Baltic Sea Science Synthesized –Time to Take Evidence-based Actions for the Well-being of the Sea and People

Final Seminar of BONUS ROSEMARIE, BONUS FUMARI and BONUS DESTONY projects

16.6.2020 – Webinar

12:00-14:00 (UTC + 3)

BONUS

SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

3 BONUS SYNTESIS PROJECTS

BONUS DESTONY - Decision support tool for management of the Baltic Sea ecosystem

BONUS FUMARI - Future Marine Assessment and Monitoring of the Baltic

BONUS ROSEMARIE - Blue health and wealth from the Baltic Sea – a participatory systematic review for smart decisions

WHY SYNTHESIS?

"Knowledge synthesis is central for knowledge translation from research community to practice and for ensuring evidence-based decision making"

"…syntheses provide a more comprehensive view than a simple separate list of individual studies"

"…perform a critical review of research outputs as well as identify the knowledge gaps and further research needs"

Synthesis topics:

- Marine monitoring methods
- Decision support tools
- Ecosystem services and human health
- Non-monetary valuation methods
- Monetary valuation methods

Webinar houserules

Eija Järvinen / SYKE

Keep your **videocamera and microphone turned off**,
except when you are presenting

For polls go to address: www.menti.com
Use code: 47 72 31
This is best done with your smartphone.

Discussion:
use the chatbox for commenting and making questions to the presenters
Identify in your question to which project your question is meant for: BF for BPONUS FUMARI, BD for BONUS DESTONY and BR for BONUS ROSEMARIE.

Karri Lehtonen from Tussitaikurit will record this webinar in drawing.
We will see the results in the end of webinar.

Presenters:
Saying ”next slide” will launch your next slide.

Agenda

1. Welcome & Why syntesis Project Leader Soile Oinonen, SYKE, BONUS ROSEMARIE
2. What was synthesized and how?
    - BONUS FUMARI Project Leader Kristian Meissner, SYKE
    - BONUS DESTONY Project Leader Vivi Fleming, SYKE
    - BONUS ROSEMARIE Kristin Kuhn, LUH
3. What was found?
    - BONUS FUMARI Project Leader Kristian Meissner, SYKE
    - BONUS DESTONY Henrik Nygård, SYKE
    - BONUS DESTONY Jacob Carstensen / ÅU
    - BONUS DESTONY Johanna Schumacher, IOW
    - BONUS ROSEMARIE Kristin Kuhn, LUH
    - BONUS ROSEMARIE Joanna Storie, EMÜ
    - BONUS ROSEMARIE Cecilia Håkansson, KTH
4. What are the knowledge gaps – and recommendations?
    - BONUS FUMARI Kristian Meissner, SYKE
    - BONUS DESTONY Vivi Fleming, SYKE
    - BONUS ROSEMARIE Benjamin Burkhard, LUH
5. Discussion : How the syntheses of the projects can help in
    National Marine Strategies
    HELCOM Baltic Sea Action
    Sustainable Development Goals
6. Closing of the webinar

WHAT WAS SYNTHETISED & HOW?
Kristian Meissner

BONUS FUMARI

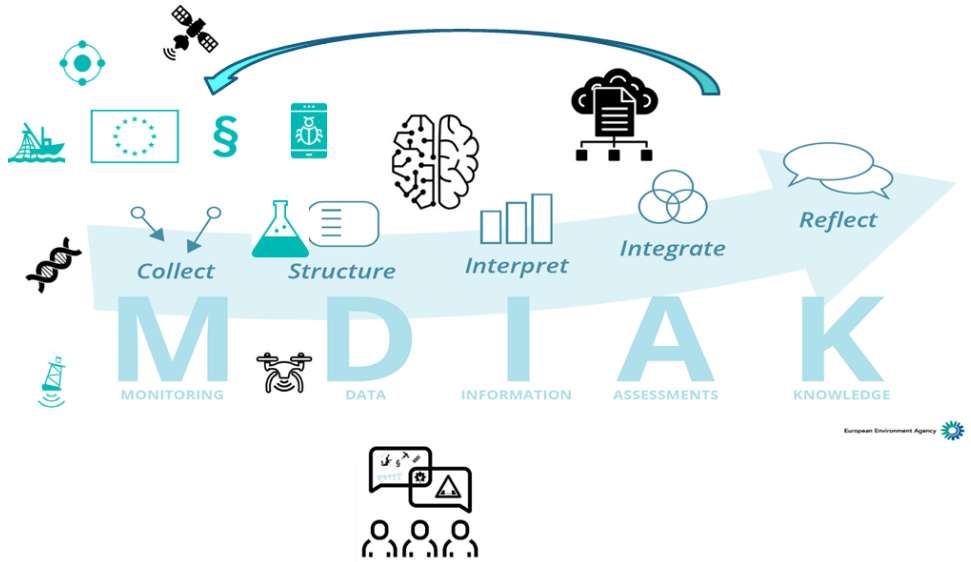
Future Marine Assessment and Monitoring of the Baltic

WP1: What are the most critical shortcomings in the current Baltic Sea monitoring?

WP2: Which novel methods could efficiently enhance the coverage, cost effectiveness and reliability of the Baltic Sea monitoring?

WP3: How is the cost-effectiveness of monitoring methods evaluated? What are roadblocks to method implementation?

Roadmap to better monitoring



WP1 Gaps + WP2 Novel methods = WP3 Renewed plan

WHAT WAS SYNTHETISED & HOW?

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

WHAT WAS SYNTHETISED & HOW? GAPS

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

What are the most critical shortcomings in the current Baltic Sea monitoring? (BSAP, MSFD and WFD)

BONUS FUMARI gap analysis:

- Scientific articles (>1000)
- BONUS and HELCOM reports
- A key stakeholder survey
- All information sources were analyzed using the same template to ensure comparability

WP1 Gaps + WP2 Novel methods = WP3 Renewed plan

WHAT WAS SYNTHETISED & HOW? GAPS

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

In **your** opinion, what are the most critical shortcomings in the current Baltic Sea monitoring? (BSAP, MSFD and WFD)

Go to www.menti.com and use the code 47 72 31

- Water quality parameters
- Pollutants
- Fisheries
- Biodiversity parameters
- Sea floor integrity
- Physical parameters
- Traffic, energy, noise
- Marine litter
- Something other

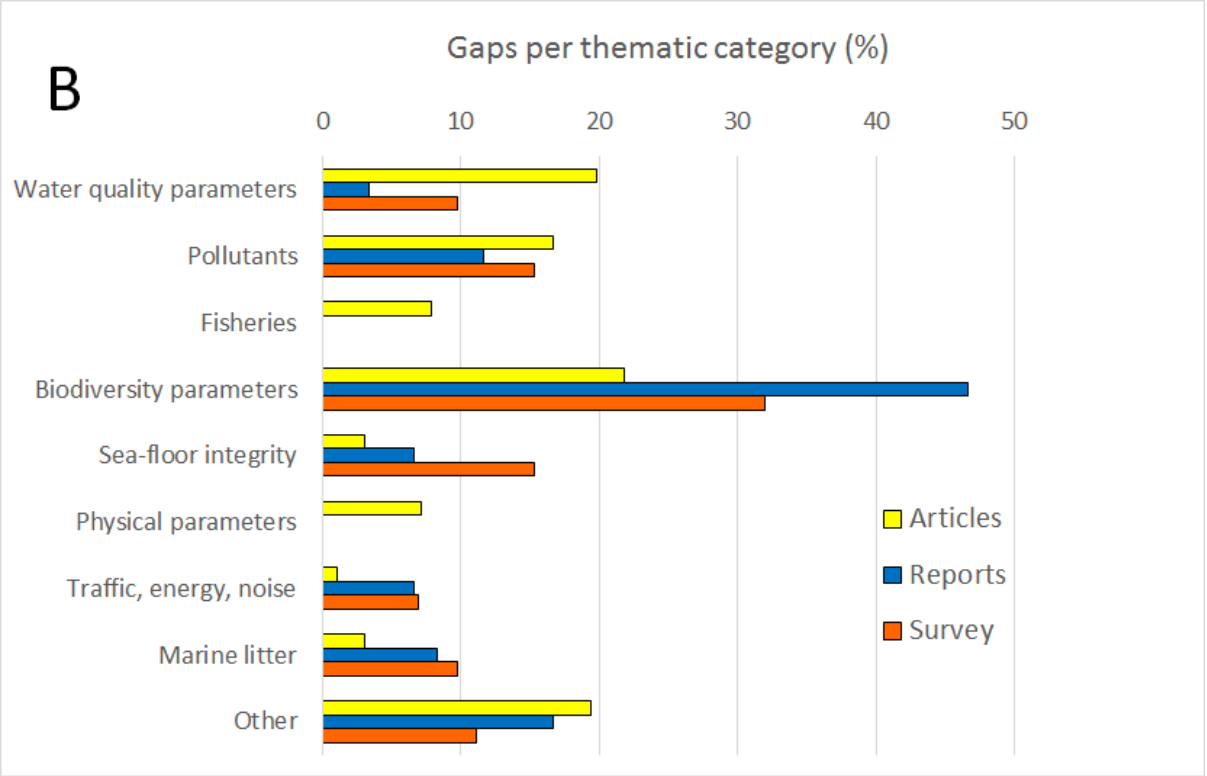
WP1 Gaps + WP2 Novel methods = WP3 Renewed plan

WHAT WAS SYNTHETISED & HOW? GAPS

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

In **your** opinion, what are the most critical shortcomings in the current Baltic Sea monitoring? (BSAP, MSFD and WFD)?



Kahlert et al. 2020 Manuscript

WP1 Gaps + WP2 Novel methods = WP3 Renewed plan

WHAT WAS SYNTHETISED & HOW? NOVEL METHODS

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

Which novel methods could efficiently enhance the coverage, cost effectiveness and reliability of the Baltic Sea monitoring?

Novel methods search using

- Stakeholders
- Project members
- External researchers
- Project reports

WP1 Gaps + **WP2 Novel methods** = WP3 Renewed plan

WHAT WAS SYNTHETISED & HOW? NOVEL METHODS

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

Which novel methods could efficiently enhance the coverage, cost effectiveness and reliability of the Baltic Sea monitoring?

Assessment of novel method:

1. Reliability
2. Environmental impact
3. Added value
4. Limitations
5. Required expertise

WP1 Gaps + **WP2 Novel methods** = WP3 Renewed plan

WHAT WAS SYNTHETISED & HOW? COST EFFICIENCY

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

How is the cost-effectiveness of monitoring methods evaluated?

Scopus and Web of Science
systematic mapping of
1684 scientific articles

- a marine ecosystem monitoring method
- a cost-efficiency assessment
→ 313 articles

Evidence of cost-efficiency based on
- cost benefit analysis
- comparative experiment
- literature review
- ”experience”/ intuition

WP1 Gaps + WP2 Novel methods = **WP3 Renewed plan**

WHAT WAS SYNTHETISED & HOW? Renewed plan

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

Roadmap for a new Baltic Sea monitoring?

- Pushback
- Procedural roadblocks or lack of procedure

Stakeholder involvement, scientific literature and reports

WP1 GAPS & WP2 Novel methods

Review of the renewal of the Finnish marine monitoring plan

Pathway analysis for novel methods

WP1 Gaps + WP2 Novel methods = **WP3 Renewed plan**

WHAT WAS SYNTHETISED & HOW?

Vivi Fleming, SYKE

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

WHAT are Decision Support Tools?

- Interactive, virtual tools
- Developed to support decision making
- Primarily used in the Baltic Sea or drainage basin
- Accessible and applied by the end-users

WHAT WAS SYNTHETISED & HOW?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

WHY do we need Decision Support Tools?

