Water JPI

Thematic Annual Programming Action

AQUATAP-ES

STAKEHOLDERS SHOWCASE EVENT

Aquatic ecosystem services on the science-policy-practice connection: challenges and opportunities

Webinar

22 June 2021, 10.30-12.00 CEST

WEBEX

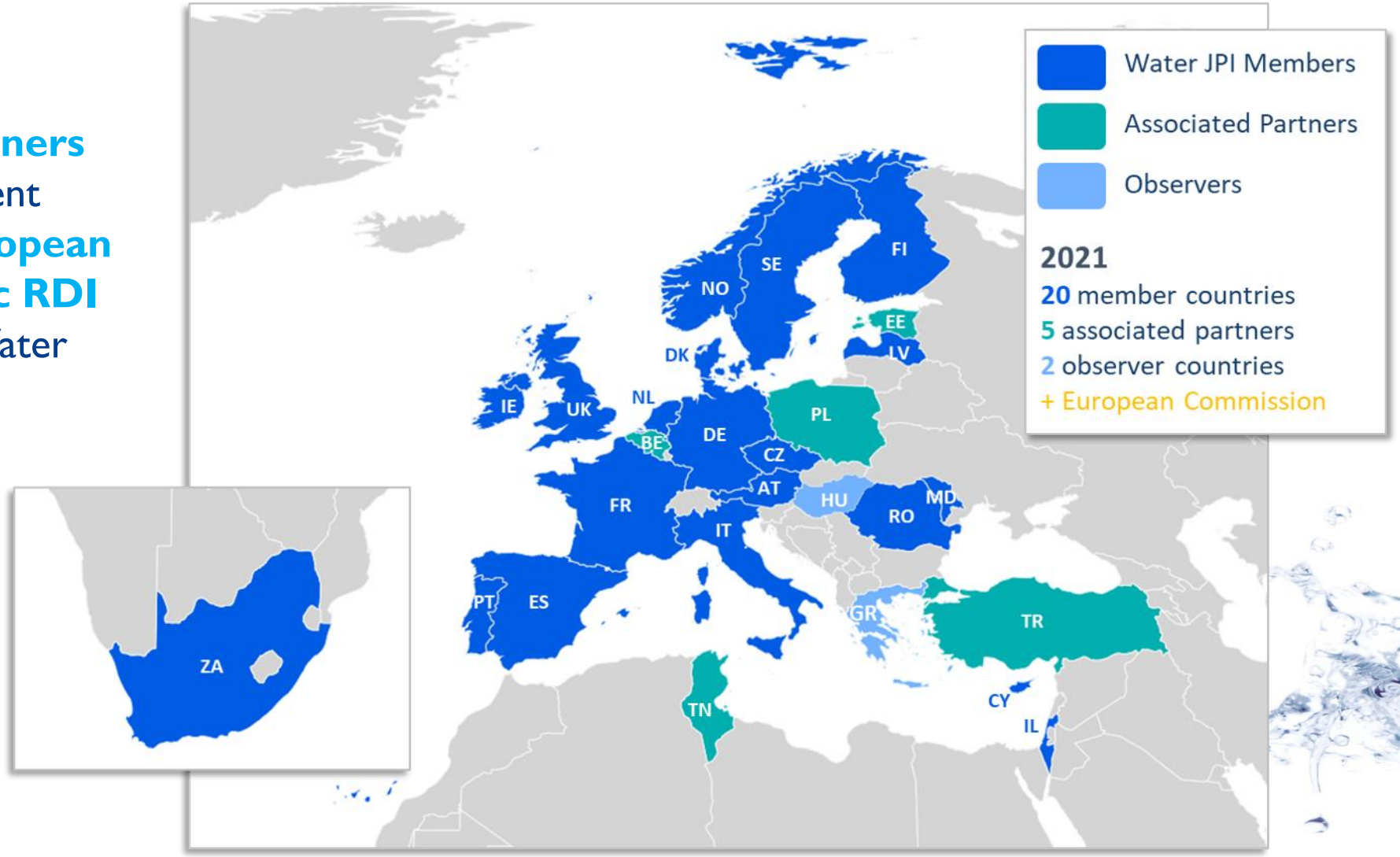
- Check your audio
- Your microphone will be muted and camera turned off to avoid echo and bandwidth problem
- Use the chat to report technical issues
- Use the « Q&A » section to comment and ask questions on the presentation and to the Panelists
- The WebEx will be recorded to assist the Secretariat in the preparation of the meeting minutes

WELCOME

Miguel Angel Gilarranz
Water JPI vice-Chair

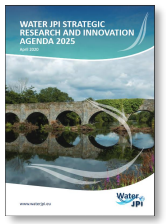
Water JPI Membership

Water JPI partners currently represent **88% of the European National Public RDI** investment on Water

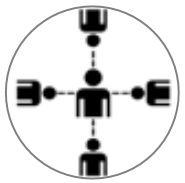


Water JPI Activities

- Common Vision
- Strategic R&I Agenda
- Research Funding Calls, TAP…
- Impact Measures
- Knowledge Transfer and Dissemination
- Data, Observatories & Infrastructures
- Capacity Building
- Stakeholders Involvement & Engagement
- International Cooperation
- Mapping & Foresight Activities

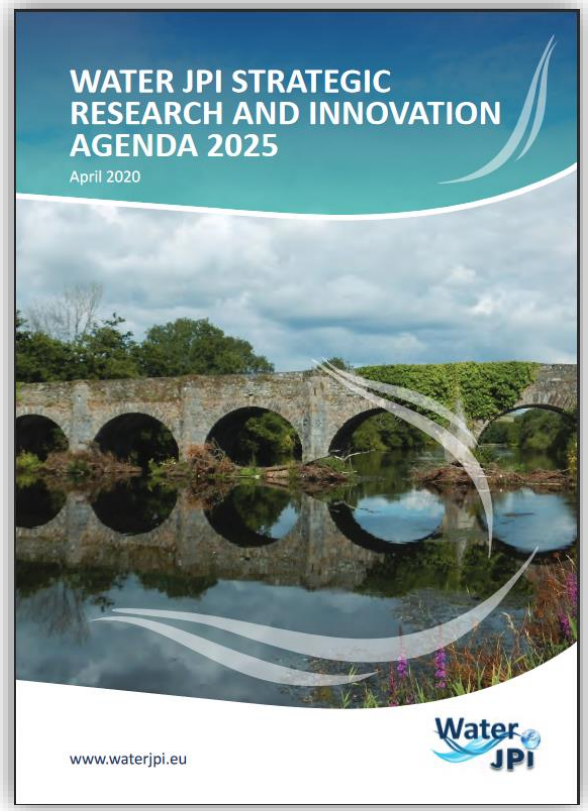








Vision 2030 and SRIA 2025

- April 2020, available online



What is the Water JPI Thematic Annual Programming action?

Juliette Arabi

Water JPI Secretariat

TAP

Thematic Annual Programming action

- **Network or cluster of excellence** of national research & innovation projects on a specific topic of the Water JPI SRIA
  - Transnational cooperation
  - Creating a critical mass of research and technological excellence
  - Integration and sharing of knowledge, infrastructure, data and modelling tools, training and capacity building
  - Improved communication and networking with stakeholders and the scientific community

HOW?

Common research priority
Common call text agreed by funders or selection of relevant recently-funded projects at national level or from a Water JPI Call

AQUATAP-ES for a common research priority on Ecosystem Services

WHY & HOW?

- Common research priority: "*Developing approaches for assessing and optimising the value of Ecosystem services*"
- 14-month preparation
- 2-year period of networking

FOR WHAT?

