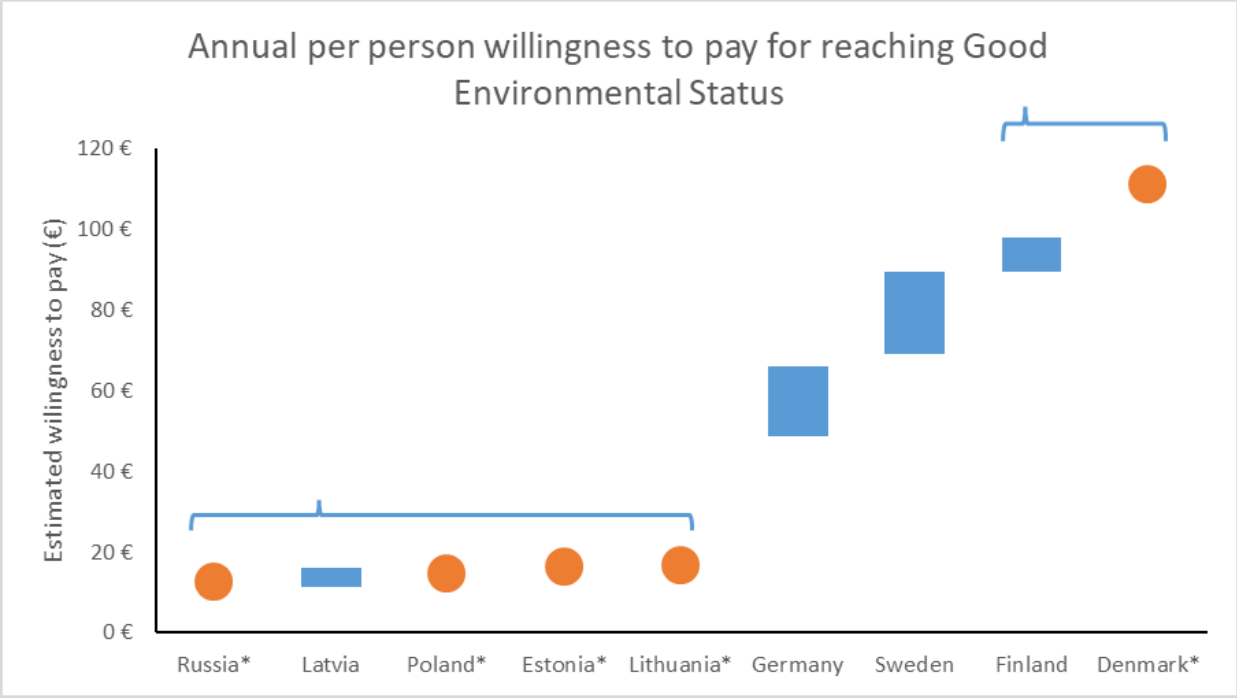
- Code development ongoing

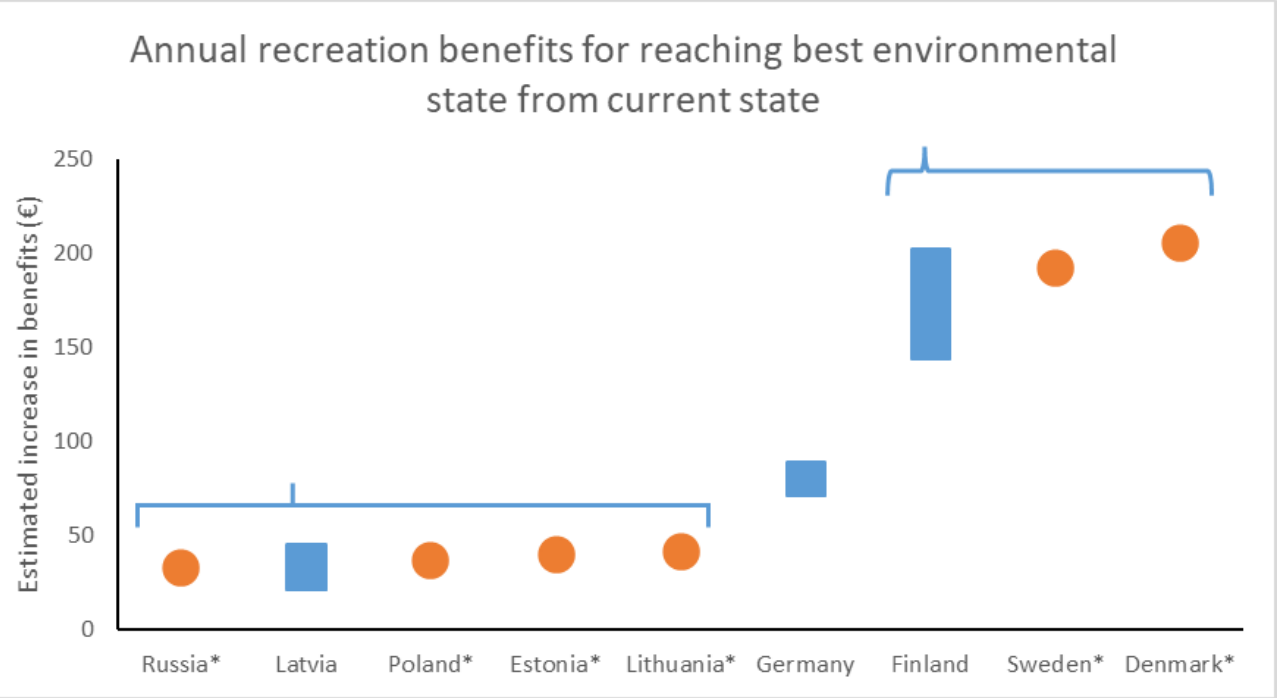
Results A1.4.3

Aim: Conduct cost of degradation analysis

- Benefits forgone from not achieving GES
- Includes both use and non-use values
  - Reaching GES by 2040 estimated to be worth 5.6 billion euros per year
  - Individual willingness-to-pay ranges from 13€ (Russia) to 111€ (Denmark) per year
  - 5/9 of the country specific estimates obtained using benefit transfers → uncertainty
- Recreational benefits forgone due to degraded environment
- Alternative calculation (estimates not to be summed)
  - Baltic Sea region misses annually 9 billion euros in recreational benefits
  - Individual forgone benefit estimates range from 33€ (Russia) to 206€ (Denmark) per year
  - 6/9 of the country specific estimates obtained using benefit transfers → uncertainty

Results A1.4.3 Cost of degradation analysis





Blue bars the confidence intervals from original studies. Dots represent transferred values. Transfers indicated with ⌐¬. Notice different scales in y-axes. Original GES studies: AKTiiVS (2022), Nieminen et al. (2019), Nordzell et al. (2020) and Oehlmann et al. (2021). Original recreation studies Ahtiainen et al. (2022) and Bertram et al. (2020).