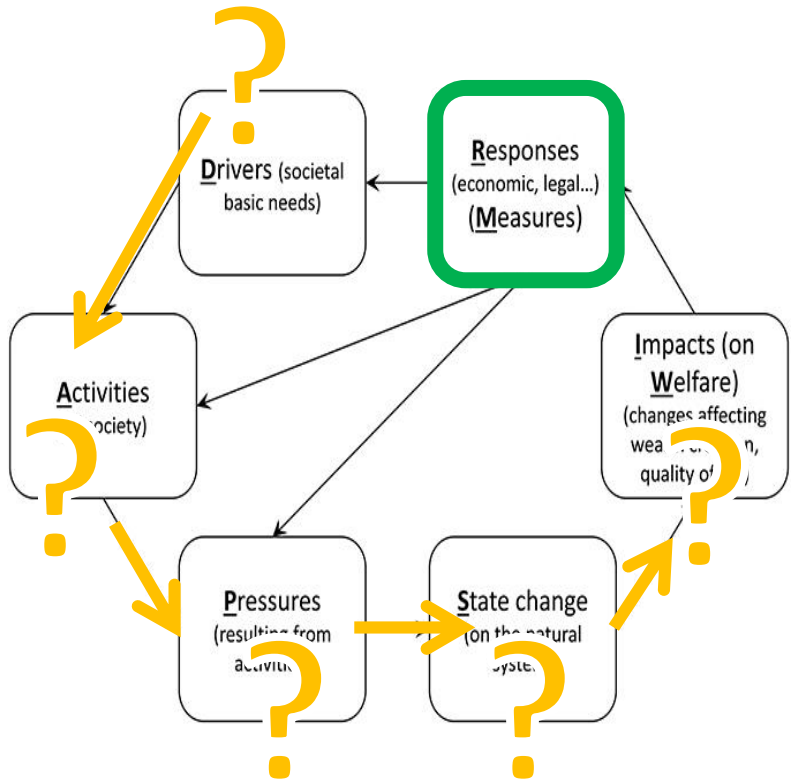


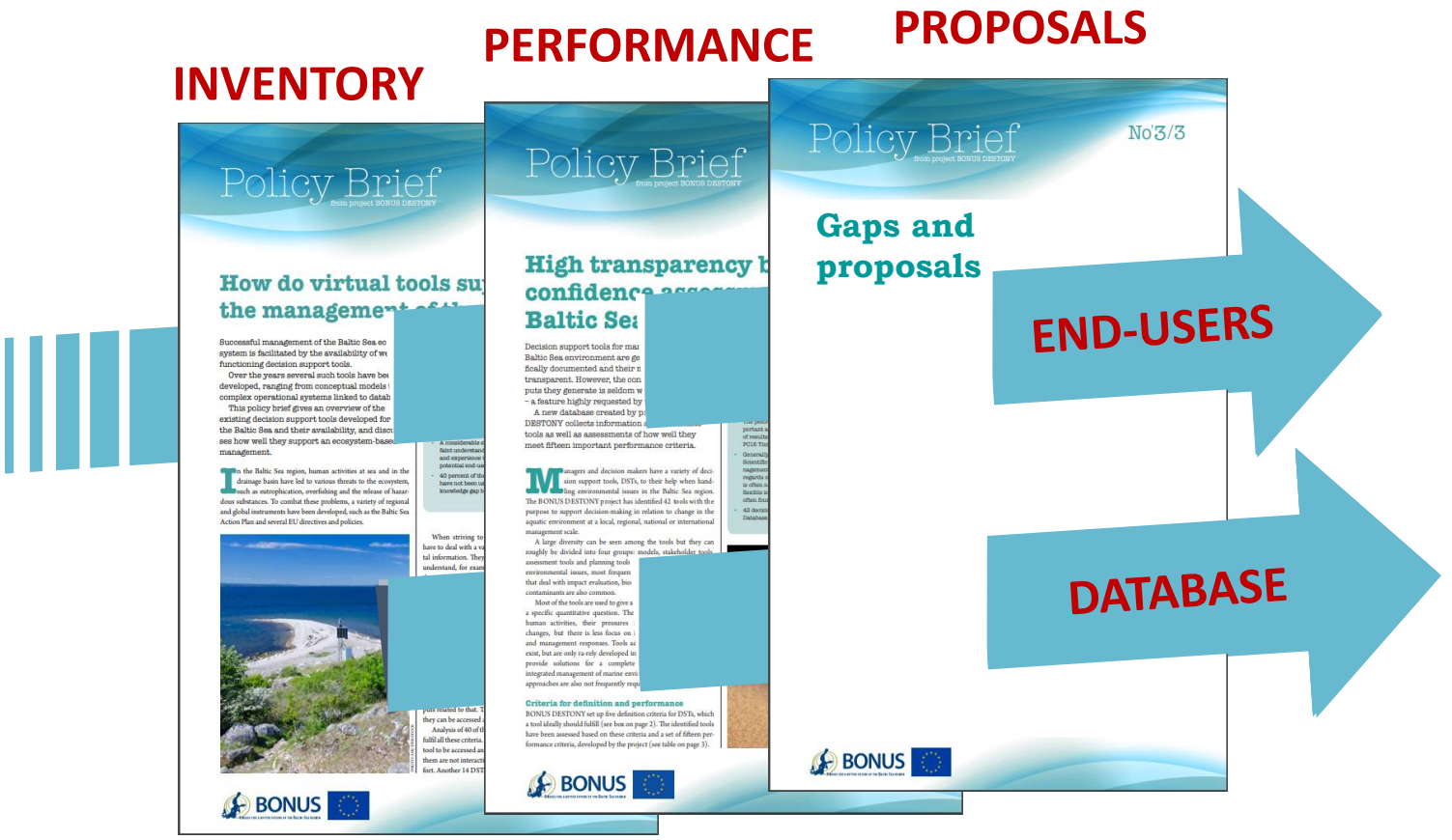
Figure adapted from Elliott et al 2017

WHAT WAS SYNTHETISED & HOW?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

HOW are we doing it?



WHAT WAS SYNTHETISED & HOW?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

For (and with) **WHOM** do we synthesize?

CLAIMING: Tools need to be developed together with end-users!

The END-USER CORE-GROUP, involved in the work

- National experts - solving environmental management needs
- The European Community - following progress towards set targets
- International organizations - working toward common goals
- Scientists - investigating new approaches

WHAT WAS SYNTHETISED & HOW?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

DESTONY

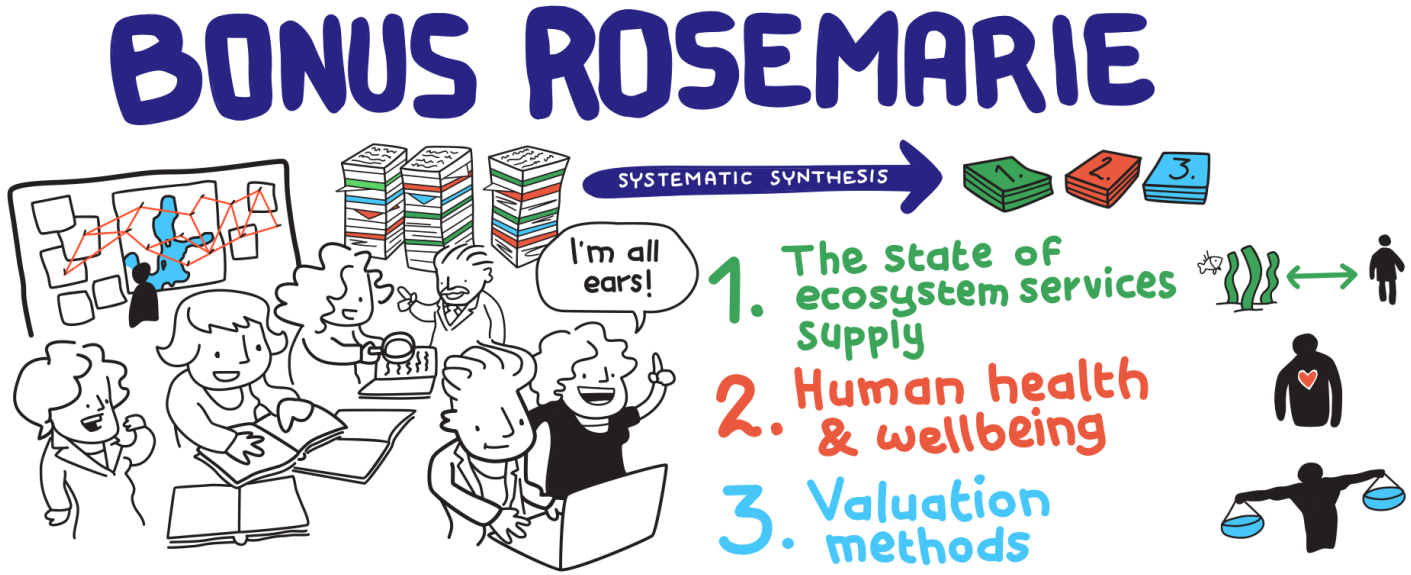
project team

- Finland: Finnish Environment Institute (SYKE)
- Denmark: Aarhus University (AU)
- Germany: Leibniz Institute for Baltic Sea Research Warnemünde (IOW)
- Sweden: Stockholm University

WHAT WAS SYNTHETISED & HOW?

Kristin Kuhn
LUH

BONUS ROSEMARIE
Blue health and wealth from the Baltic Sea
– a participatory systematic review for smart decisions

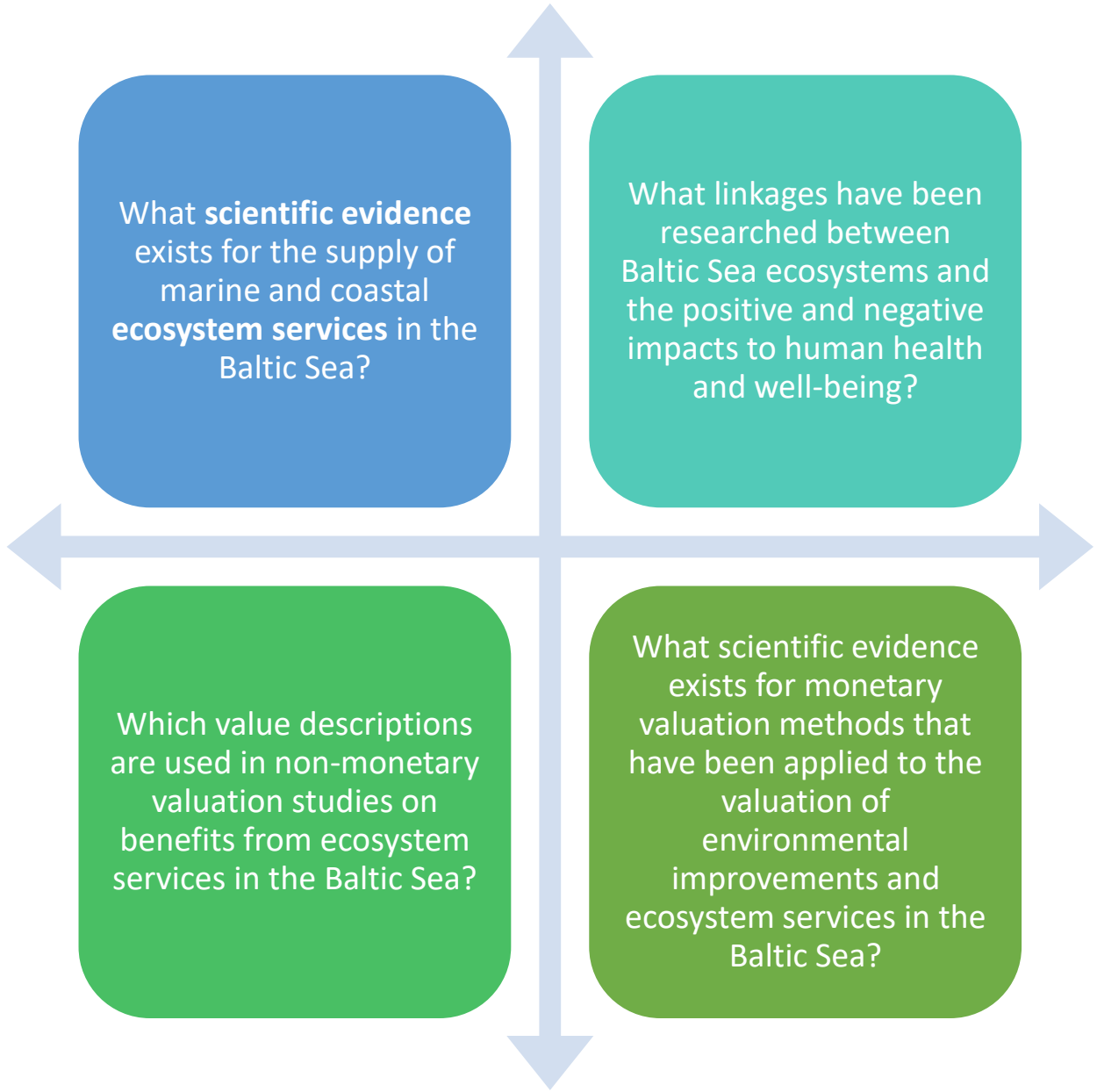


- To identify, collate, and describe the evidence base on a specific topic
- To identify knowledge clusters and research gaps
- Based on the Collaboration for Environmental Evidence (CEE) guidelines

>>> Intention is to be as transparent, objective and replicable as possible

Review questions

BONUS ROSEMARIE
Blue health and wealth from the Baltic Sea
– a participatory systematic review for smart decisions



3 systematic maps

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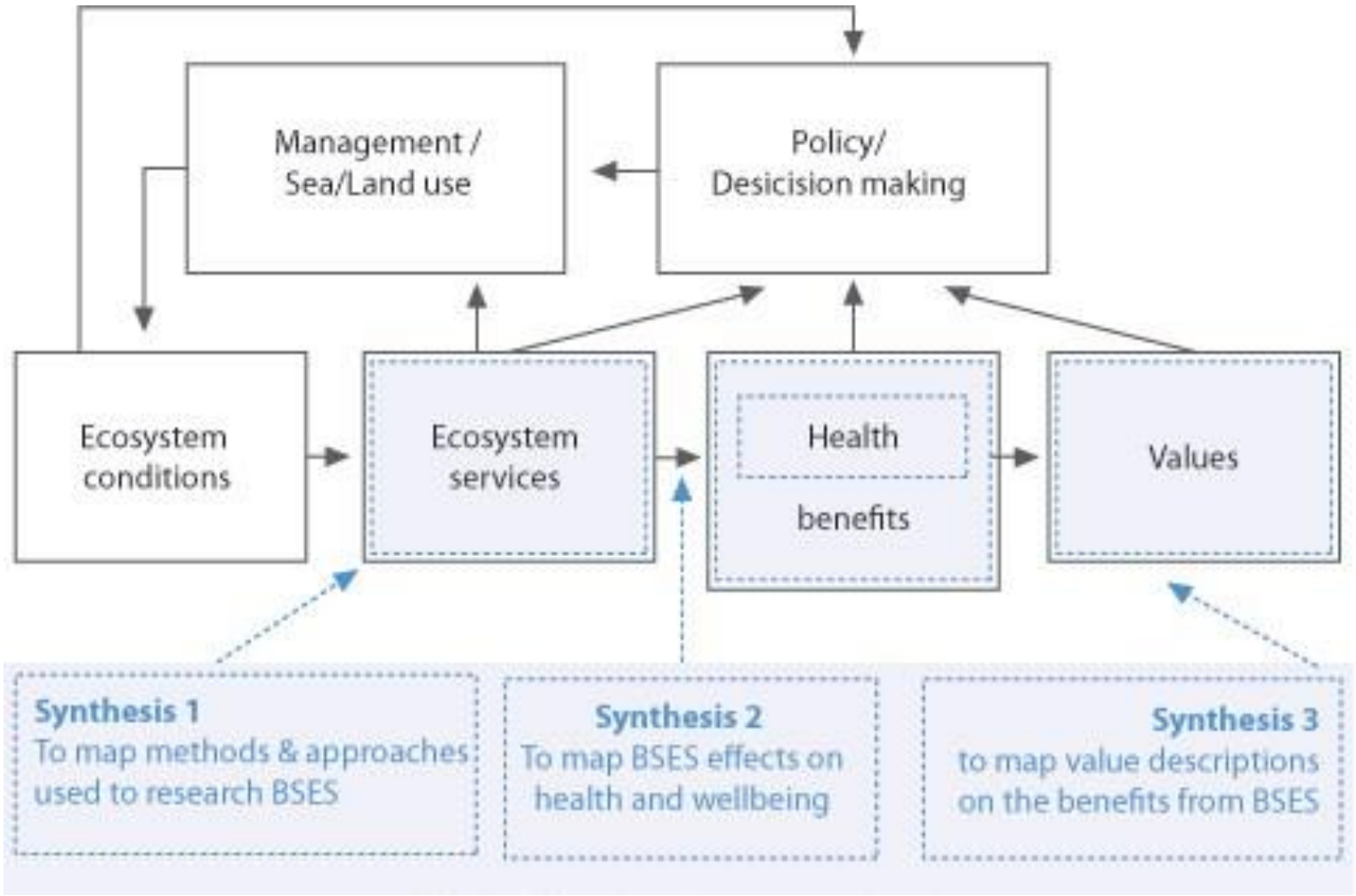
Blue health and wealth from the Baltic Sea
– a participatory systematic review for smart decisions