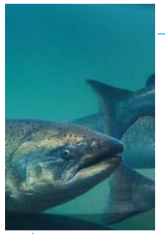
- Transnational cooperation
- Exchange of data, results, approaches, and methods
- Assessing and optimising the value of Ecosystem Services
- To enhance critical mass of research and technological excellence
- Knowledge dissemination & communication

FOR WHOM?

- Generating knowledge for European policy makers, public institutions, farmers, consumers and extension services

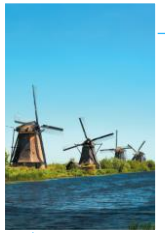
Water JPI AQUATAP-ES

- 6 nationally funded projects
- 4 countries: Ireland, Finland, Spain & the Netherlands



"Complex eco-evolutionary dynamics of aquatic ecosystems faced with human-induced and environmental stress": Finland.

"ESDecide: from Ecosystem Services Framework to Application for Integrated Freshwater Resources Management": Ireland.



"Services and natural capital for the large Dutch water bodies": The Netherlands.

"Spatial and temporal flow intermittency in fluvial ecosystems: effects on structure, function and ecosystem services": Spain.

"Design of a methodology to increase flood resilience compatible with improved status of water bodies and sustainable management of water resources ": Spain.

"The Diversity and Resilience of kelp ecosystems in Ireland": Ireland.

Water JPI TAP – estimated Budget

For a 2-year TAP action

- **TAP Coordination** (EPA, IE) ≈ 42 500 €
  - Personnel costs ≈ 5 person month (circa. 25 000 €)
  - 4 workshops (2 physical & 2 online) ≈ 3 500 €
  - Design, proofreading of output documents (Who's Who, Policy Brief) : 4 000 €
  - Honorary-fee for 24-month TAP scientific coordination: 10 000 €
- **TAP participation**
  - **As Researcher** : 4-8 % of RDI project total budget
    - Personnel costs for TAP activities
    - Travel & accommodation expenses for workshops attendance
  - **As Steering Committee member**: in-kind from each funding agency
    - Personnel costs for TAP activities
    - Travel & accommodation expenses for workshops attendance

2019-21 Key Achievements of the AQUATAP-ES network

Challenges and Opportunities

José María Bodoque del Pozo

AQUATAP-ES Scientific Coordinator

Water JPI

Thematic Annual Programming Action

AQUATAP-ES

AQUATAP-ES
Overall Goal - Informing Policy & Practice

AQUATAP_ES will seek to foster integration of the ecosystem service concept/ framework into decision-making relating to the management of aquatic resources. This will necessitate consideration of:

1. who the key stakeholders are and their needs,
2. information needs, e.g. policy briefs,
3. data needs and tools (e.g. numerical models, decision support tools) and training.

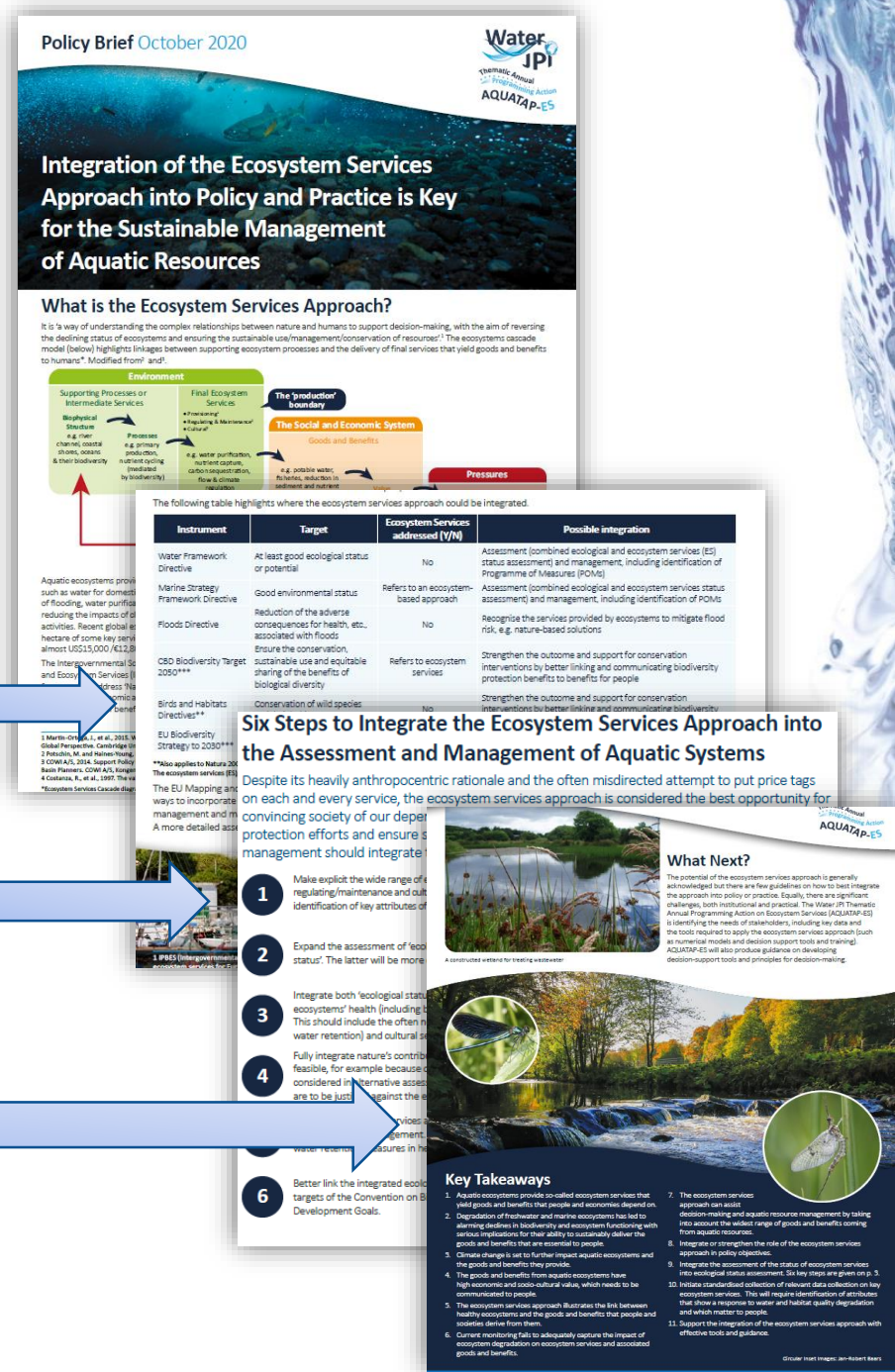
What we have completed

Outputs
Kick-off meeting – 12th June 2019 in Dublin, Ireland
Mapping of TAP expertise – June 2019
Submission to BiodivERsa Sutherland Scan – June 2019
Input to the Water JPI Consultative SRIA Workshop – October 2019
Five network workshops held from 2019 – 2021
AquaTAP-ES Policy Brief. Integration of the Ecosystem Services Approach into Policy and Practice is Key for the Sustainable Management of Aquatic Resources -15th November 2020
Paper accepted for *Springer* Encyclopedia of the UN Sustainable Development Goals. Clean Water and Sanitation: *Title: Role of the Ecosystem Services Approach & Natures Contributions to People (NCP) in supporting the achievement of SDG6 targets* –January 2021
Compilation of data and modelling needs – March 2021
Host for Session @ 3rd ESP Europe Conference, Tartu, Estonia: S5-*Progress and challenges in the operationalisation of the ecosystem services approach for aquatic resources management* –10th June 2021. Paper also presented.
Briefing Notes on Decision Support System for potential users (in draft)
Stakeholders Showcase Events (Webinar) – 22th June 2021
Paper to be presented at SEFS 12: Symposium for European Freshwater Sciences -25th July 2021 – 31st July 2021