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Results A1.4.4

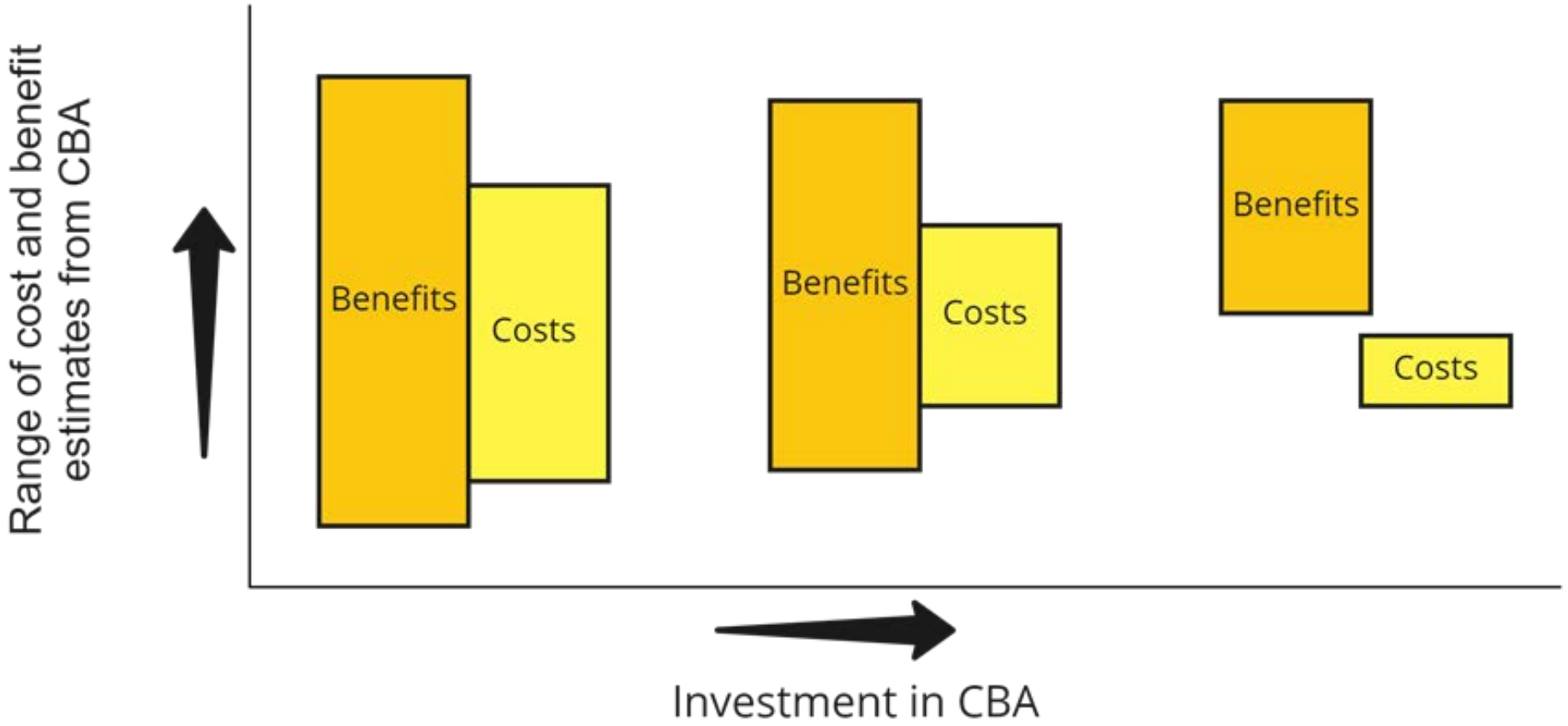
Aim: Conduct cost-benefit analysis for selected topics

- Data deficiencies led to readjustment of task aim

New Aim: Review state-of-the-art for regional cost-benefit analyses and develop cost data for one or more topics

- HOLAS 3 chapter on regional cost-benefit analyses
- Marine litter abatement cost database

Results A1.4.4 CBA review



Focus: When is CBA suitable for supporting decision making, based on the availability of information on costs and benefits, and difficulties in improving the precision of information. Analyse how these look like for Biodiversity/habitats, Birds, Fish, Hazardous substances, Marine mammals, Marine litter, Non-indigenous species, Nutrients, Underwater noise.