Synthesising the evidence base – Systematic mapping

BONUS ROSEMARIE
Blue health and wealth from the Baltic Sea
– a participatory systematic review for smart decisions

SYSTEMATIC MAP PROTOCOL Open Access

What evidence exists for the impact of Baltic Sea ecosystems on human health and well-being? A systematic map protocol

Joanna Storie[1], Monika Suškevičs[1], Mart Külvik[1], Virpi Lehtoranta[2], Suvi Vikström[2], Simo Riikonen[2], Harri Kuosa[2], Kristin Kuhn[3] and Soile Oinonen[2*]

Abstract

Background: The Baltic Sea ecosystems supply many benefits to society, termed ecosystem services. These depend upon a healthy marine environment requiring marine and relevant land-based policies integrated with public health policies. Until recently marine environment protection policies have largely focussed on human impacts on the environment and have not taken into account impacts of ecosystems on human health beyond the direct impacts of hazardous substances, such as those present in seafood. Whilst endeavours have been made to integrate human health and well-being into marine policies, interviews with key stakeholders through a participatory process revealed that the linkages were not sufficiently strong to inform policymaking. The existing evidence base urgently needs to be identified and synthesised to support relevant policy updates of the Marine Strategy Framework Directive (MSFD) 2008/56/EC and the Baltic Sea Action Plan (BSAP) (2007) as well as to help direct future research priorities.

Method: The protocol is based on the primary question, "*What linkages have been researched between Baltic Sea ecosystems and the positive and negative impacts to human health and well-being*?" Using systematic mapping, this study will identify and map the state and the geographical distribution of the existing research evidence linking human health and well-being with the Baltic Sea ecosystems. The types of ecosystem services supplied by the Baltic Sea and the associated health and well-being impacts will be categorised and presented in a graphical matrix, illustrating ecosystem service type and the types of health and well-being outcomes. The systematic mapping procedure will result in a narrative report published with a searchable database, which will contain a descriptive summary of the information from all of the eligible studies. The systematic map and database will be displayed on the website of the Finnish Environment Institute (SYKE).

Keywords: Evidence synthesis, Participatory approach, Systematic map, Policy relevance, HELCOM region, Ecosystem services, Marine and coastal

Search strategy

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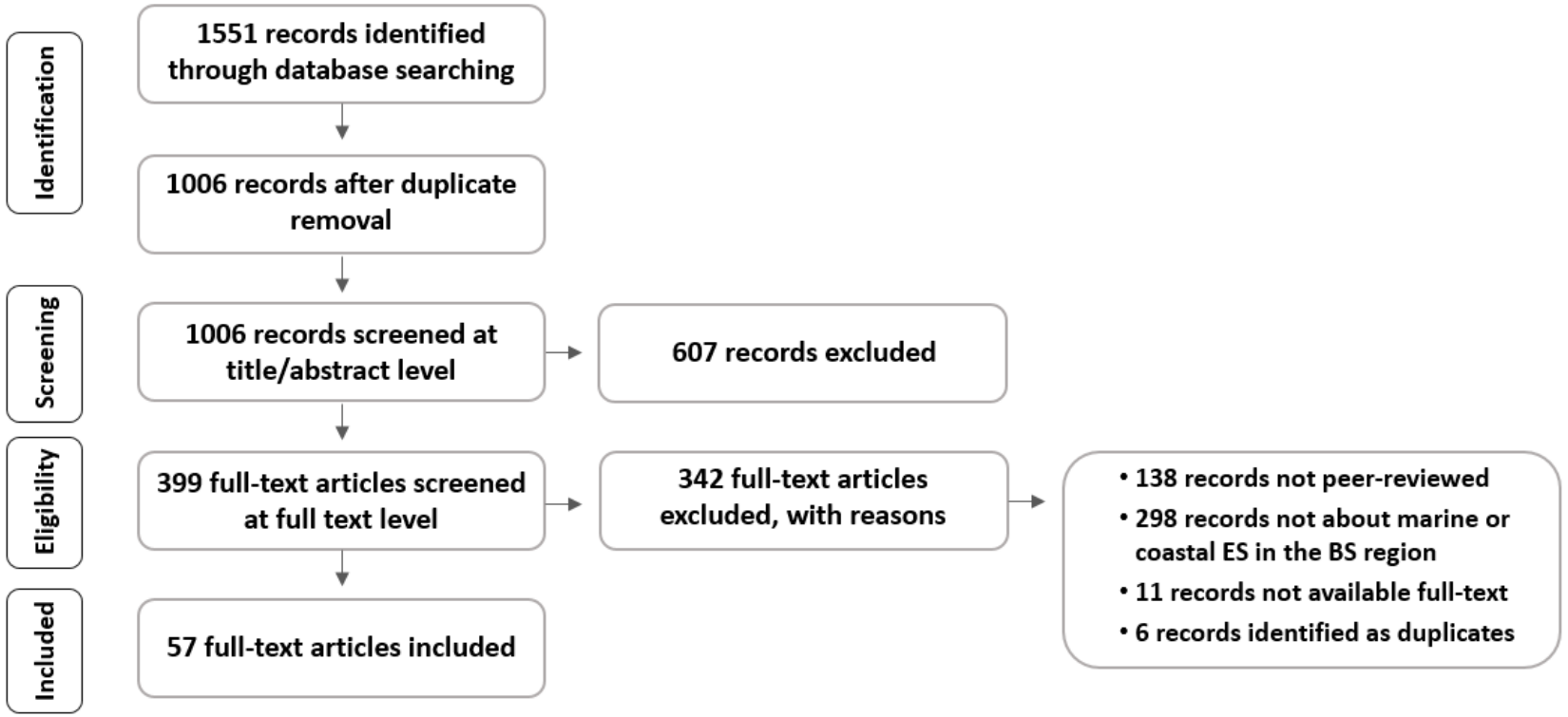
Blue health and wealth from the Baltic Sea
– a participatory systematic review for smart decisions

Database		Ecosystem services	Valuation methods	Human health
1	1FINDR	62	0	56
2	BASE	128	8	135
3	CAB ABSTRACTS	229	493	354
4	CORE	19	NA	114
5	DNB	NA	NA	15
6	DNL-ONLINE	1	0	23
7	DOAJ	6	0	39
8	ESTER	NA	NA	6
9	GEO-LEO	9	1	149
10	GOOGLE SCHOLAR	251	39	214
11	GZB	NA	NA	1
12	LIBRIS	1	2	52
13	MEDLINE	NA	NA	1028
14	MELINDA	NA	0	24
15	PUBMED	NA	NA	67
16	SCOPUS	104	382	435
17	Web of Science	197	685	1748
Total	**7077**	**1007**	**1610**	**4460**

Search strategy

BONUS ROSEMARIE
Blue health and wealth from the Baltic Sea
– a participatory systematic review for smart decisions



Flow diagram depicting the study selection process of one synthesis

Stakeholder involvement

Policy makers from the HELCOM GEAR group were involved throughout the review process

- Opportunity to influence the scope of the research and support the review question definitions
- Comments and feedback on the review results and policy briefs
- **Supports science-policy integration in both directions**

BONUS ROSEMARIE
Blue health and wealth from the Baltic Sea
– a participatory systematic review for smart decisions

WHAT WAS FOUND?

GAPS

Kristian Meissner
SYKE

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

What are the most critical shortcomings in the current Baltic Sea monitoring?

Scientific articles

Reports

Stakeholders

WP1 Gaps + WP2 Novel methods = WP3 Renewed plan

WHAT WAS FOUND?

GAPS

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

What are the most critical shortcomings in the current Baltic Sea monitoring?

Scientific articles

6

Reports

Stakeholders

Gap ranking differs with information source (Rashomon effect)

WP1 Gaps + WP2 Novel methods = WP3 Renewed plan

WHAT WAS FOUND?

NOVEL METHODS

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

Which novel methods could efficiently enhance the coverage, cost effectiveness and reliability of the Baltic Sea monitoring?

Novel methods to address gaps in Baltic Sea monitoring exist.

Cost rating and applicability of novel methods

Step in monitoring	Method	Main improvement for the monitoring	Overall costs	Applicability
Field sampling/ surveying	Manta Trawl	Sampling of (water surface) microplastics (D10)	low	high
	Encapsulated Filtration Device	Sampling of (water column) microplastics (D10)	low	very high
	Sediment Corer	Sampling of (sedimented) microplastics (D10)	low	very high
	Argo Float	Increased spatio-temporal resolution (D5, 7, 11)	low	high
	Ferrybox	Increased spatio-temporal resolution (D4, 5, 7)	moderate	very high
	Profiling Buoy	Increased temporal resolution (D1, 5, 7)	moderate	very high
	Bottom-mounted Profiler	Increased temporal resolution (D1, 5, 7)	moderate	very high
	Passive Samplers: Chemcatcher and POCIS	Increased spatio-temporal resolution of already monitored and novel contaminants (D8-9)	moderate	very high
	Artificial Substrates: ARMS and ASU	Increased temporal resolution (D1, 2, 5, 6) and enhanced monitoring of benthic organisms	low	high
	Citizen Observations	Increased spatio-temporal resolution (D2, 5, 7, 10) and increased environmental awareness of citizens	very low	very high
	Earth Observation	Increased spatio-temporal resolution and Baltic wide coverage (D1, 5, 7, 10)	low	very high
	HydroFIA®pH	Increased spatio-temporal resolution (D1, 5, 7)	low	very high
Sample analysis	(e)DNA Metabarcoding	Increased precision (spatial coverage) of data (D1, 5, 7), makes novel indicator species accessible, non-invasive	low	high
	Stable Isotope Analysis	Enhanced data acquisition (D5) and monitoring of food webs	low	very high

WHAT WAS FOUND? Cost efficiency

How is the cost-effectiveness of monitoring methods evaluated?

Many arguments of cost-efficiency are poorly founded.

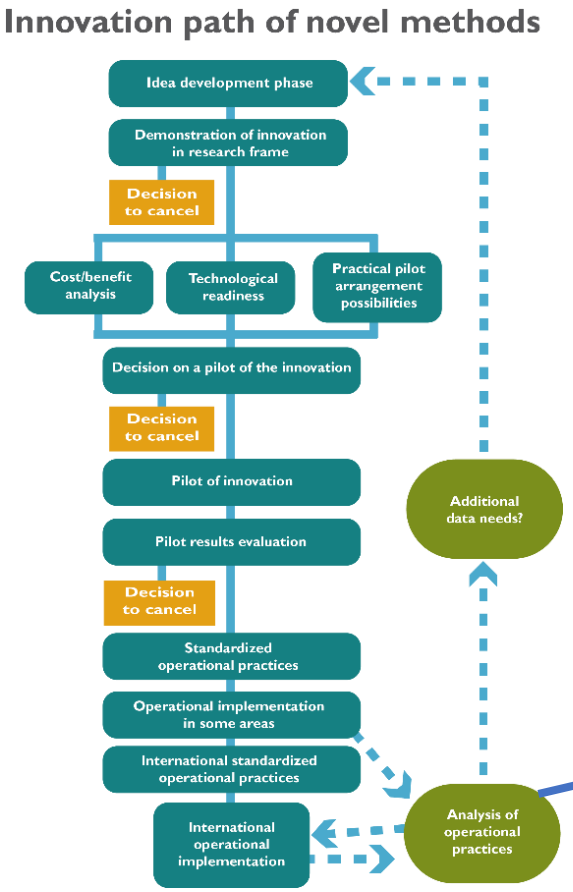
More rigorous, comparable and transparent cost-efficiency assessment protocols must become a new standard.