Policy Brief

Integration of the Ecosystem Services Approach into Policy and Practice is Key for the Sustainable Management of Aquatic Resources

- ✓ Short document outlining the opportunities the ecosystem services approach offers for improved protection or management of aquatic resources*
- ✓ Table to highlight policy where the ecosystem services approach could be integrated
- ✓ 6 steps to integrate the ecosystem services approach into the assessment and management of aquatic systems
- ✓ Take home messages



Stakeholder consultation April - June 2020

Policy Brief

Integration of the Ecosystem Services Approach into Policy and Practice is Key for the Sustainable Management of Aquatic Resources

Six Steps to Integrate the Ecosystem Services Approach into the Assessment and Management of Aquatic Systems

Despite its heavily anthropocentric rationale and the often misdirected attempt to put price tags on each and every service, the ecosystem services approach is considered the best opportunity for convincing society of our dependence on nature. To effect the changes necessary to support water protection efforts and ensure sustainable delivery of essential ecosystem services, aquatic ecosystem management should integrate the following steps:

1. Make explicit the wide range of ecosystem services and benefits that are provided to people. Therefore, an inventory of provisioning, regulating/maintenance and cultural services should complement the biophysical monitoring of aquatic ecosystems. This will require identification of **key attributes of the ecosystem services for data collection** and new data collection initiatives in many countries.

2. Expand the assessment of 'ecological status' of surface waters to include an assessment of **'ecosystem services status'**. The latter will be more easily acknowledged by the general public than the former.

3. Integrate both 'ecological status' and 'ecosystem services status', to inform the public of the **importance of protecting ecosystems' health** (including biodiversity, where appropriate) as a prerequisite for ecosystem services at desired service rates. This should include the often neglected, but important, benefits of regulating services (such as water purification, nutrient and water retention) and cultural services (such as recreation and inspiration).

4. Fully integrate **nature's contributions to people** into monetary assessments of ecosystem services. If a full integration is not feasible, for example because of a lack of sound methodology, any services not included should be clearly communicated and be considered in alternative assessments. This is of particular importance if the benefits of ecosystem protection and management are to be justified against the expenditure on the required management measures.

5. Identify synergies, disservices and trade-offs that can inform more beneficial, win–win solutions for aquatic ecosystems and water resources management. Synergies may be provided by **nature-based solutions to water-related challenges,** such as water retention measures in headwaters to reduce flood risk and wetlands for pollutant capture.

6. **Better link the integrated ecological status–ecosystem services status assessment** with (1) the Aichi and global biodiversity targets of the Convention on Biological Diversity, (2) the EU Biodiversity Strategy for 2030 and (3) the UN Sustainable Development Goals.

Paper

Springer Encyclopedia of the UN Sustainable Development Goals. Clean Water and Sanitation: *Title: Role of the Ecosystem Services Approach & Natures Contributions to People (NCP) in supporting the achievement of SDG6 targets*

Ecosystem Services Approach and Natures Contributions to People (NCP) Help Achieve SDG6

Mary Kelly-Quinn[1], Mike Christie[2], José María Bodoque[3] and Kathryn Schoenrock[4]
[1]School of Biology and Environmental Science & Earth Institute, University College Dublin, Dublin, Ireland
[2]Aberystwyth Business School, Aberystwyth University, Aberystwyth, UK
[3]Faculty of Environmental Sciences and Biochemistry, University of Castilla-La Mancha, Ciudad Real, Spain
[4]Department of Zoology, Ryan Institute, National University of Ireland Galway, Galway, Ireland

Definition

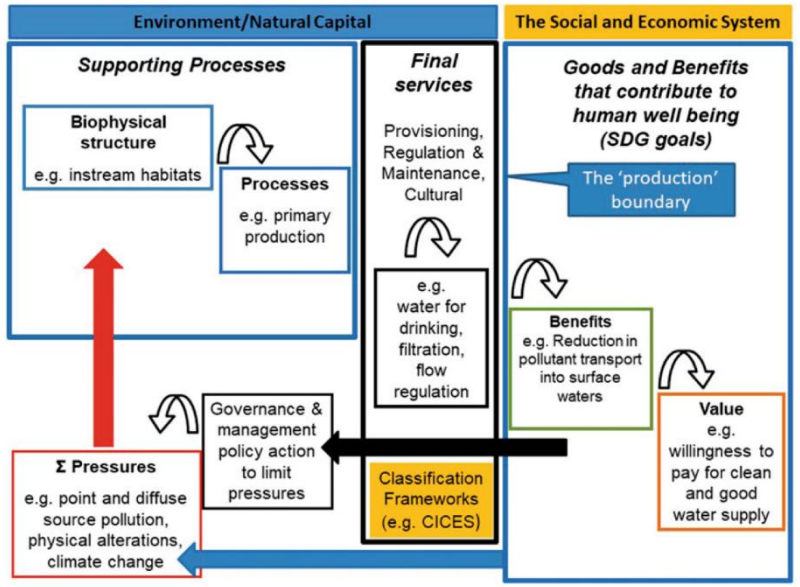
The United Nations "Sustainable Development Goals" (SDGs) are a collection of 17 global goals designed to be a "*blueprint to achieve a better and more sustainable future for all*" (UN 2015). The SDGs have been developed to be the world's best plan to build a better world for people and our planet by 2030.

Ecosystem Services (ES) are the contributions of nature to human wellbeing (Costanza et al. 1997; Millennium Ecosystem Assessment 2005; TEEB 2010; Haines-Young and Potschin 2014). Ecosystem services include *Provisioning Services* which are material outputs from ecosystems including food and water, *Regulation and Maintenance Services* which are the less direct benefits such as flow regulation and water purification, and *Cultural Services* include the tangible recreational uses (e.g., kayaking, fishing, and walking along a river) and the less tangible benefits such as aesthetic or spiritual benefits as well as research and educational values. Supporting processes or intermediate services are the ecological functions and processes that underpin the three groups of ES and are often referred to as the final services (see Fig. 1).

Nature's Contribution to People (NCP) extends the concept of ecosystem services, by classifying NCP into material, regulating, and nonmaterial services, as well as explicitly recognizing the knowledge of local-indigenous communities (Díaz et al. 2018; IPBES 2019a).

Ecosystem function is the capacity of natural processes such as primary productivity or carbon cycling contributing to an ecosystem, to provide ES/NCP or Nature Based Solutions (NBS) to human populations (De Groot et al. 2002).

Nature Based Solutions (NBS) are actions which are inspired by, supported by, or copied from nature to provide environmental, social, cultural, and economic benefits (Nesshover et al. 2017).