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Results A1.4.4 CBA review

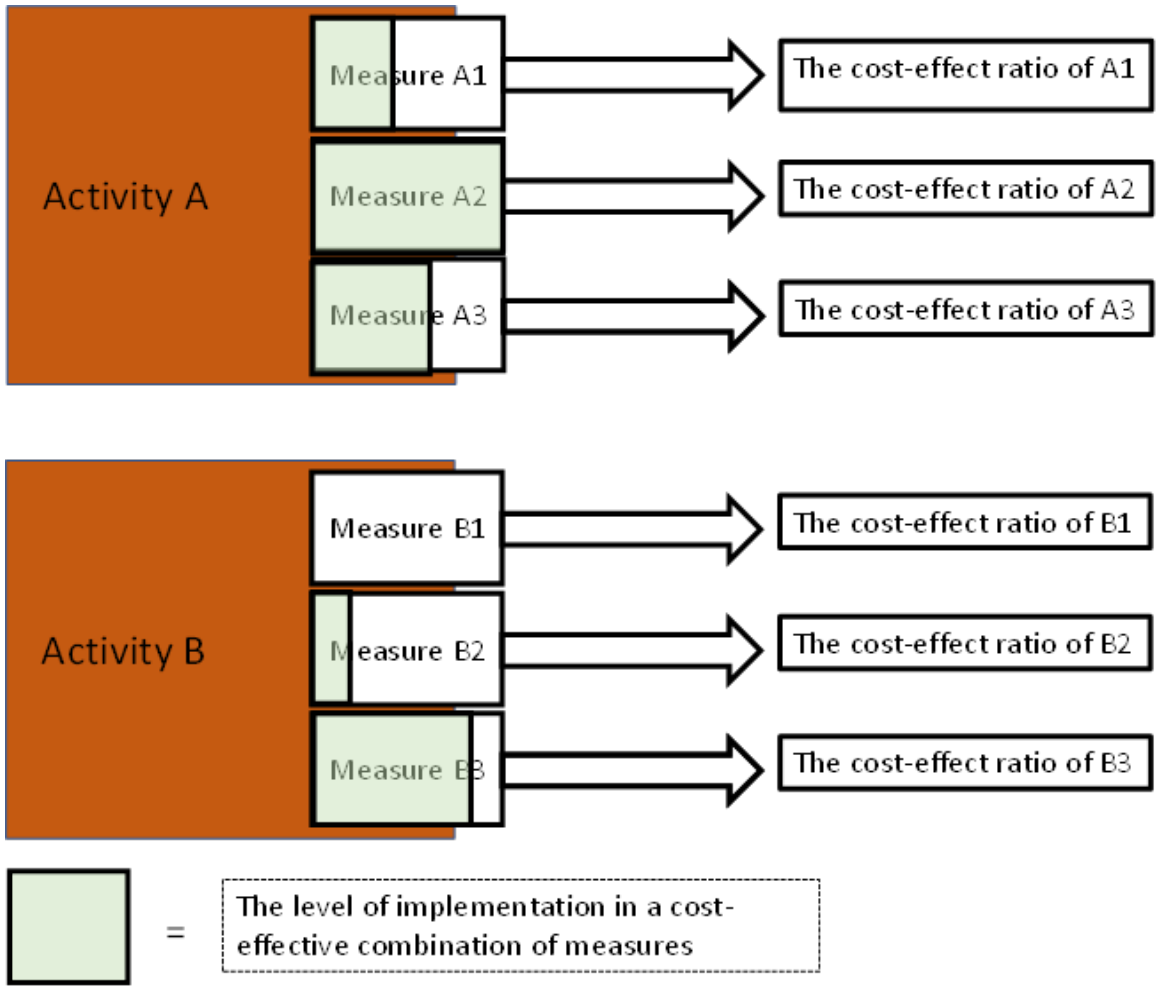
Topic	Environmental information		Socio-economic abatement cost information		Socio-economic abatement benefit information		Literature reviewing global or regional information conditions
Fish	●●●○	Dependent on commercial value of species. Multi-species/ecosystem modelling still improving	●●●○	Dependent on commercial value of species, typically high	●●●○	Dependent on commercial value of species, typically high	
Marine litter	●○○○	Complicated by high interdisciplinary	●○○○	Data deficient, most available technology solutions are immature	●●○○	Non-market valuations are available	Christensen *et al.* (2021) Stoever *et al.* (2021)
Nutrients	●●●○	Long time-lags and remaining uncertainties regarding internal cycling increase uncertainty	●●●●	Very high data availability	●●●○	Long time-lags and high levels of non-market benefits increase uncertainty	Halkos and Galani (2014) Ahtiainen (2016)