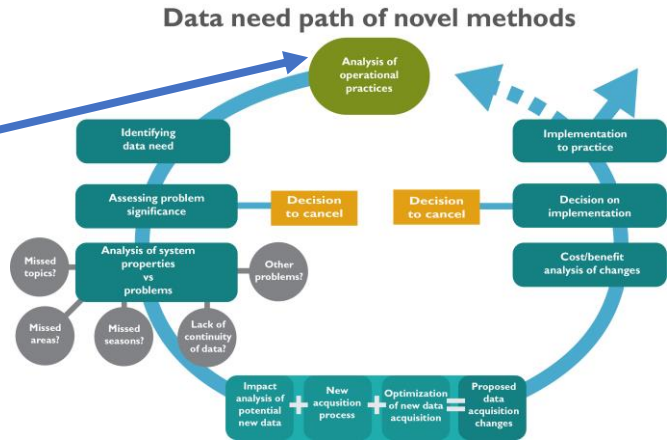
WHAT WAS FOUND? Renewed plan

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

Roadmap for a new Baltic Sea monitoring?





1) The need for a formalized adoption pipeline for novel method uptake hosted by HELCOM

2) Model the method adoption pipeline after CEN standardization process using it as a tool or a template

3) Establishment of a revision process for existing methods

WHAT WAS FOUND?

Henrik Nygård, SYKE

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

Aims

- Map existing DSTs according to the DAPSIWRM framework and environmental problems
- Evaluate the DSTs based of 15 performance criteria, and how well the performance of the DSTs match end-user preferences
- How is uncertainty dealt with in the DSTs, is the confidence of the DST outputs communicated to the end-users?

Definition criteria:

A DESTONY DST should be
1) interactive
2) virtual
3) used to support decision making
4) used in Baltic Sea
5) accessible by end-user

Nygård et al (subm.)

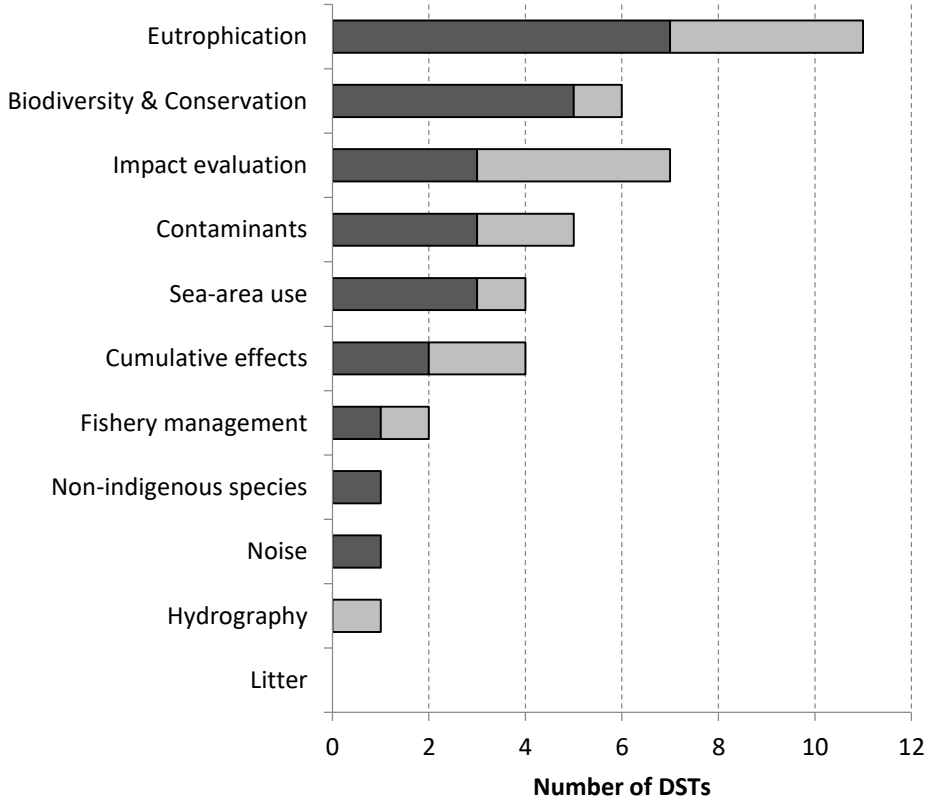
WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

DST inventory

- In total 42 DSTs were identified
- 26 fulfilled at least 4 of 5 definition criteria
- DSTs addressed the main environmental problems in the Baltic Sea
- Different types of tools were found: assessment tools, models, planning tools, stakeholder tools



Nygård et al (subm.)

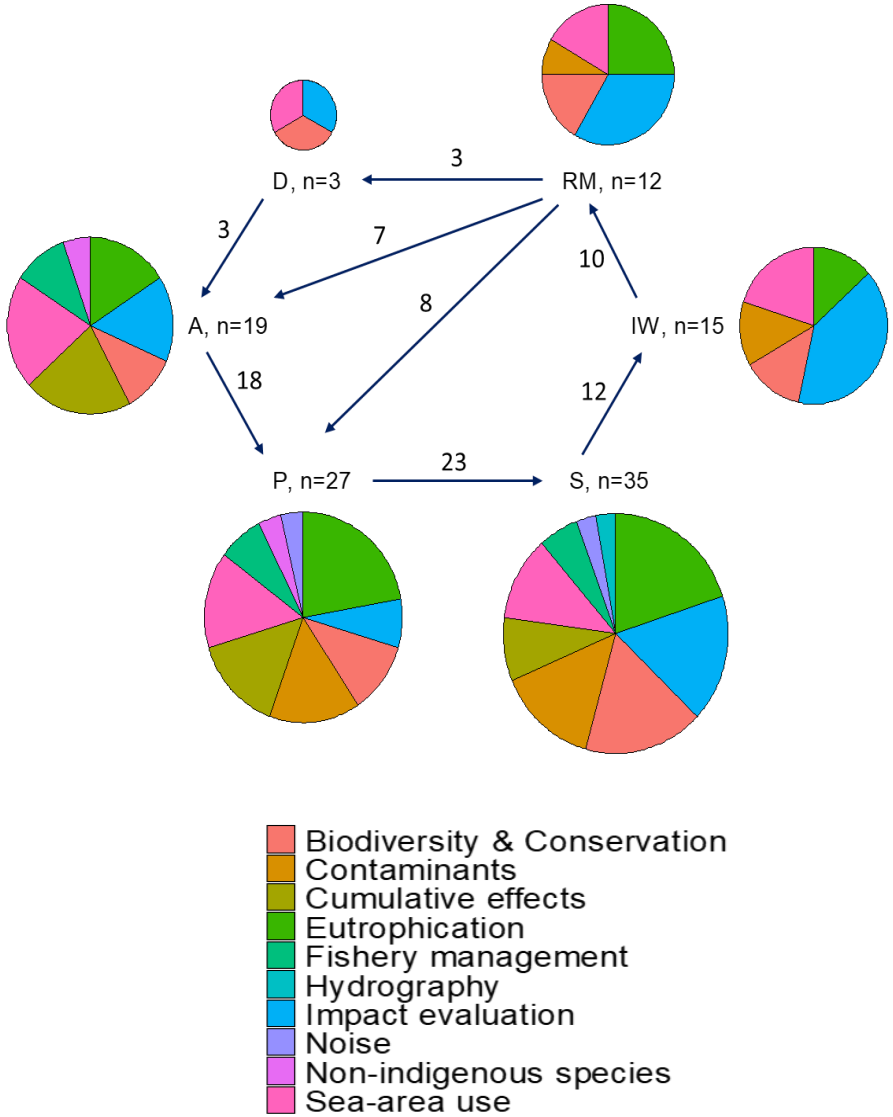
WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

DSTs in the DAPSIWRM context

- Most tools address the Activities-Pressures-Status changes segments
- DSTs including socio-economic aspects underrepresented
- 3 DSTs covered the whole framework
- Only 9 DSTs covered >3 segments
- For Biodiversity & Conservation, Sea-area use and Impact evaluation the whole DAPSIWRM framework could be addressed with a single DST
- Tools can address all segments, apart from Drivers, for Eutrophication and Contaminants issues



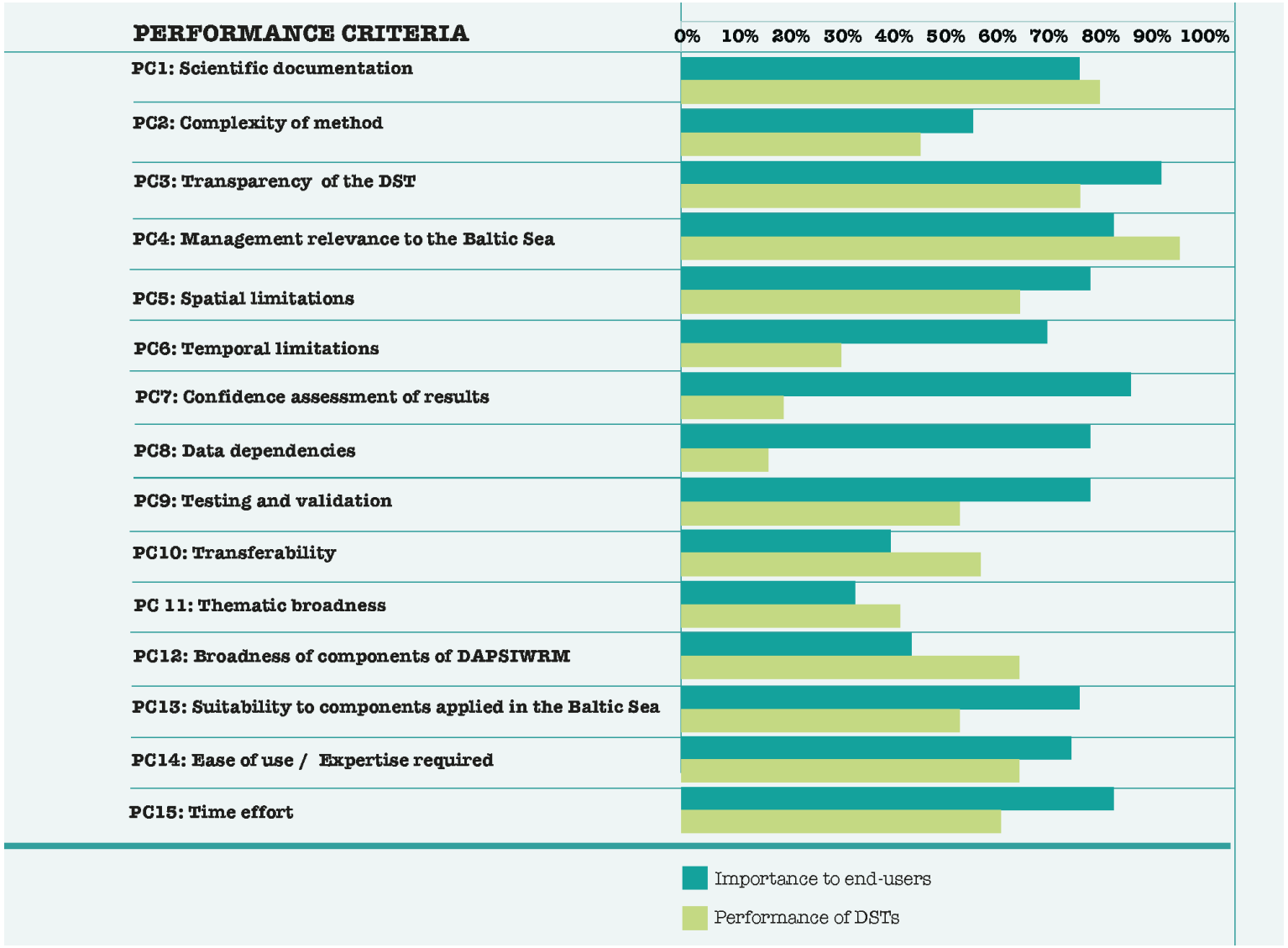
Nygård et al (subm.)

WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

DST performance vs end-user preference



Nygård et al (subm.)

WHAT WAS FOUND?

Jacob Carstensen, ÅU

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

How to quantify uncertainty and increase confidence in DST output

Approaches range from purely qualitative and heuristic scoring of the input and/or output data to fully quantitative, data-driven confidence assessments within a statistical probability framework:

Expert elicitation Sensitivity analysis Scenario analysis

Multi-model analysis Probabilistic modelling

Choice of method varies on a case-by-case basis and depends on available data and the ‘problem’ at hand. Combining approaches might be beneficial for robust uncertainty assessment.

Van Beest et al (Subm.) AMBIO

WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

How is uncertainty dealt with in DSTs developed for the Baltic Sea?

- Out of 42 DSTs reviewed:

20 DSTs (48%) do not quantify any of the known sources of uncertainty (i.e. measurement, sampling and model/parameter structure) and as such no confidence in the output is expressed.

12 DSTs (60%) did not mention uncertainty or confidence in the documentation

27 DSTs (64%) were assessment tools and 15 DSTs (36%) were planning tools. Uncertainty was generally considered less in planning tools compared to assessment tools

Van Beest et al (Subm.) AMBIO

WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

How is uncertainty dealt with in DSTs developed for the Baltic Sea?

- Out of 22 DSTs that can consider uncertainty:

uncertainty in the DST input data was possible with simple sensitivity analyses (27%: n=6/22) or qualitative scoring based on expert judgement (9%: n=2/22) – though uncertainty in the input data did not directly influence or express confidence in the DST output.

confidence in the output data was assessed using alternative scenario modelling (5%: n=1/22) or through qualitative scoring based on expert judgement (9%: n=2/22).

Comprehensive confidence assessment of the output was possible in 27% of the DSTs (n= 6/22) where either spatial, temporal or methodological sources of uncertainty could be estimated

Van Beest et al (Subm.) AMBIO

WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

How is uncertainty dealt with in DSTs developed for the Baltic Sea?

Overall, uncertainty and confidence assessments in Baltic-based DSTs is typically an ‘end of pipe’ analysis once model set-up, calibration and validation had been completed.