- Definitions
- Introduction
- Sustainable Development Goals 6 'Clean Water and Sanitation'
- Ecosystem Services Approach and NCP
- Ecosystem services underpinning the SDG 6 targets
- Ecosystem degradation challenges achievement of SDG 6 goals
- What can evidence on the status and trends in ES / NCP tell us about progress towards achieving the SDG 6 targets?
- How can insights from ecosystem services and the ecosystem services approach be capitalised on to help achieve SDG 6 goals - Opportunities & Evidence?
- Conclusions

W. Leal Filho et al. (eds.), *Clean Water and Sanitation*, Encyclopedia of the UN Sustainable Development Goals,
https://doi.org/10.1007/978-3-319-70061-8_147-1

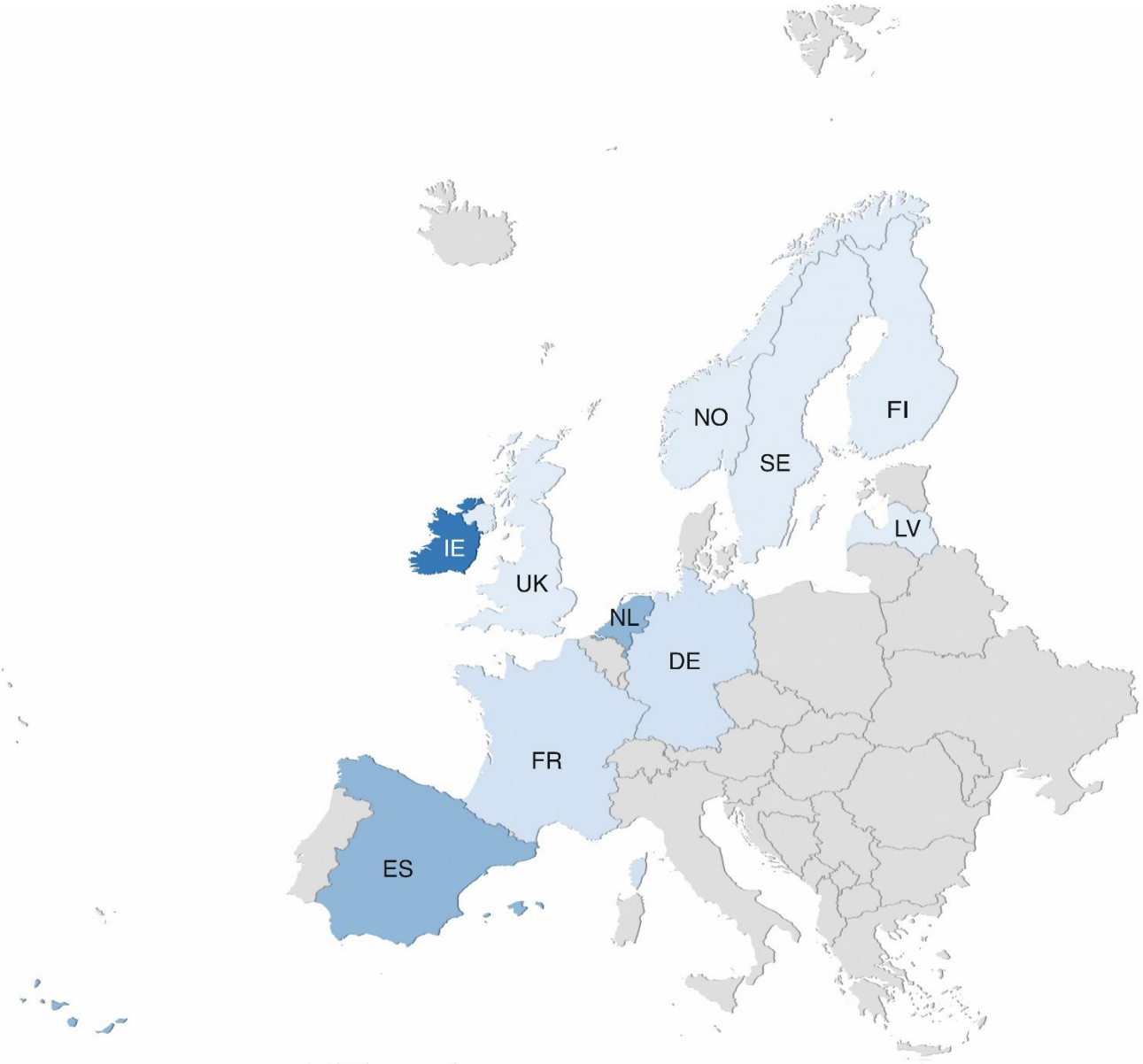
Paper

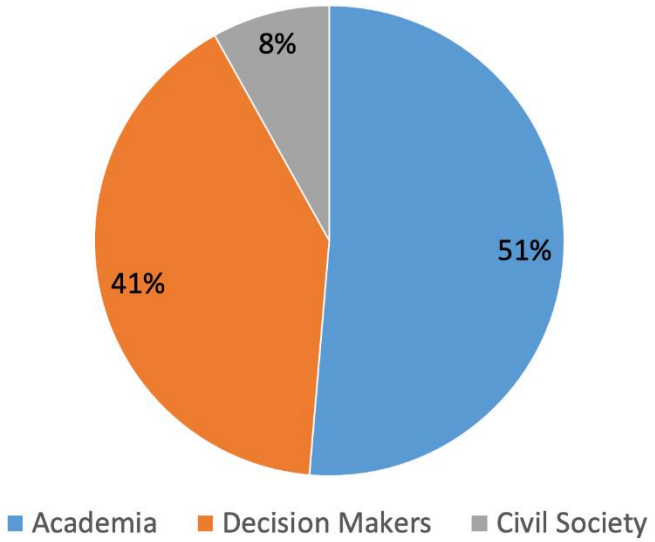
Springer Encyclopedia of the UN Sustainable Development Goals. Clean Water and Sanitation: *Title: Role of the Ecosystem Services Approach & Natures Contributions to People (NCP) in supporting the achievement of SDG6 targets*

Conclusions

- The **ecosystem service approach** provides a framework that links biodiversity with a range of ES/NCP that contribute to people's wellfare and therefore help support the **SDG goals**.
- Human development activities have **degraded many water-based ecosystems** and therefore reduced their ability to deliver ES/NCP that could contribute to the SDG goals
- **Water permeats many other SDGs** and represents one of the key interdependencies and nexus among the 17 SDG goals as it is essential for not only potable water but also to sustain terrestrial and aquatic ecosystems and the flow of ES/NCP that support well-being and economic activities.
- Finally, **NBS** may provide and approach that could allow continued human and economic development, while also protecting natural habitats and associated ES/NCP.

