



The LifeWatch ERIC Biodiversity
& Ecosystem eScience Conference

PLOVDIV, BULGARIA

7-10 JULY 2026

"LTER - Bg as a part of eLTER RI - how to collaborate with other research infrastructures"

Dr Svetla Bratanova-Doncheva

Institute of Biodiversity and Ecosystem Research-BAS, Bulgaria,
sbrat@abv.bg



PLOVDIV 7-10.07.2026

*Towards an **integrated** ecosystem research infrastructure landscape (**observation + experimentation + modelling + data**)*

European environmental Research Infrastructures (RIs) are instrumental in supporting high-quality, long-term ecosystem research, biodiversity monitoring, and climate science. Leading infrastructures such as eLTER RI, ICP Forest, ICOS ERIC, AnaEE ERIC, and LifeWatch ERIC provide critical capabilities for observation, experimentation, and data management.

Despite their achievements, challenges remain regarding data interoperability, operational coordination, and strategic integration. Strengthened collaboration across RIs is essential to **maximize the scientific and societal impact of European environmental research and to support the implementation of EU policies**, including the Green Deal and the EU Biodiversity Strategy.



Global Networking of Ecosystem research sites

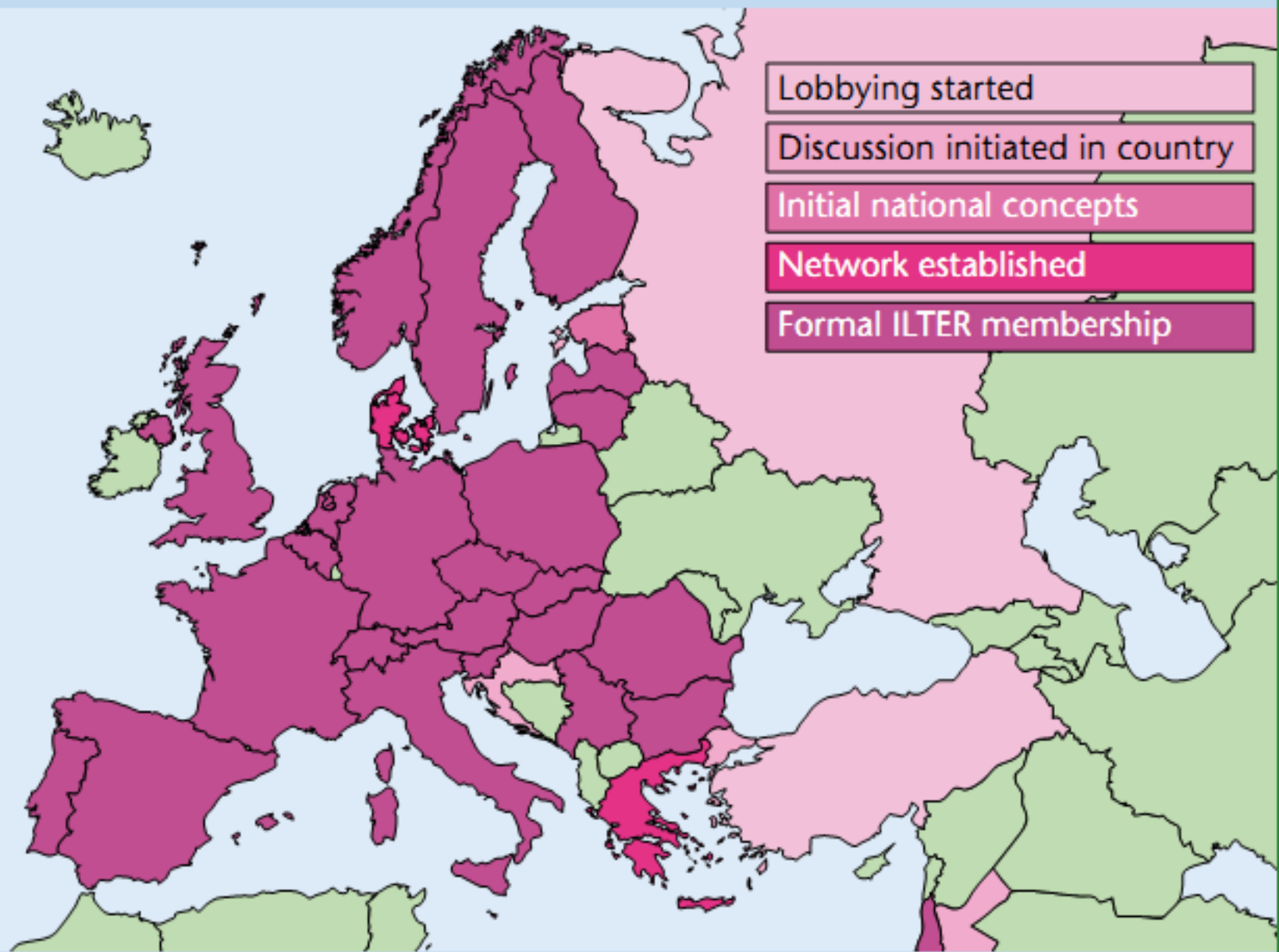


LTER-Europe, a network of...