Only in a few cases (n=5/22: 23%) was input uncertainty or confidence in the output assessed through a multifaceted approach (including spatial, temporal and methodological sources of uncertainty) using a well-described statistical theory (probability framework) within either a completely data-driven approach (n=2/22) or by supplementing data gaps with expert judgement (n=3/22).

Schumacher et al. (subm)

WHAT WAS FOUND?

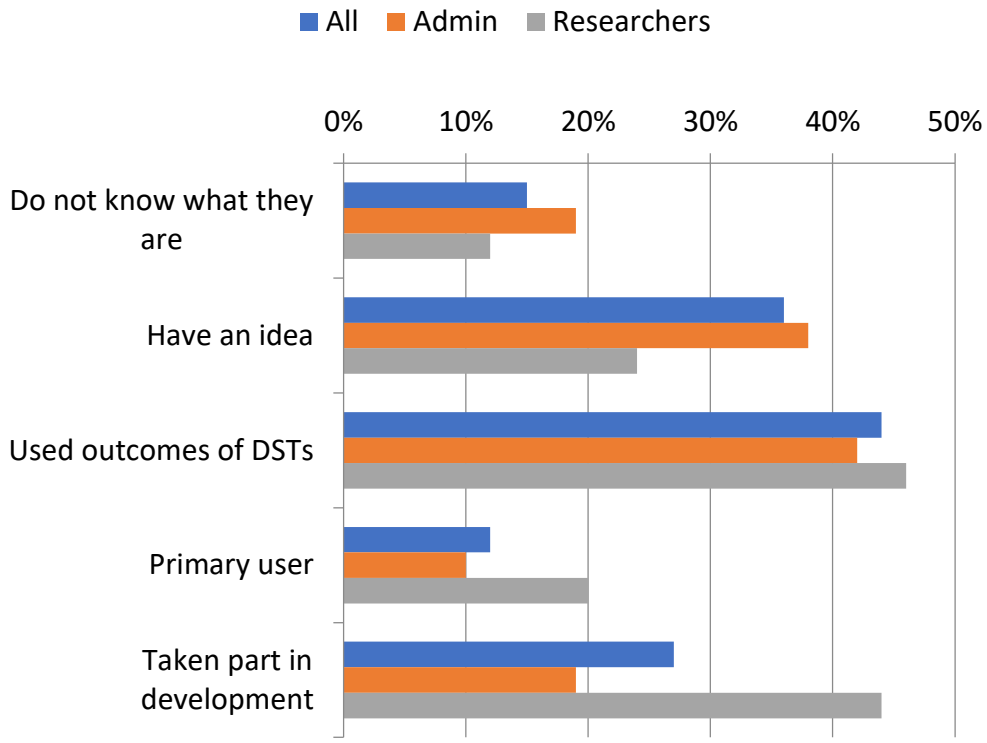
Johanna Schumacher, IOW

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

Current DST Use

- Limited practical use of DSTs by end-users
- Authorities mostly use outcomes of DSTs
- Low involvement of authorities in DST development



Results based on online questionnaire addressed to potential DST users (authorities, research institutes & universities, NGOs, others) (N=108)

Schumacher et al. (subm)

WHAT WAS FOUND?

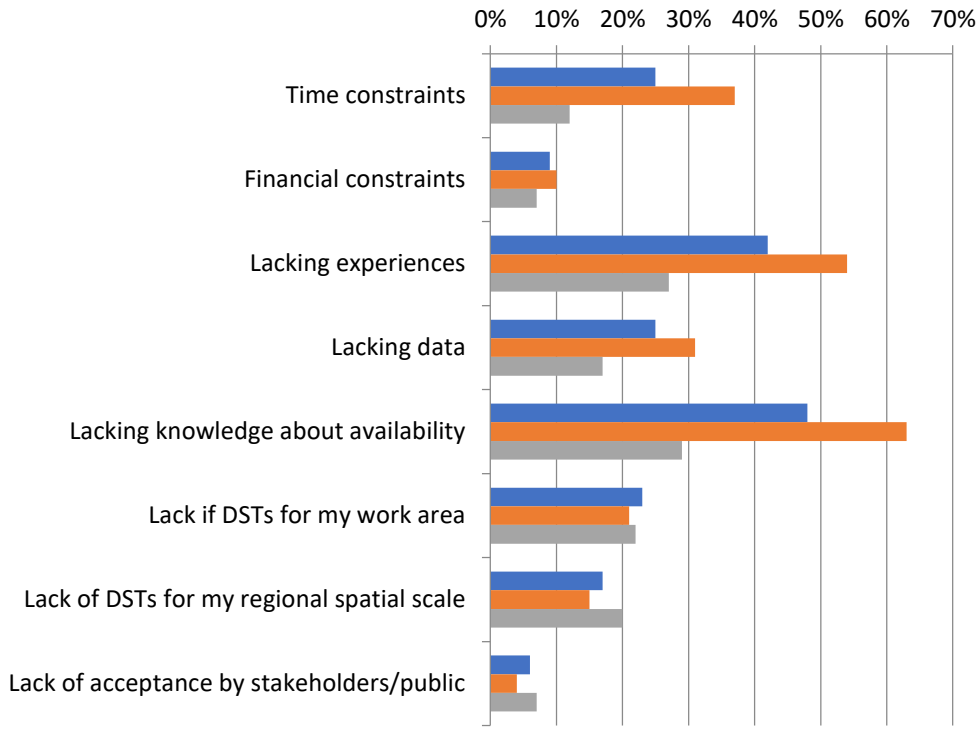
BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

Constraints for DST Use

- Lacking awareness about availability of DSTs is the main constrain
- Lacking experiences and time constraints are the limiting factors among authorities

→ Need for DST database, with updated information including benefits and limitations



Results based on online questionnaire addressed to potential DST users (authorities, research institutes & universities, NGOs, others) (N=108)

Schumacher et al. (subm)

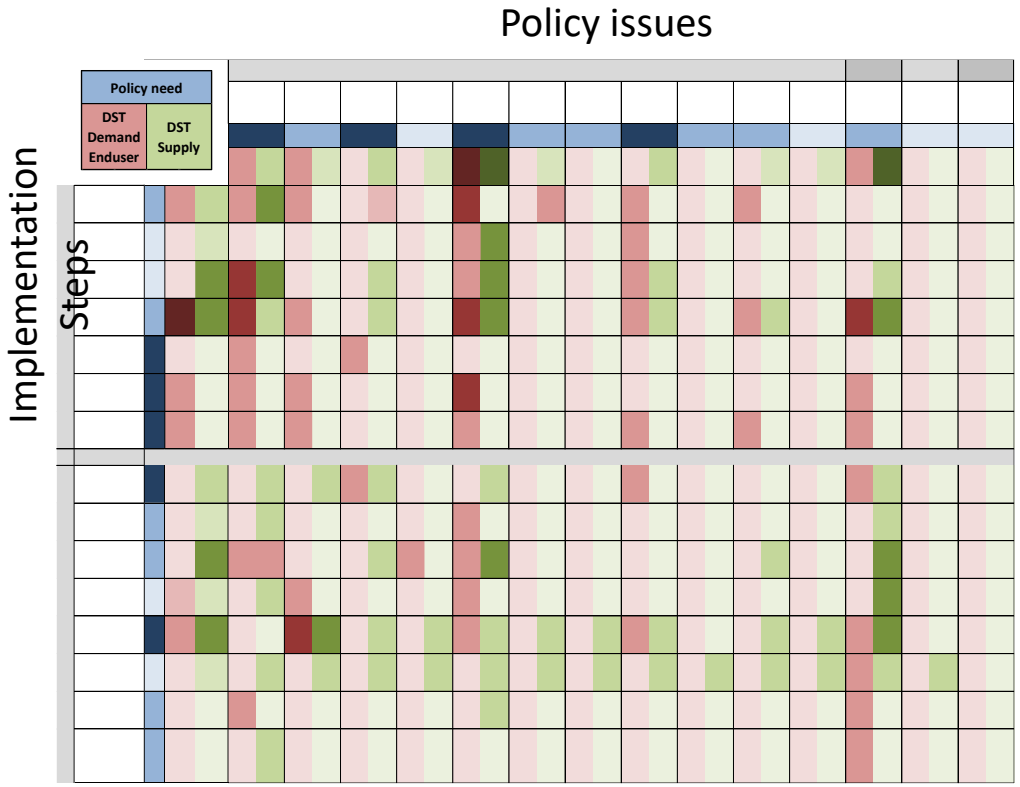
WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

Gap-analysis

- Identification of DST gaps for policy issues and implementations steps and requirements
- Based on DST supply (DST Inventory)
- End-user demand
- Policy relevance



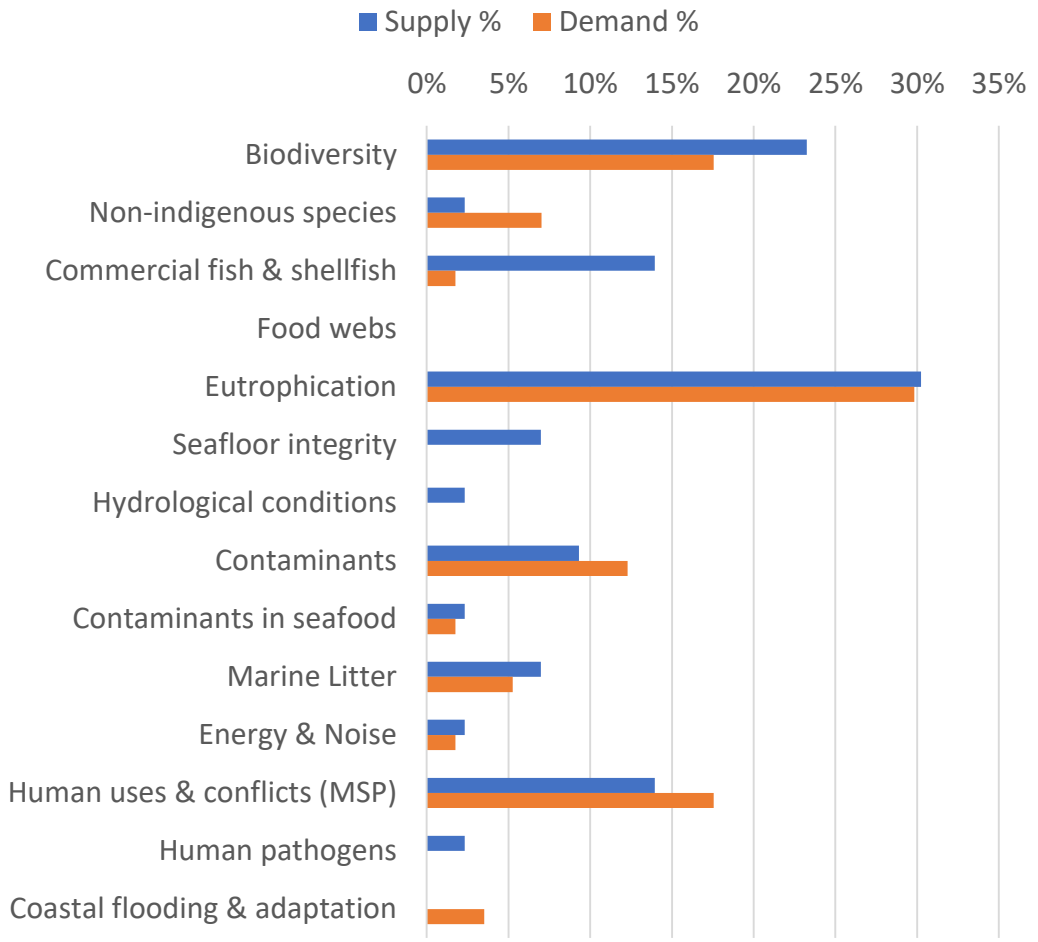
Schumacher et al. (subm)

WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

Gap-analysis: Policy issues



DST supply based on DST inventory (N=42); DST demand based on end-user surveys (N=57)

- Strongest demand for policy issues with the highest supply
- Unsatisfied demand for non-indigenous species, MSP

→ Need for awareness raising / information

→ Need for cooperation between developers and end-users

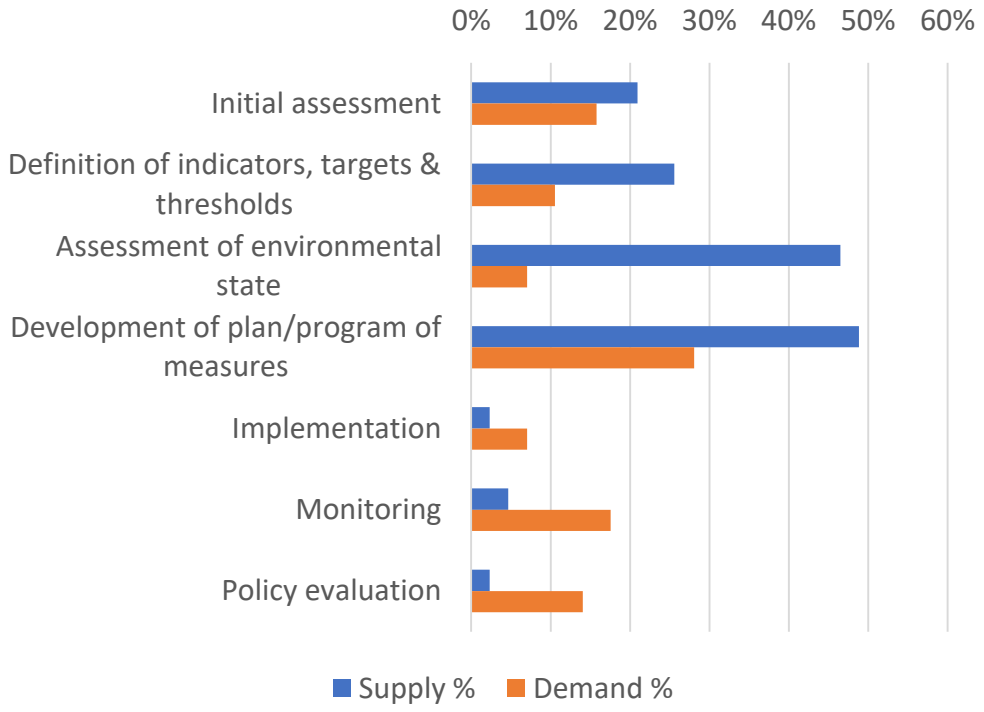
Schumacher et al. (subm)

WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

Gap-analysis: Policy implementation steps



DST supply based on DST inventory (N=42); DST demand based on end-user surveys (N=57)

- Strongest demand for DSTs that support the identification of measures (Biodiversity, NIS, Eutrophication, MSP)
- Gaps for DSTs that support initial assessment (incl. pressures) and monitoring

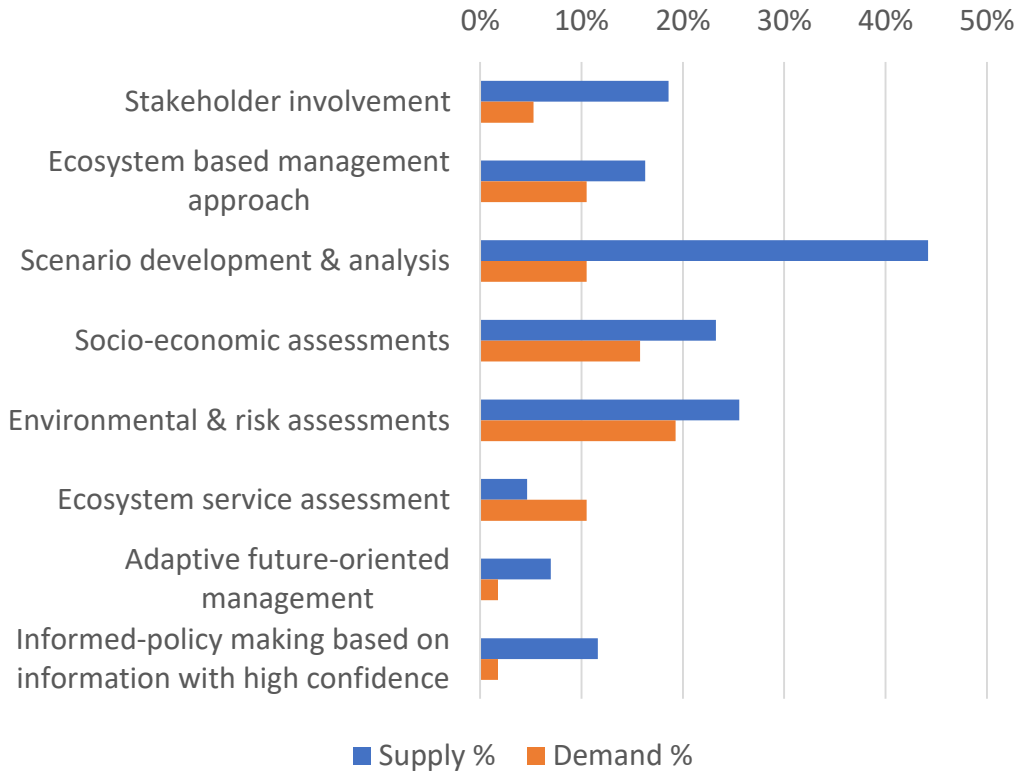
Schumacher et al. (subm)

WHAT WAS FOUND?

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

Gap-analysis: Policy Requirements



DST supply based on DST inventory (N=42); DST demand based on end-user surveys (N=57)

- General demand for DSTs addressing socio-economic aspects and environmental and risk assessment
- Unsatisfied demand for DSTs assessing ecosystem services

Schumacher et al. (subm)

WHAT WAS FOUND? What scientific evidence exists for the supply of marine and coastal ecosystem services in the Baltic Sea?

Kristin Kuhn, LUH

BONUS ROSEMARIE
Blue health and wealth from the Baltic Sea – a participatory systematic review for smart decisions

- 1006 search results from 11 databases
  > 57 papers found to be relevant
- No interpretation of ecosystem services (ES)
- ES research was a growing field in the last decade in the Baltic Sea region

What scientific evidence exists for the supply of marine and coastal ecosystem services in the Baltic Sea?

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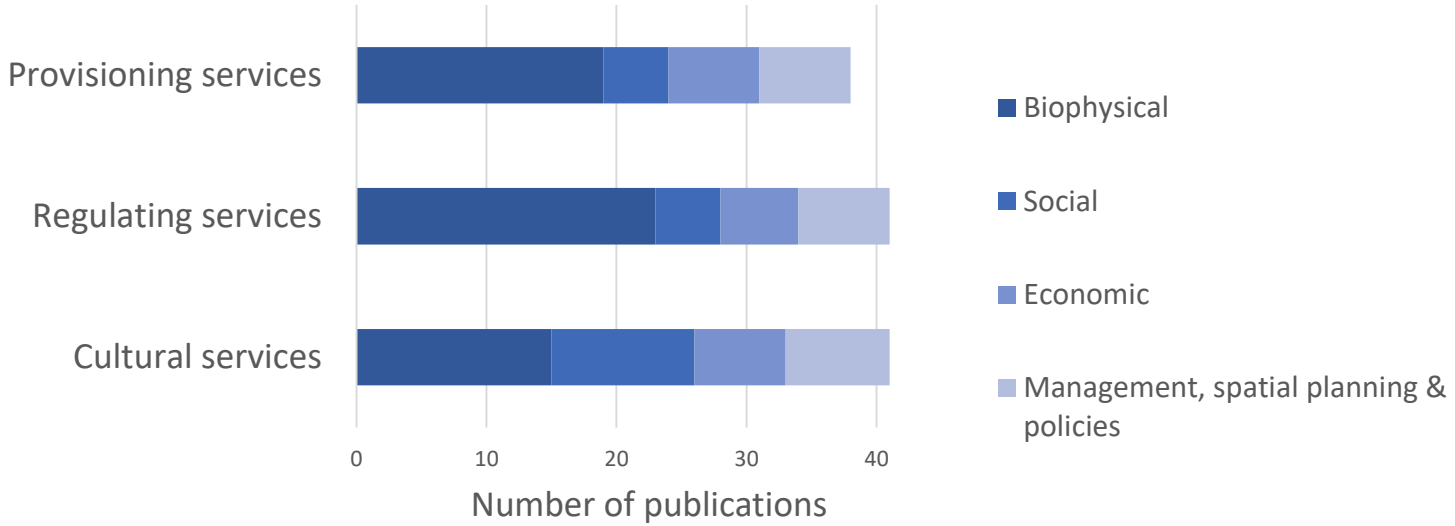
Blue health and wealth from the Baltic Sea – a participatory systematic review for smart decisions

- Eutrophication mitigation, the provision of fish and recreation are the ecosystem services **most studied.**



What scientific evidence exists for the supply of marine and coastal ecosystem services in the Baltic Sea?

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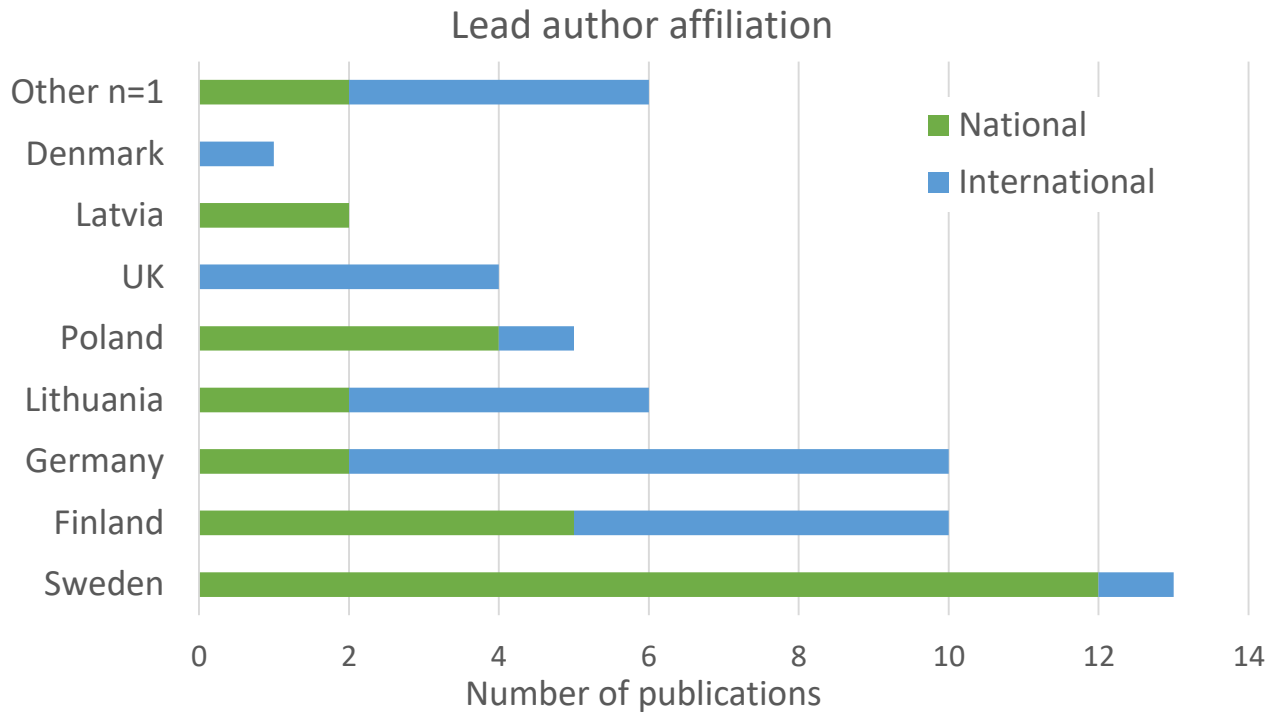
- 50% of studies are authored by international contributors
- Authors from Sweden, Finland and Germany published the most studies (58%), no publication from Estonia was recognised



What scientific evidence exists for the supply of marine and coastal ecosystem services in the Baltic Sea?

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Blue health and wealth from the Baltic Sea – a participatory systematic review for smart decisions

Research gaps

- Few studies integrate ecosystem synergies and trade-offs, or integrate ES and ecosystem condition
- Links between science and marine policy are often missing
- Nearly 70% of studies do not apply a classification system > no common terminology
- National mapping initiatives (MAES, Action 5 of the European Biodiversity Strategy to 2020) are only found for the Latvian and Lithuanian coast

WHAT WAS FOUND? Human health & well-being

Joanna Storie
EMÜ

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What linkages have been researched between Baltic Sea ecosystems and the positive and negative impacts to human health and well-being?

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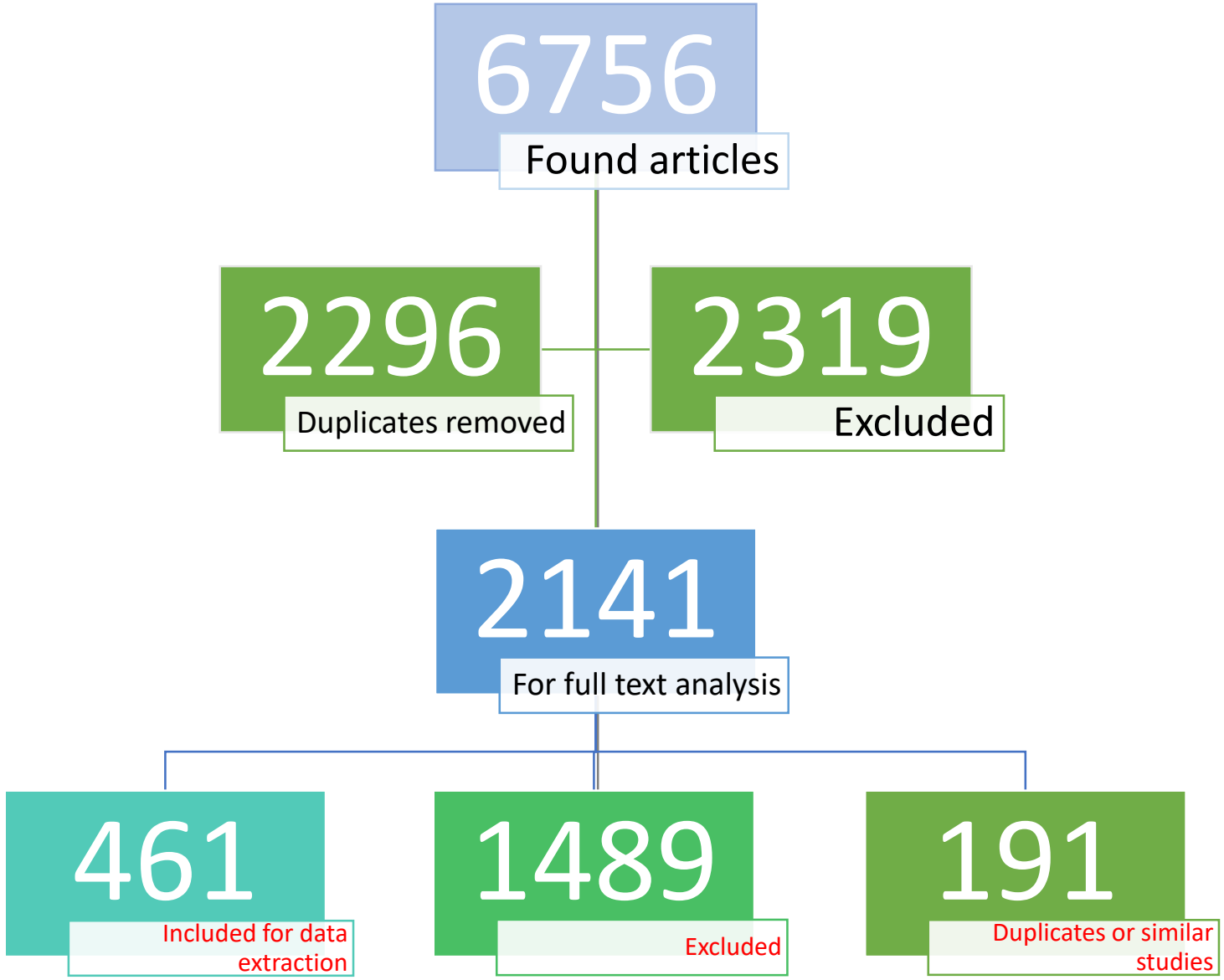