Compilation of Data and Modelling Needs

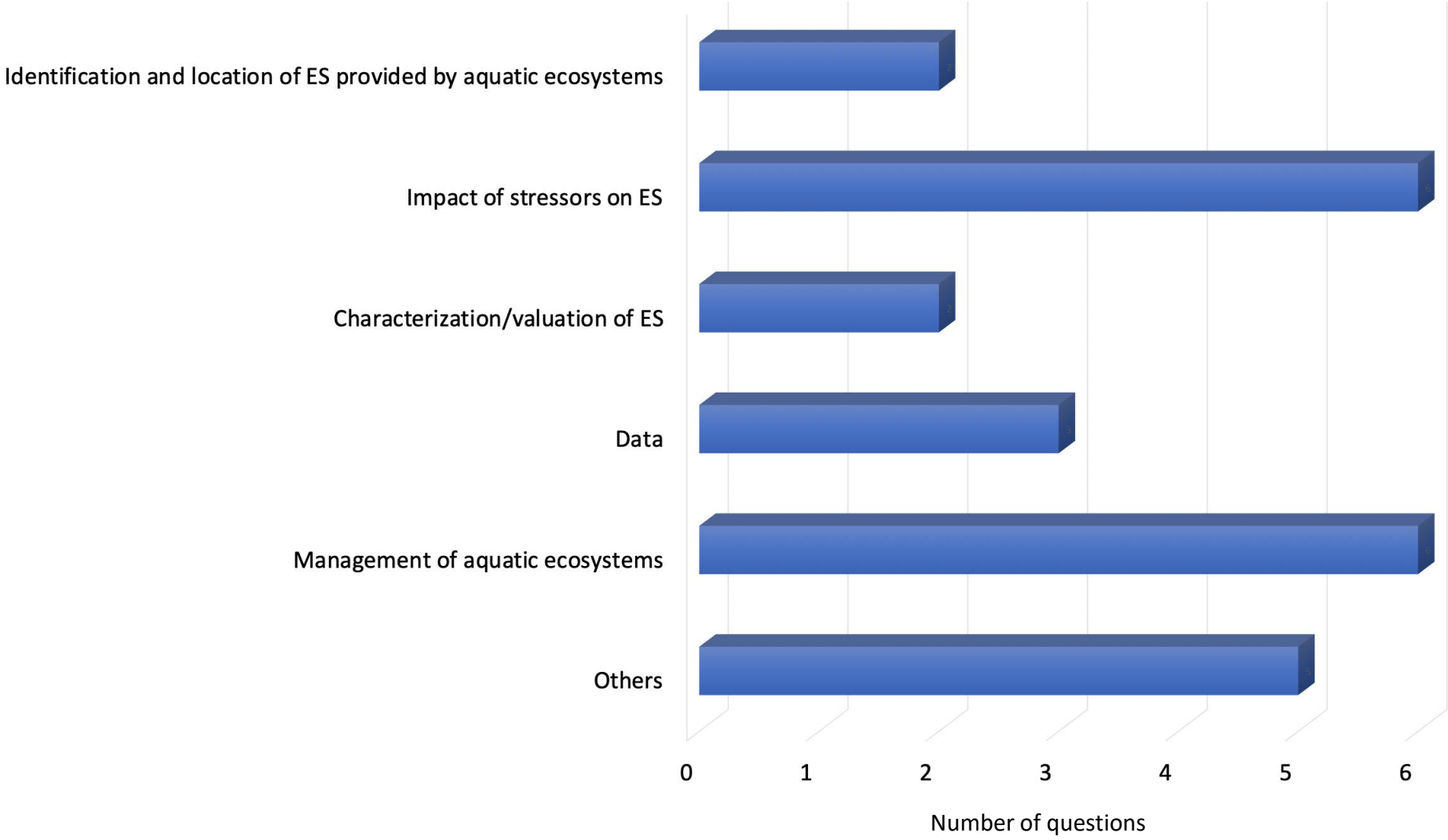




The experts consulted work on the following categories of ecosystem services: i) Provisioning –abiotic (i.e., **surface water for drinking and non-drinking purposes**; ii) Provisioning – biotic (i.e., **wild animals –aquatic, animals reared by insitu aquaculture**); iii) Regulation –abiotic (i.e., **control of erosion rates; flood control**); iv) Regulation –abiotic/biotic (i.e. **water quality**) and cultural (i.e., **sport fishing, tourism**)