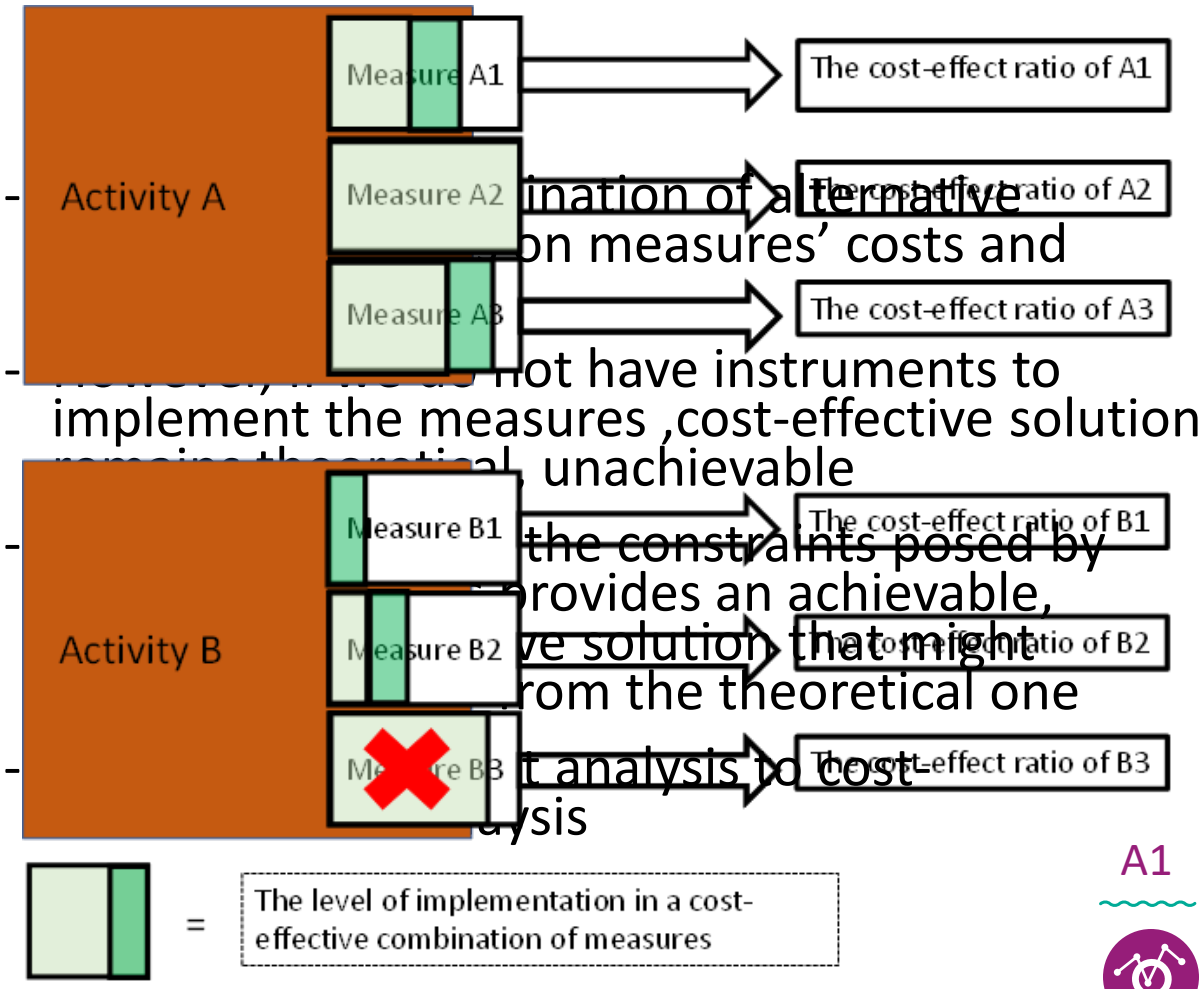
Results A1.4.5

Aim: Incentives and implementation of measures

- Description of incentives and regulations around the Baltic Sea countries to mitigate nutrient loading
  - Management of Baltic Sea Eutrophication. Forthcoming. Iho, A. & Ahtiainen, H.
  - Environmental Economics For Efficient Marine Protection: The Example Of The Baltic Sea. Forthcoming. Ahtiainen, H. & Iho, A.