Some preliminary oversights

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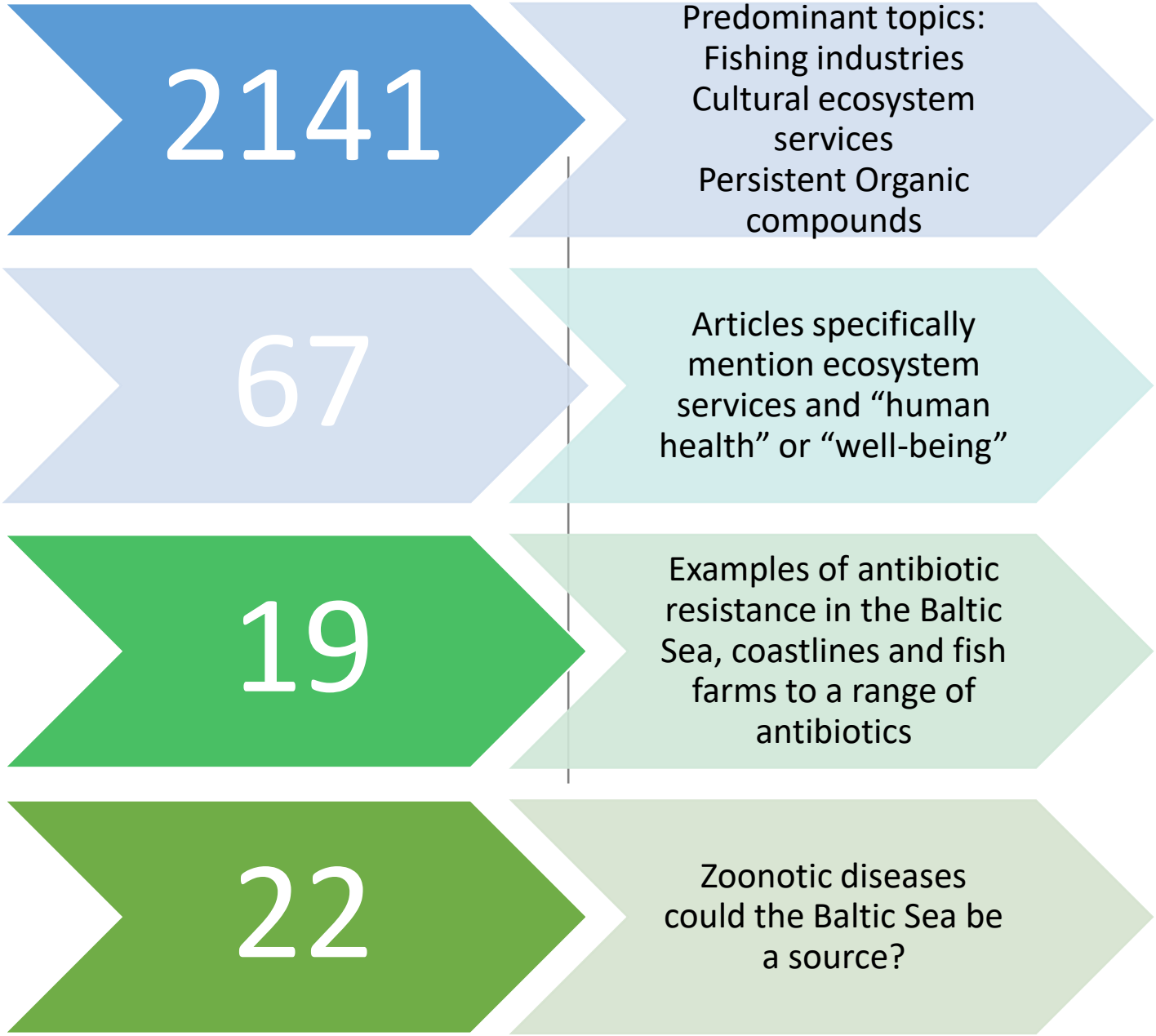

Zoonotics: a topical issue and a potential Baltic problem too?

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Sources

Seafood, Seals, Birds, Ticks, Sewage

Types

Parasitic infections, Vibrio infections, Botulinum, E. coli, Campylobacteria, Influenza A, Antibiotic resistant bacteria. Coronaviruses?

Areas

All areas of the Baltic Sea and coastlines, Recreational areas, Bird conservation islands, Pathogens moving northwards, Aquaculture farms

Good news?

A source of antimicrobial metabolites found

Fermented herring may help in irritable bowel syndrome, gastric catarrh and heartburn.

WHAT WAS FOUND? Monetary and non-monetary valuation methods

Cecilia Håkansson
KTH

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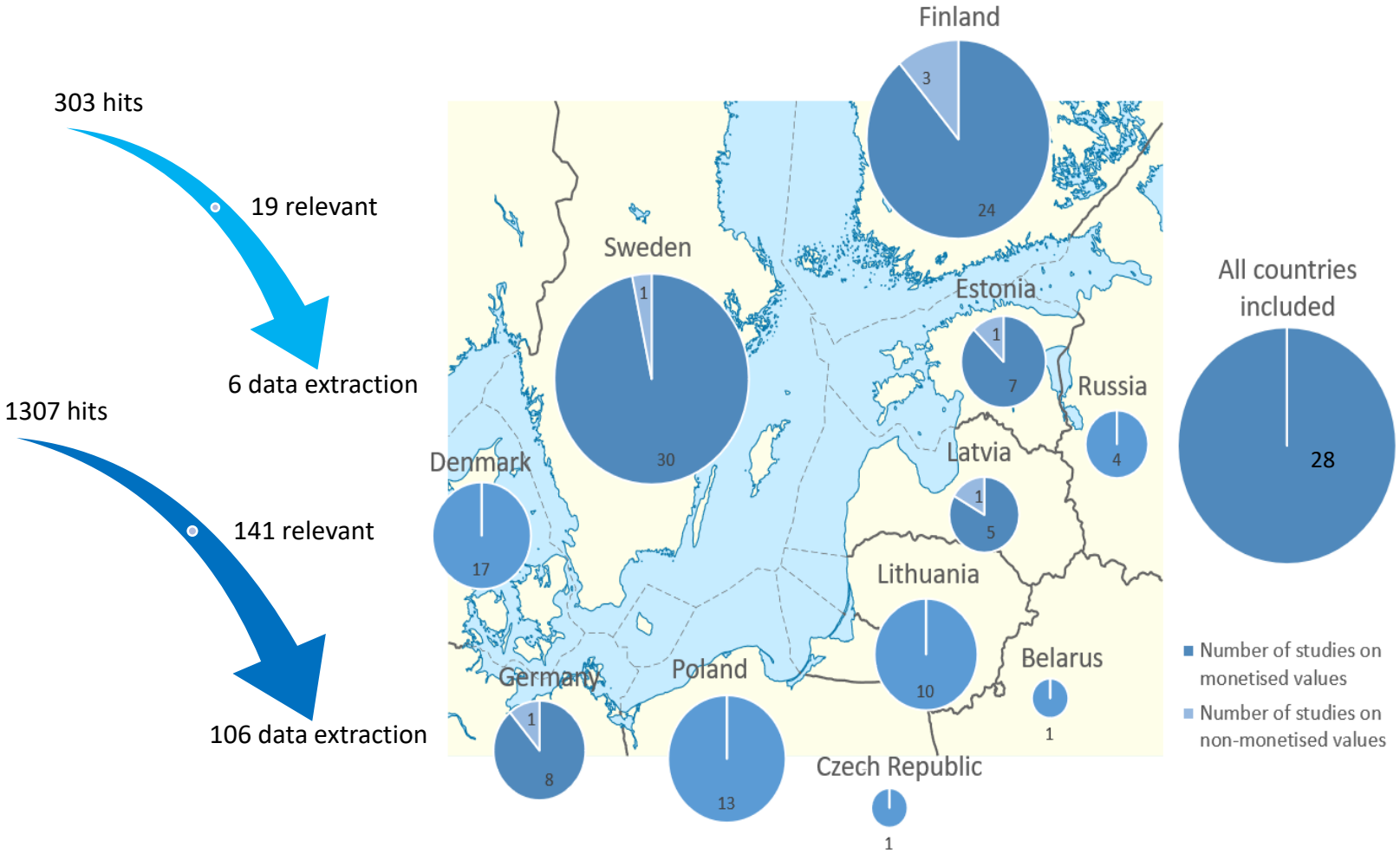
Peer reviewed valuation studies on environmental changes and marine ecosystem services



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Monetary valuation review and input to marine policy

price-based methods
benefit-based methods
cost-based methods

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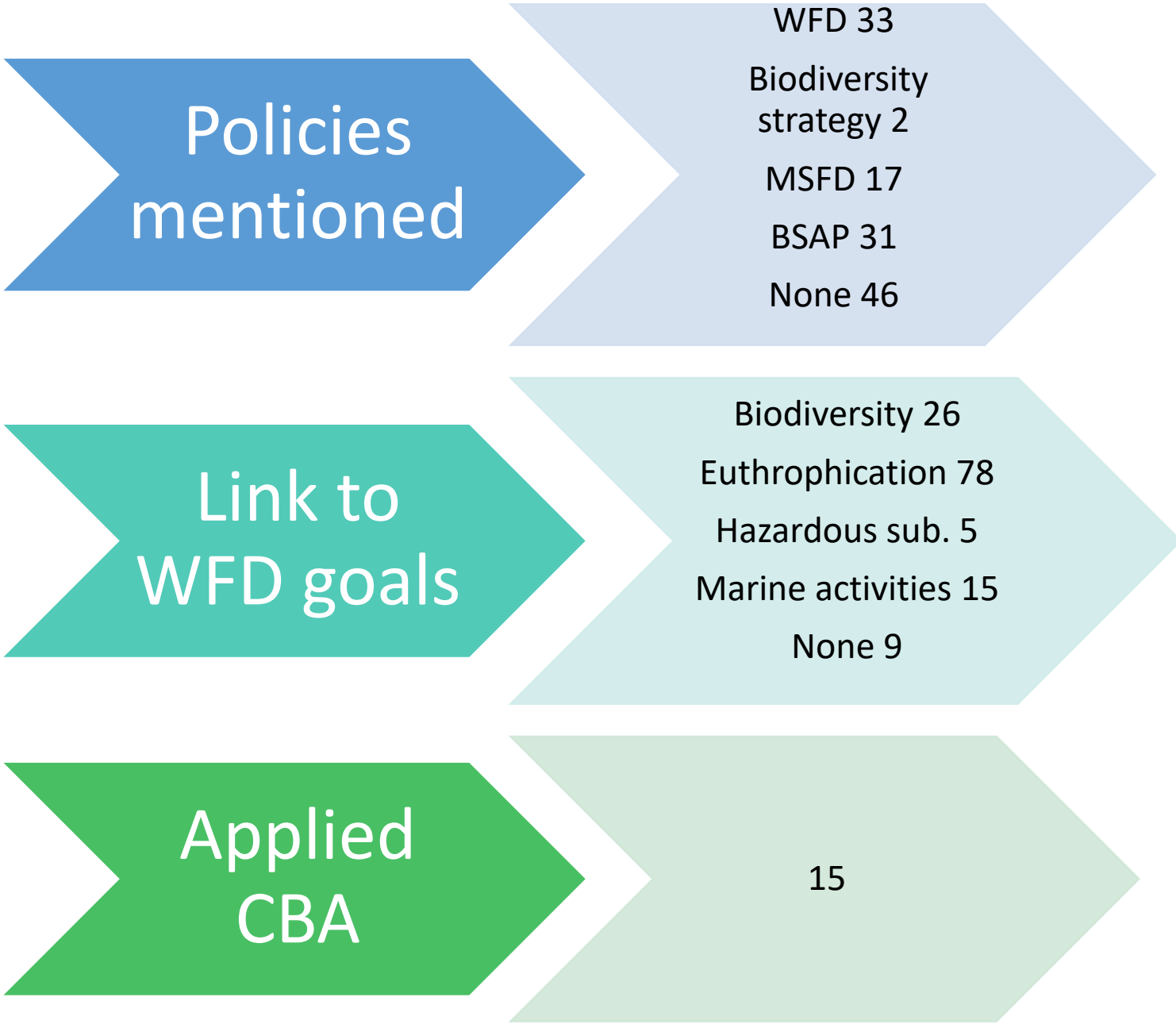