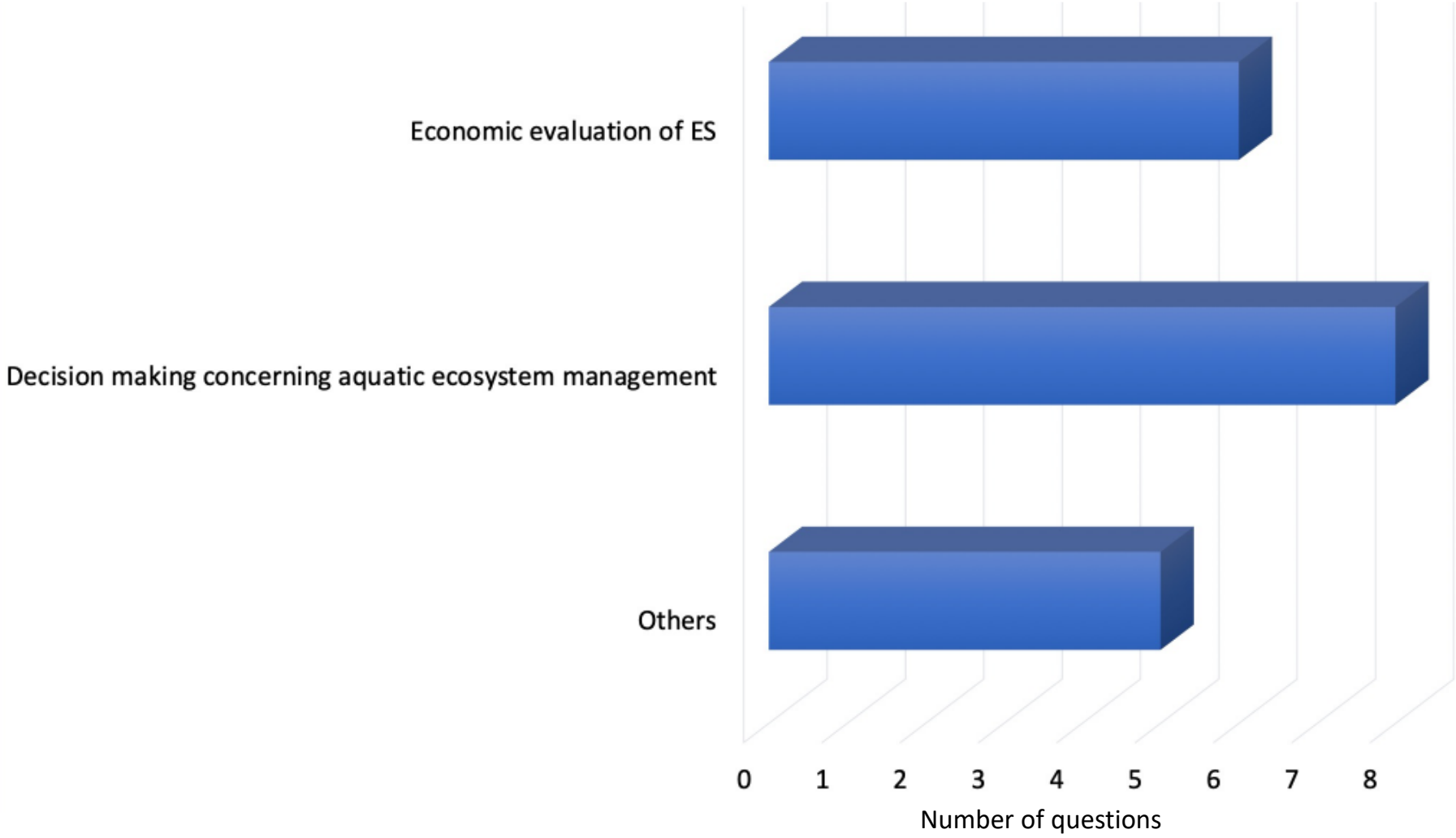
Compilation of Data and Modelling Needs

24 questions raised – practice domain



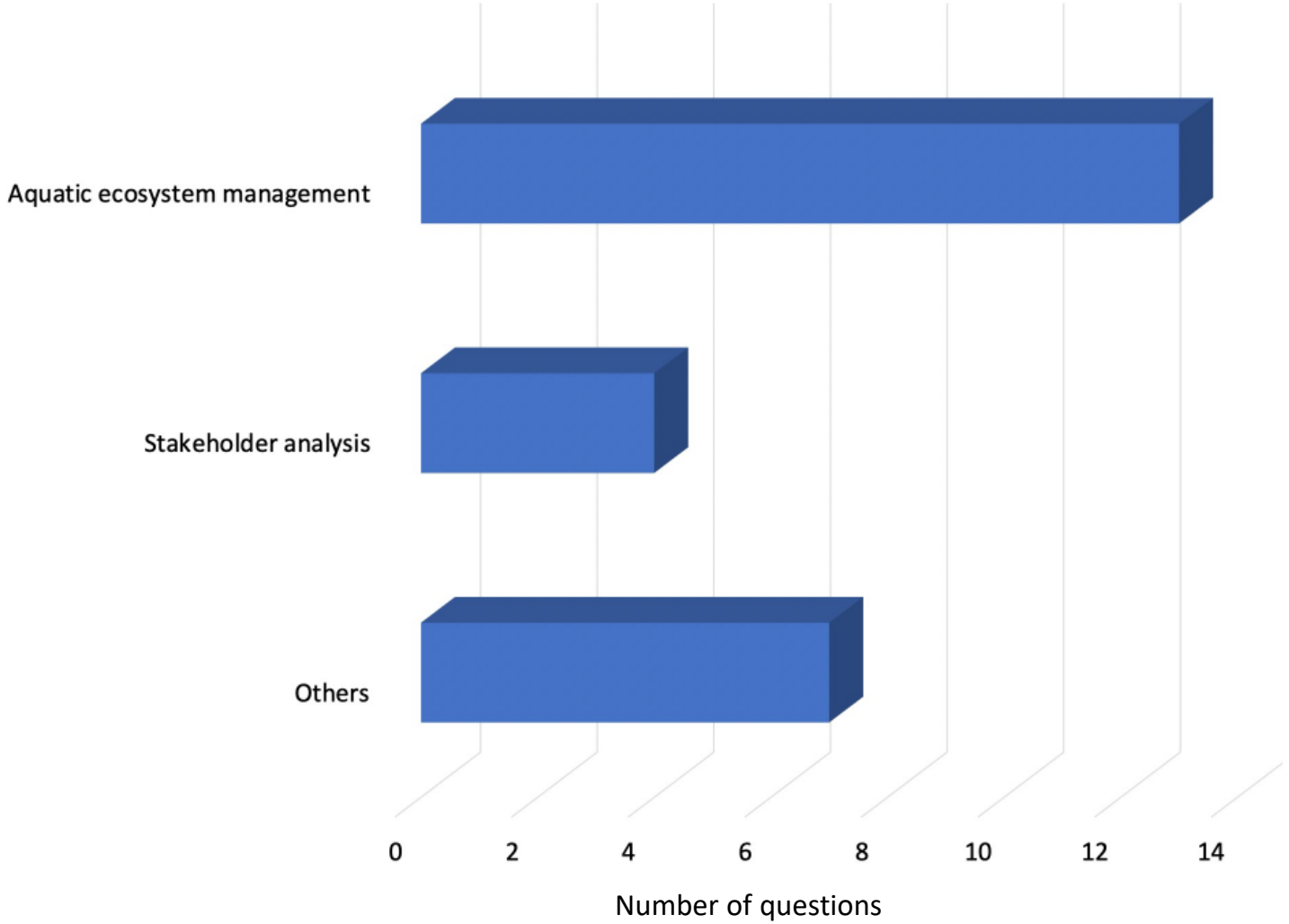
Compilation of Data and Modelling Needs

19 questions raised – policy domain



Compilation of Data and Modelling Needs

24 questions raised –policy and practice domain



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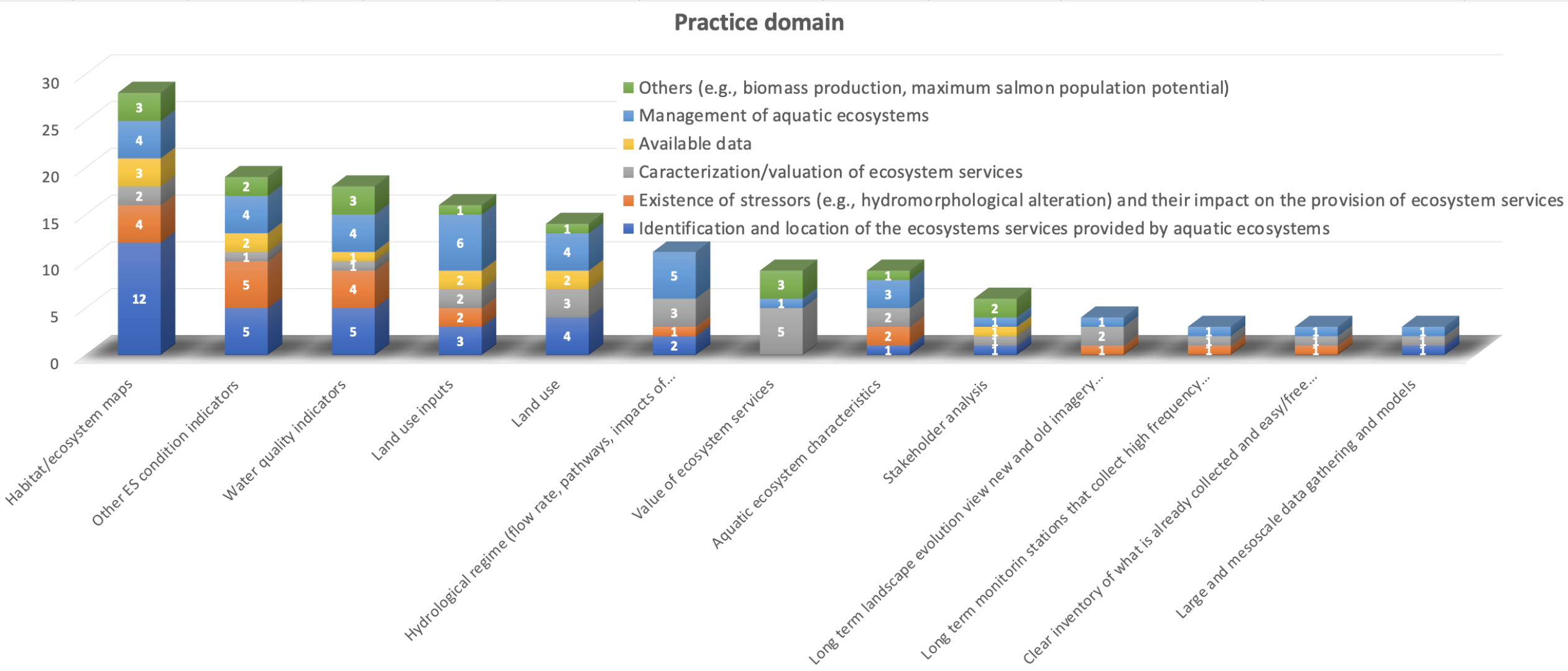