- Deliverable refocused to the interlinkages of cost-effectiveness analysis and incentive/policy instrument design.

Results A1.4.5 Incentives





- ination of alternative
- on measures' costs and
- ot have instruments to implement the measures ,cost-effective solution , unachievable
- the constraints posed by rovides an achievable, ve solution that might rom the theoretical one
- t analysis to cost- ysis

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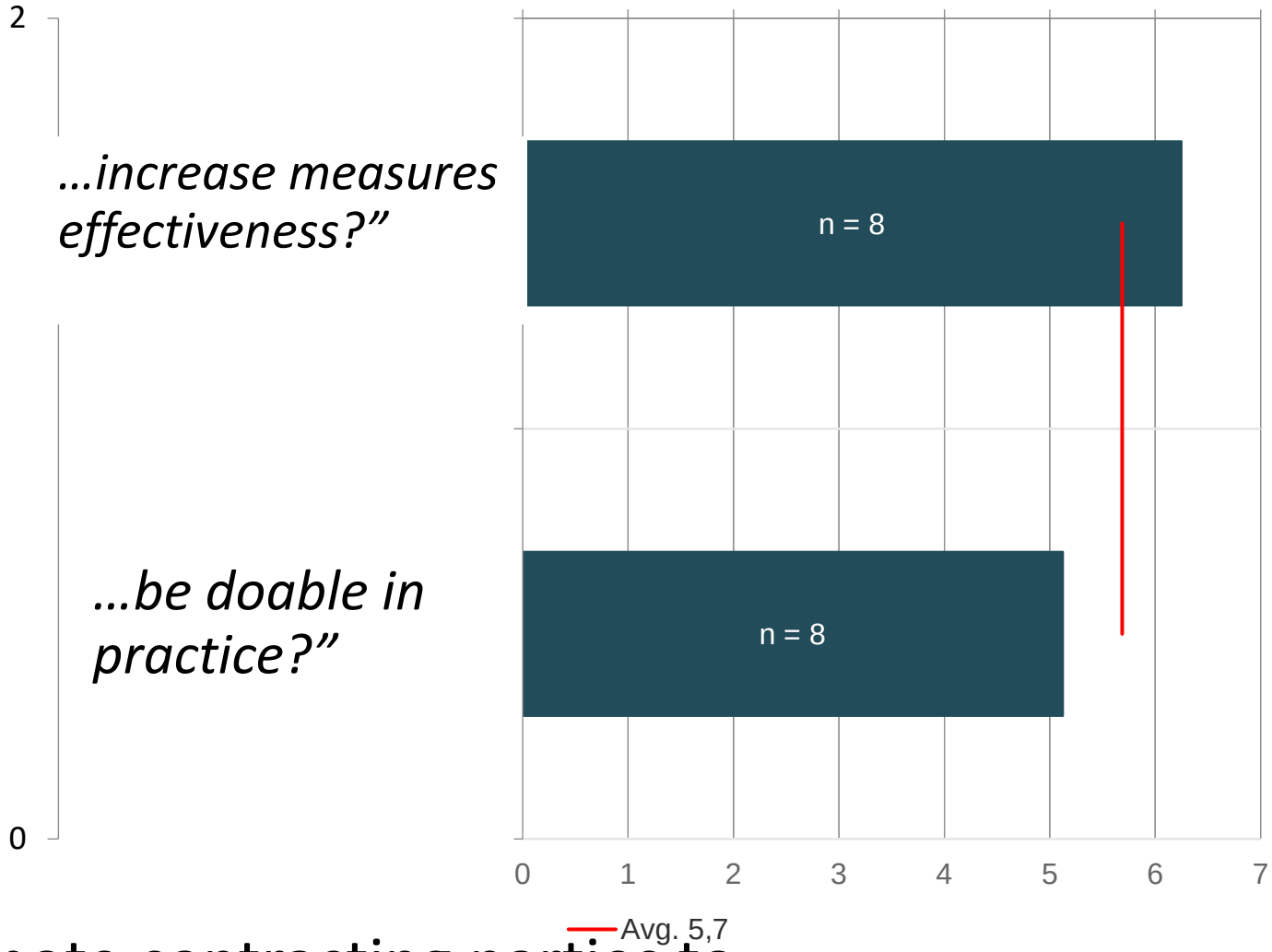
Results A1.4.5 Incentives