Monetary valuation review and marine ES

price-based methods
benefit-based methods
cost-based methods

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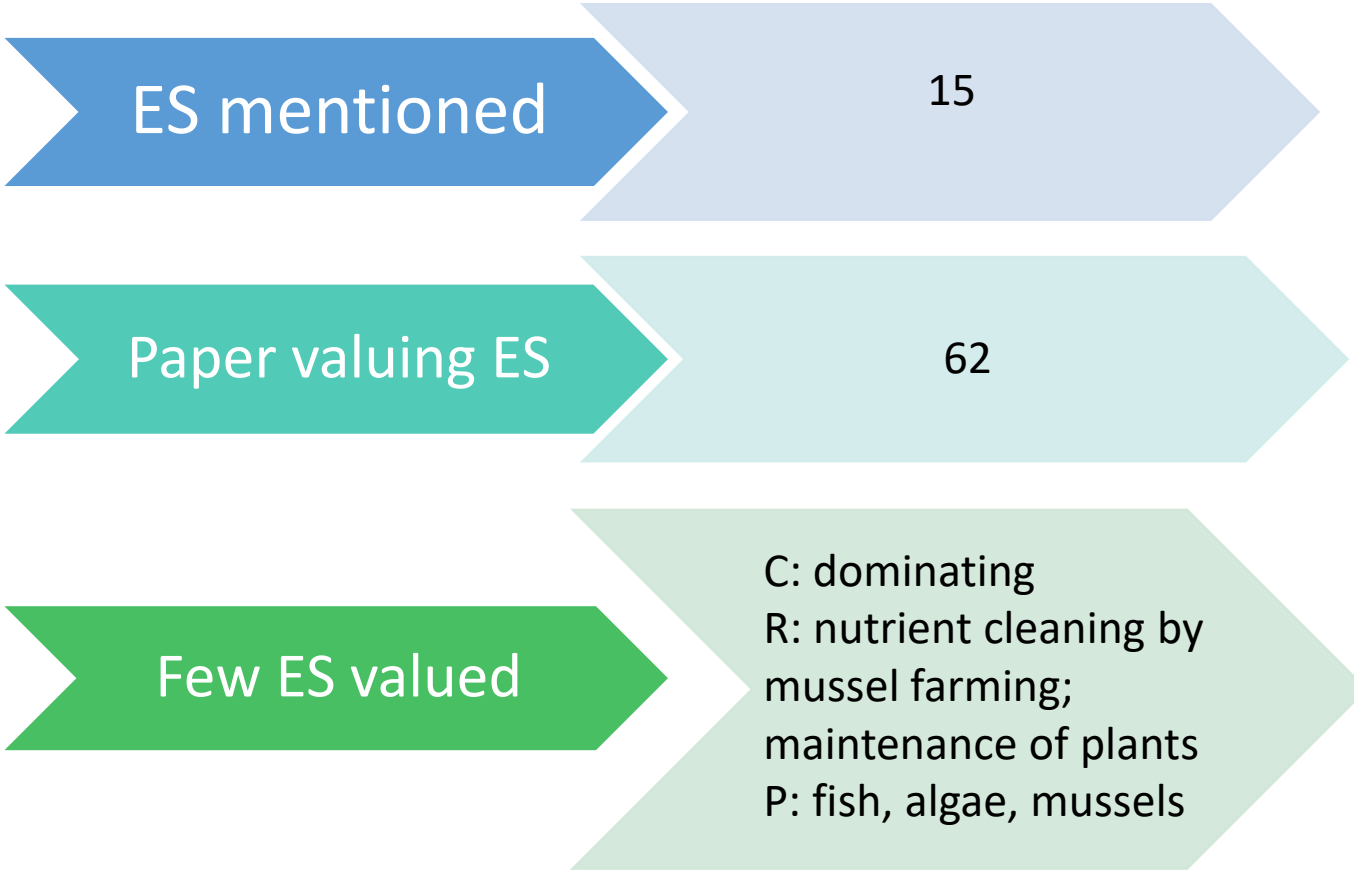


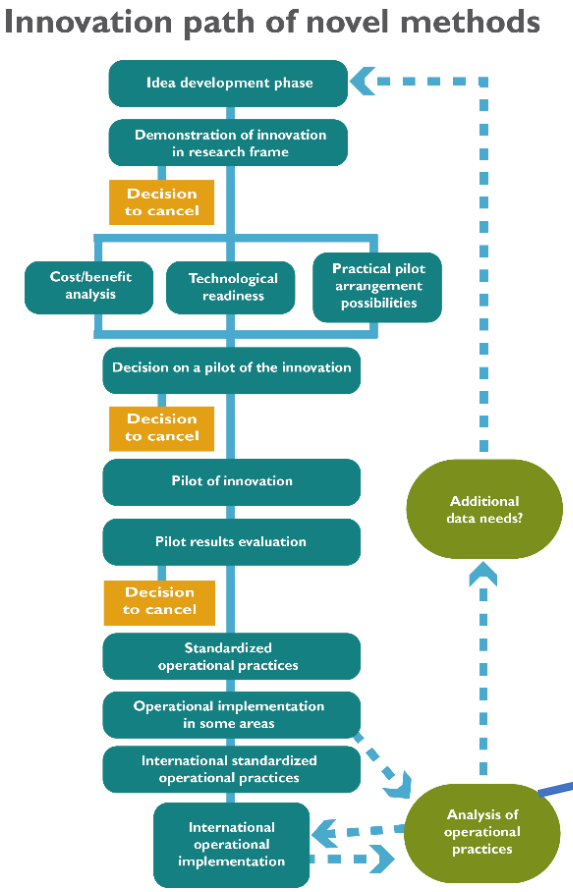
RECOMMENDATIONS
Renewed plan

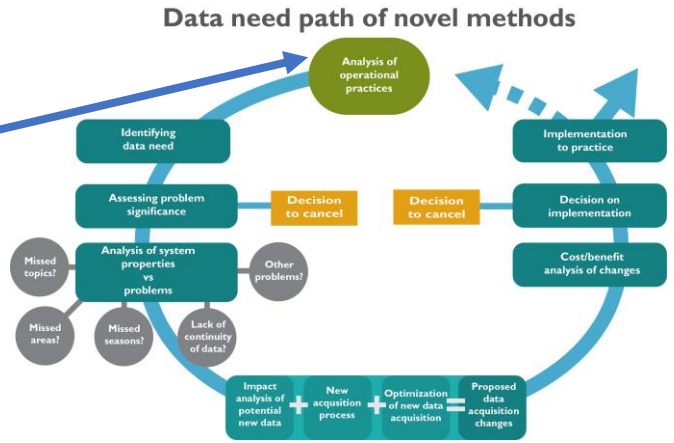
Kristian Meissner, SYKE

BONUS FUMARI

Future Marine Assessment and Monitoring of the Baltic

Roadmap for a new Baltic Sea monitoring?





1) The need for a formalized adoption pipeline for novel method uptake hosted by HELCOM

2) Model the method adoption pipeline after CEN standardization process using it as a tool or a template

3) Establishment of a revision process for existing methods

PROPOSALS & RECOMMENDATIONS

Vivi Fleming, SYKE

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

Development areas

1. Tools that address impacts on welfare and link environmental and socio-economic aspects should be developed.
2. Tools need to be developed for uncovered problem areas: especially non-indigenous species, but also marine litter and underwater noise.
3. Tools should support the development of plans and programs of measures, especially for these problem areas: biodiversity, non-indigenous species, eutrophication and human uses & conflicts.

PROPOSALS & RECOMMENDATIONS

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

End-user-related recommendations

1. Awareness of tools should be increased. End-users need information about existing DST – we made a database, it should be maintained!
2. End-users need training and guidance: user-friendly guidelines, online tutorials – even cooperation with tool hosts
3. Tools should be flexible, able to adjust according to end-users needs.

PROPOSALS & RECOMMENDATIONS

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem

General proposals

1. End-users should play an essential role in the development of DSTs, even take part in the development.
2. Outcome uncertainties should be documented and communicated – this important feature is not available in most existing DSTs.
3. Standard formats for DST inputs and outputs should be developed to enable interoperability. This would support the ecosystem approach – one tool covering all segments is not needed.
4. DSTs need a host with continuous funding for maintenance and further development – otherwise they will not remain operational.

RESEARCH GAPS

Benjamin Burkhard
LUH

BONUS ROSEMARIE
Blue health and wealth from the Baltic Sea – a participatory systematic review for smart decisions

- Studies integrating the Good Environmental Status and ES are missing and knowledge of ES synergies and trade-offs is very limited

- The research focus of ES assessment and valuation is limited to only a few ES

  > ES assessment is needed as a foundation for ES valuation

- Studies linking ES and human health and well-being seldom describe the health and well-being aspects in detail.

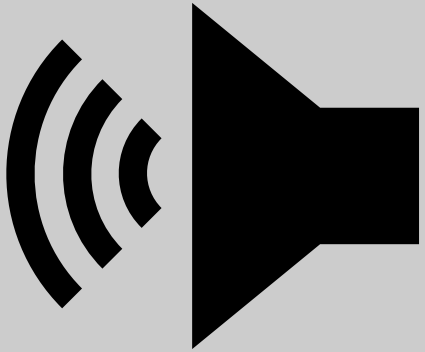
RECOMMENDED ACTIONS

- Research calls for the gaps in ES assessment and valuation to be filled.
- Focus on transdisciplinarity and a strong science-policy cooperation
- Stronger implementation of ES in marine policies

  - To underline the strong interrelationship of human activities (pressures and policy actions) and environmental conditions
  - To quantify the benefits of marine protection actions to societies and therefore integrate healthy ecosystems and human well-being

DISCUSSION
WRITE YOUR QUESTIONS OR COMMENTS IN THE CHATBOX, PLEASE!

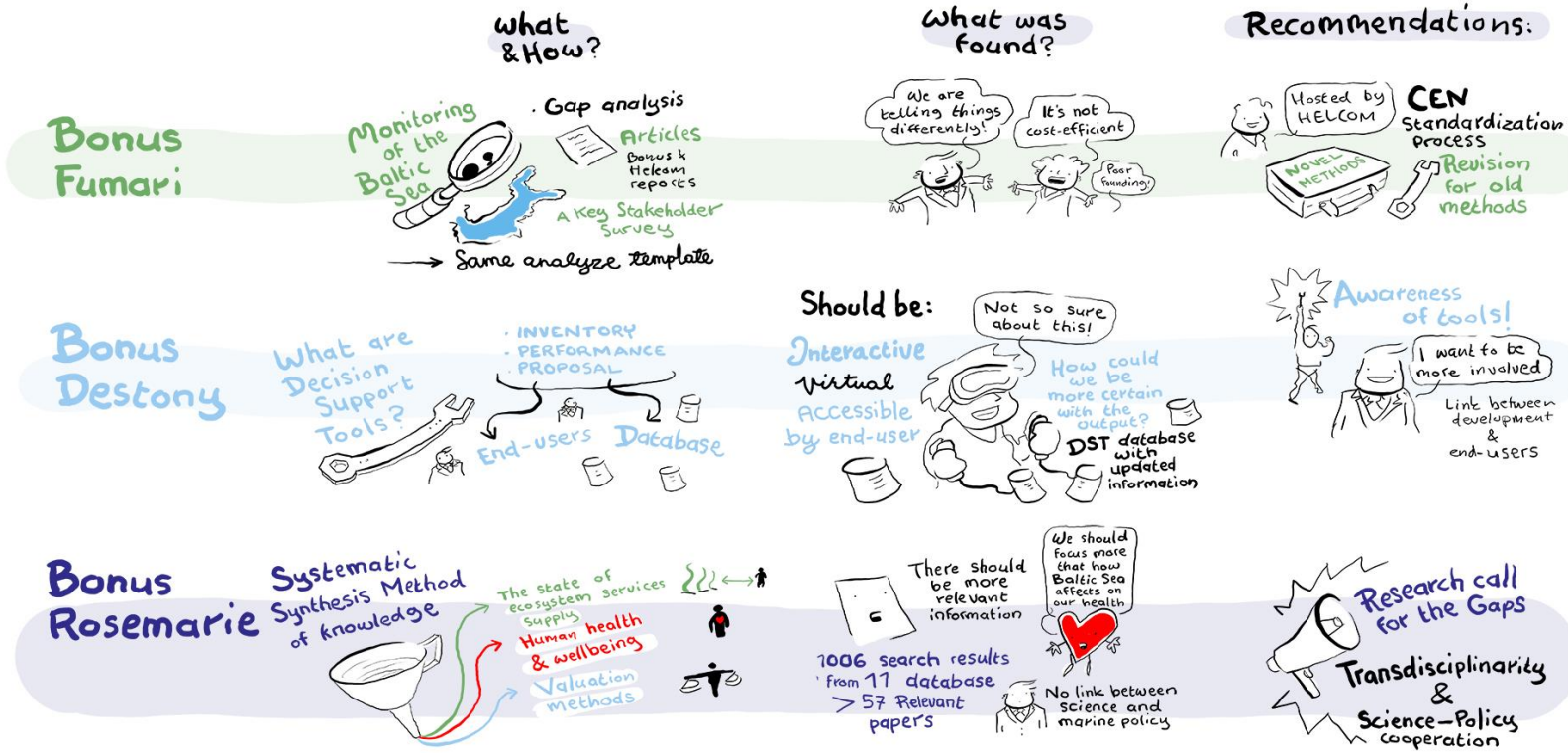
Indicate the project in question (BF / BD / BR)



This webinar has been recorded in drawing by Karri Lehtonen from Tussitaikurit.

Baltic Sea Science Synthesized

Time to Take Evidence-based Actions for the Well-being of the Sea and People



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SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

Thank you!

Presentations are available on
the webinar´s event page & project websites:

www.syke.fi/projects/BONUSFUMARI

www.syke.fi/projects/BONUSDESTONY

www.syke.fi/projects/BONUSROSEMARIE

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