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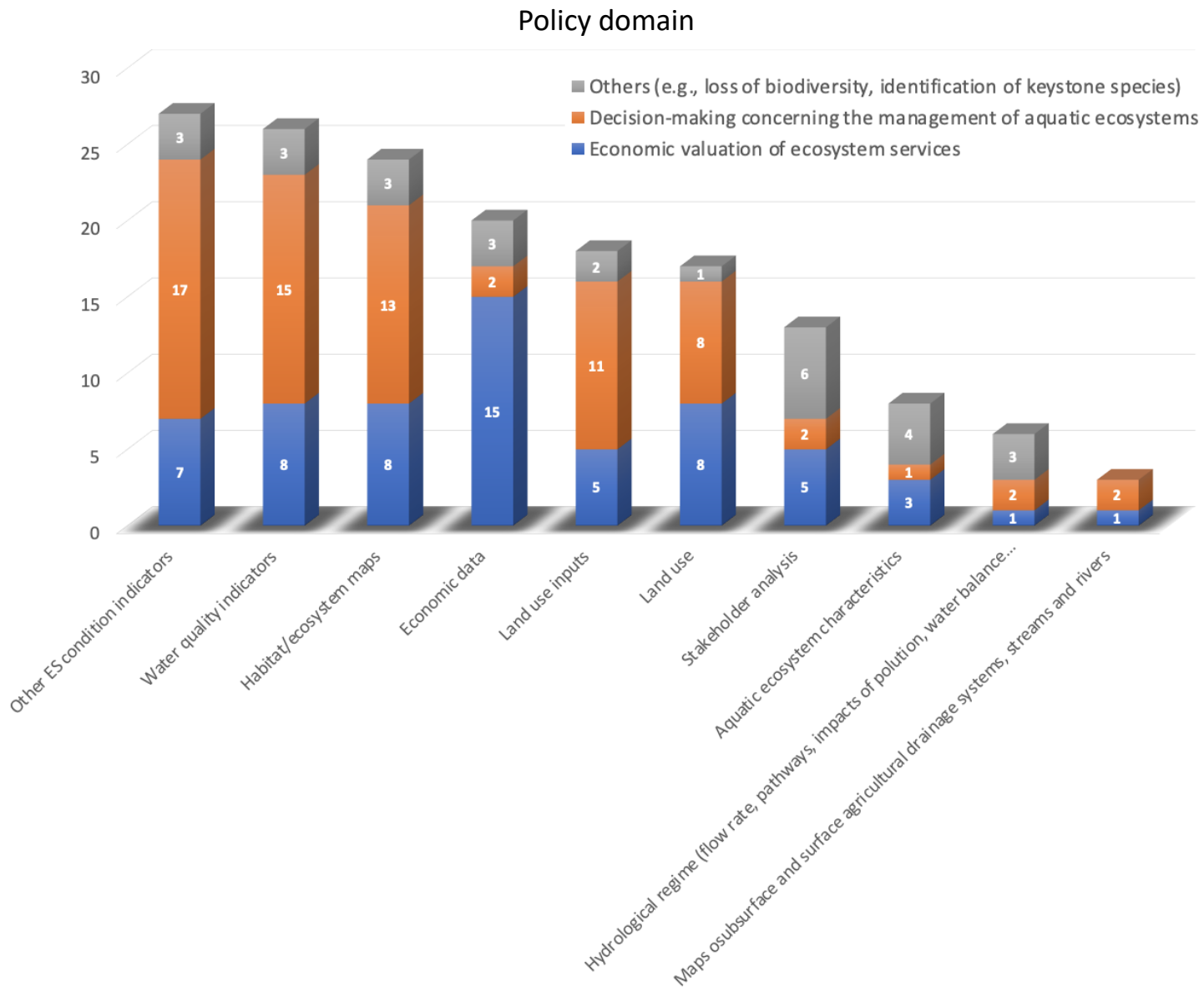
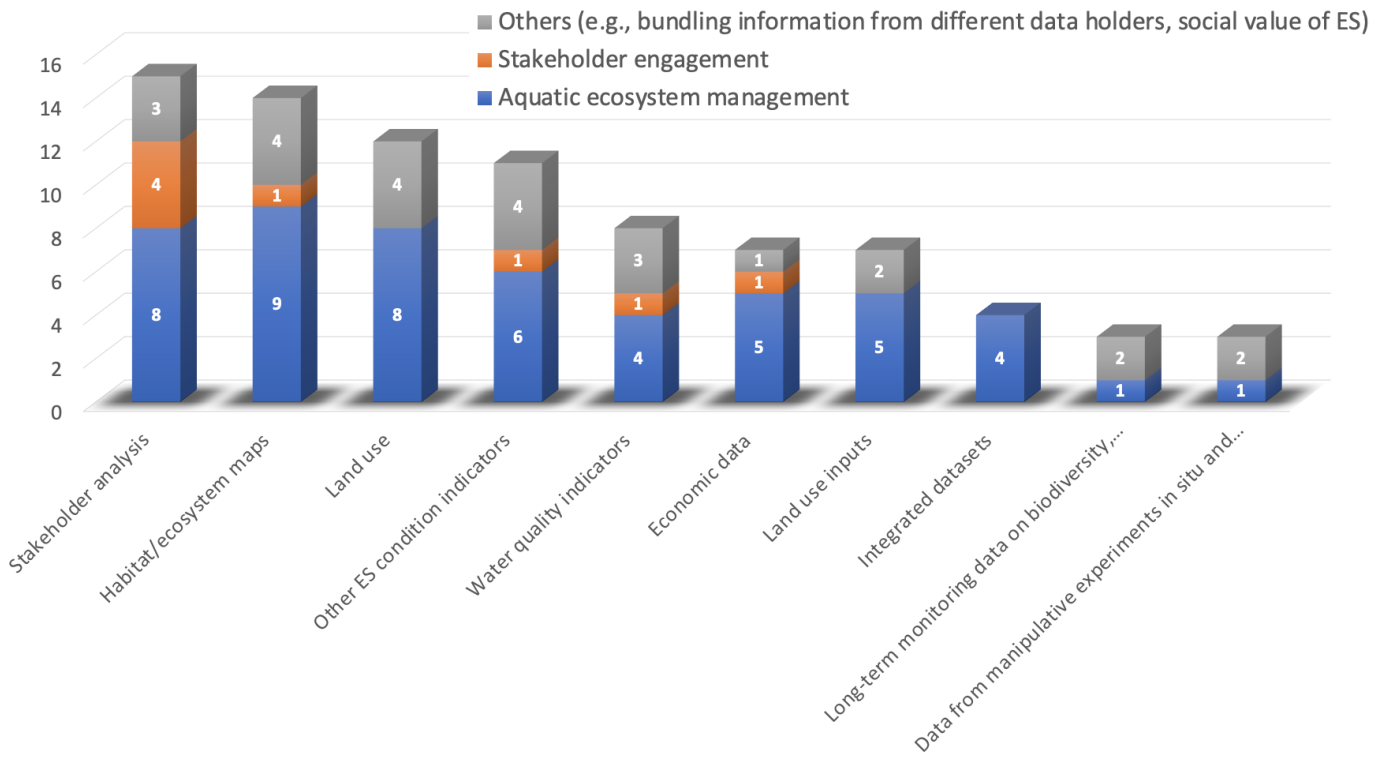


Compilation of Data and Modelling Needs

Policy and practice domain



Summary

Spatial Data

- Habitat/Ecosystem map
- Land Use
- Other Ecosystem Service Condition Indicators

Monitoring Data

- Water Quality Indicators
- Hydrological Regime
- Aquatic Ecosystem Characteristics