- Survey on HELCOM EG ESA experts: *"In your opinion, to what extent would you agree with the following statements: Stronger links between planned measures and implementation instruments during the formulation of a Programme of measures (BSAP, MSFD, etc.) would…*



Recommendation: require/promote contracting parties to conduct incentive/instrument analysis when designing policies. Simplest option: name instrument for each measure.

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Results summary – support effective regional measures

Task	Deliverables	Status	
1.1	1. Description of improved assessment framework for sufficiency, effectiveness and economic impacts of measures	Improved framework exists, description to be written	
1.2	2. Data for assessing the effectiveness and costs of regionally coordinated actions		☑
1.3	3. Results of a literature review		☑
	4. Improved approach for assessing regional benefits		☑
	5. Regional benefit estimates of achieving GES		☑
1.4.1	6. Results on the use of marine waters		☑
1.4.2	7. Results for improved sufficiency and effectiveness of measures analysis	Coding ongoing	
1.4.3	8. Results on the cost of degradation		☑
1.4.4	9. Review of state-of-the-art for regional cost-benefit analyses and develop cost data for one or more topics		☑
1.4.5	10. Description of incentives and regulations around the Baltic Sea countries to mitigate nutrient loading	Some compiling remains	

Key messages

- Key messages for **science**
  1) Databases for costs and benefits, should be used and further developed
  2) SOM continuing to improve, but still requires development to realize management potential
  3) Cost-effectiveness analysis should take into account the incentives to implement the intended set of measures
- Key message for **policy makers**
  1) Despite large value currently derived from the Baltic Sea, value can still be greatly increased through environmental improvement
  2) To increase this value, coordination of Baltic Sea protection policies need to be maintained and intensified
  3) Further improvement of UMW and CoD depends on data standardization and data development policies
  4) Data sharing and data centralization for costs and effectiveness of environmental measures should be a high priority nationally and regionally

Use of results so far and in future

- HELCOM ➡ Economic and social analyses for HOLAS 3
- BSAP ➡ Action HT15; HT18
- MSFD ➡ Articles 8; 13
- EU research (Horizon Europe) ➡ Cost & Benefit Data
- Global ➡ Cost & Benefit Data

Data for efficiency and measures A1

This work was possible due to data from

- Eurostat
- EMODnet
- Scientific literature
- Statistics Sweden
- Central Statistical Bureau of Latvia
- HELCOM map and data service
- ICES data
- BONUS ROSEMARIE project
- HELCOM ACTION project
- Others

Outputs

- Cost & benefit databases
- Model code and description for SOM analysis
- HOLAS 3. Thematic Assessment of Social and Economic Analyses.
- Management of Baltic Sea Eutrophication. Forthcoming (06/23) in Water Encyclopedia (book). Iho, A. & Ahtiainen, H.
- Environmental Economics For Efficient Marine Protection: The Example Of The Baltic Sea. Forthcoming (06/23) in Water Encyclopedia (book). Ahtiainen, H. & Iho, A.

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