Socioeconomic Data

- Stakeholder Analysis
- Economic Data

Compilation of Data and Modelling Needs

Ecosystem Services	Category	Example	Model(s)	Modeling approach	Typical Spatial scales	Typical Temporal scales	Actively Maintained by	User-base / support group	Key reference(s)/Report(s)/Links	Observations
Surface water	Provisioning (abiotic)	Surface water for drinking and non-drinking purposes	SWAT	Physically-based model	Small watershed to river basin-scale	Daily and monthly	United States Department of Agriculture (USDA)	SWAT User Group ArcSWAT Group SWAT-CUP Group QSWAT Group SWAT-MODFLOW Group	Abbaspour et al. (2007) Arnold et al. (2012)	Free
			MIKE SHE	Physically-based model	Single soil profile to river basin-scale	Sub-hourly and hourly	Danish Hydraulic Institute (DHI)	Mike User Forum	Graham and Butts (2005)	Commercial
			HBV Hydrology Model	Semidistributed conceptual catchment model	Small watershed to river basin-scale	Daily and monthly	Swedish Meteorological and Hydrological Institute	None	Bergström (1992)	Free
			TOPMODEL	Topographic index based model	Landscape to watershed scale	Hourly, daily and monthly	Keith Beven (Lancaster Univesrity)	None	Beven (1997)	Free
Ground (and subrsuface) water	Provisioning (abiotic)	Groundwater for drinking and non-drinking purposes	MODFLOW	Physically-based model	Local-scale to regional-scale groundwater models	user choicer	United States Geological Survey (USGS)	MODFLOW Users Group	Langevin et al. (2020), see also Harbaugh (2005)	Free
			FEFLOW	Physically-based model	Local-scale to regional-scale groundwater models	Hourly	Danish Hydraulic Institute (DHI)	FEFLOW Users Group	Diersch (2014)	Commercial
Freshwater surface water used as an energy source.	Provisioning (abiotic)	Hydroelectric power	HEC-Ras	Physically-based hydraulic river model	Reach scale (100 m – 100 km)	Minutes - hours	USACE	USACE	USACE (2016)	Free
			MIKE 11	Physically-based hydraulic river model model	Reach scale (100 m – 100 km)	Minutes - hours	Danish Hydraulic Institute (DHI)	Mike User Forum	DHI (2017)	Commercial
			HEC-ResSim	Conceptual model	Small watershed to river basin-scale	Daily	USACE	USACE	USACE (2013)	Free
			MIKE HYDRO BASIN	Conceptual model	Small watershed to river basin-scale	Daily	Danish Hydraulic Institute (DHI)	Mike User Forum	DHI (2014)	Commercial
			MaxHydro	Conceptual model	Reservoir	Subhourly to monthly	Hydropower Optimization Software			Commercial
			Optipower	Conceptual model	Reservoir	Daily	Power Vision Engineering			Commercial
Ground water (and subsurface) used as an energy source.	Provisioning (abiotic)	Geothermal power	MODFLOW	Physically-based model	Local-scale to regional-scale groundwater models	user choice	United States Geological Survey (USGS)	MODFLOW Users Group	Langevin et al. (2020), see also Harbaugh (2005) Various GUIs available from USGS and 3rd parties	Free
			FEFLOW	Physically-based model	Local-scale to regional-scale	Hourly	Danish Hydraulic Institute (DHI)	FEFLOW Users Group	Diersch (2014)	Commercial

Compilation of Data and Modelling Needs

- A total of **36 modelling tools** and approaches have been identified.
- Provisioning ES are characterized primarily with **conceptual and physically based models**, although other approaches based on stochastic/mathematical or life cycle analysis are also used.
- To characterize regulating ES, beyond the above, **biogeochemically based modelling** is also employed.
- Cultural ES are characterised from **spatial pattern analysis and questionnaire surveys** designed to elicit perceptions.

Host for Session @ 3rd ESP Europe Conference

S5 – Progress and challenges in the operationalization of the ecosystem services approach into policy & practice for aquatic resources management

9:30 – 10:30 Thursday, 10 June

Hosts: M. Kelly-Quinn, J. M. Bodoque del Pozo, M. Christie, J. Backx, M. de Lange

	Time	Name	Title of the Presentation
S5-1	**9:30**	M. Vainu	Progress and challenges of the assessment of river ecosystem services in Estonia: the case of Viru subcatchment
S5-2	**9:45**	R. Aps	Indicators of marine ecosystem services inform the Baltic Sea ecosystem-based fisheries management and the maritime spatial planning
S5-3	**10:00**	D. Norton	Natural capital accounting: integrating ecosystem services into catchment management
S5-4	**10:15**	S. Wanke	Addressing Ecosystem Services within Integrated Multi-Trophic Aquaculture (IMTA) Systems and Conventional Aquaculture Systems through Bayesian Networks

S5 – Progress and challenges in the operationalization of the ecosystem services approach into policy & practice for aquatic resources management

11:00 – 12:30 Thursday, 10 June

Hosts: M. Kelly-Quinn, J. M. Bodoque del Pozo, M. Christie, J. Backx, M. de Lange

	Time	Name	Title of the Presentation
S5-1	**11:00**	M. Penk	An ecosystem service-based decision-support tool for river basin management
S5-2	**11:15**	M. Christie	An evaluation of the ecosystem service benefits associated with achieving the EU WFD target of all rivers attaining 'satisfactory' ecological condition
S5-3	**11:30**	L. Ritzenhofen	Ecosystem Service Assessment within the Water Framework Directive - Mussel Cultivation as Controversial Measure
S5-4	**11:45**	C. Caro	Ecosystem services as a resilience descriptor in habitat risk assessment using the InVEST model
S5-5	**12:00**	E. Albrecht	Trade-offs between hydropower and biodiversity - A case study on water governance in Kemi river basin
S5-6	**12:15**	J. Bodoque	Data and modelling needs to support integration of the ecosystem services approach into water resources management

Briefing Notes on Decision Support System for potential users - contents

- What are Decision Support Systems (DSS)?
- Why use Decision Support Systems?
- What types of decisions are supported and how?
- Some examples of Decision Support Systems
- Sustainability, confidence and trust?
- Future directions and possibilities?

What are Decision Support Systems (DSS)?

A DSS is a collection of

(i) models,
(ii) data,
(iii) analysis methods and
(iv) users

that can assist in making informed decisions. In the case of AquaTap-ES, these decisions relate to the management of fresh and marine waters with a specific focus on the ecosystems services they provide.

The distinction between “decision support” and “decision making” is important as normally DSS do not make decisions, but rather provide information and analysis that may assist a “decision maker”.

Opportunities for future collaboration

COST Actions

COST (CO-operation in Science and Technology) is the longest-running European framework supporting **cooperation** among **researchers**, by enabling them to **jointly** develop their **own ideas** and **new initiatives** across all fields un science and technology.

Panel Discussion

Where do we go from here? Putting Theory into Practice…

Moderated by Lisa Sheils

AQUATAP-ES facilitator

Water JPI

Thematic Annual Programming Action

AQUATAP-ES

Panel Members

"Aquatic ecosystem services on the science-policy-practice connection: challenges and opportunities"

Ronald de Bruin
Director of the COST Association

Panagiotis Balabanis
Head of Sector water, DG RTD

Mary Kelly Quinn
AQUATAP-ES Scientific Coordinator

Mostafa Panahi
Environmental and Energy Economics Expert IPBES

Nihat Zal
Water Resources, Water Scarcity and Droughts Expert, EEA

Questions to the panel

- What are the key challenges/barrier to integrating the Ecosystem Services Approach into everyday management of our waters and how can they be addressed?
- How do we sustain the AQUATAP-ES network?
- What is the Future for the Thematic Annual Programming action?

Questions?

Use the Chat Section

MAIN CONCLUSIONS AND POTENTIAL NEXT STEPS

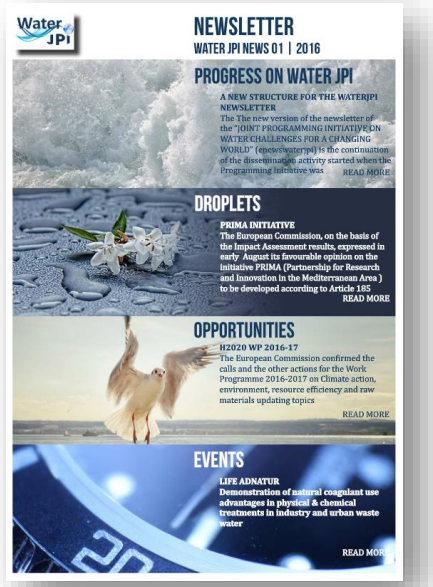
Véronique Briquet-Laugier
Water JPI Coordinator

Water JPI
Thematic Annual Programming Action
AQUATAP-ES

For more information…

www.waterjpi.eu

- Website : www.waterjpi.eu
- A Newsletter – Subscribe on line!
- @WaterJPI
- LinkedIn - Water JPI researcher forum group https://www.linkedin.com/groups/8455262
  - Joint Calls announcements & Networking
  - Announcement of events and activities
- A unique contact point
  - waterjpisecretariat@agencerecherche.fr
  - Phone + 33 1 78 09 81 20



Thanks to all!

See you…

Contact

waterjpisecretariat@agencerecherche.fr