- Researchers ("Community")
- LTER Sites
- LTSER platforms
- Data and metadata
- National networks
- Institutions
- Disciplines
- In-situ research

And a ...

- Part of the network of networks
- Research strategy process

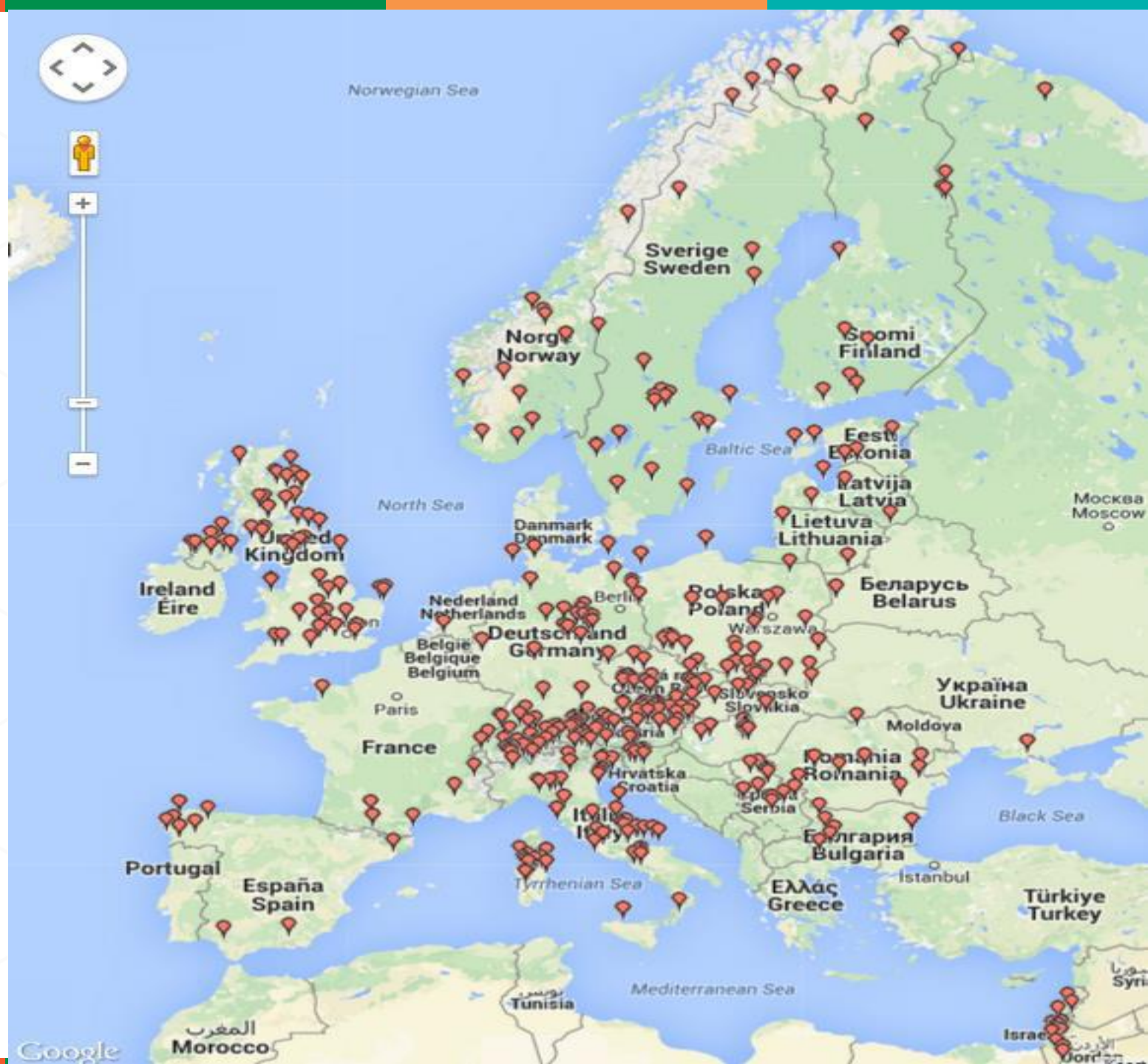


eLTER-sites

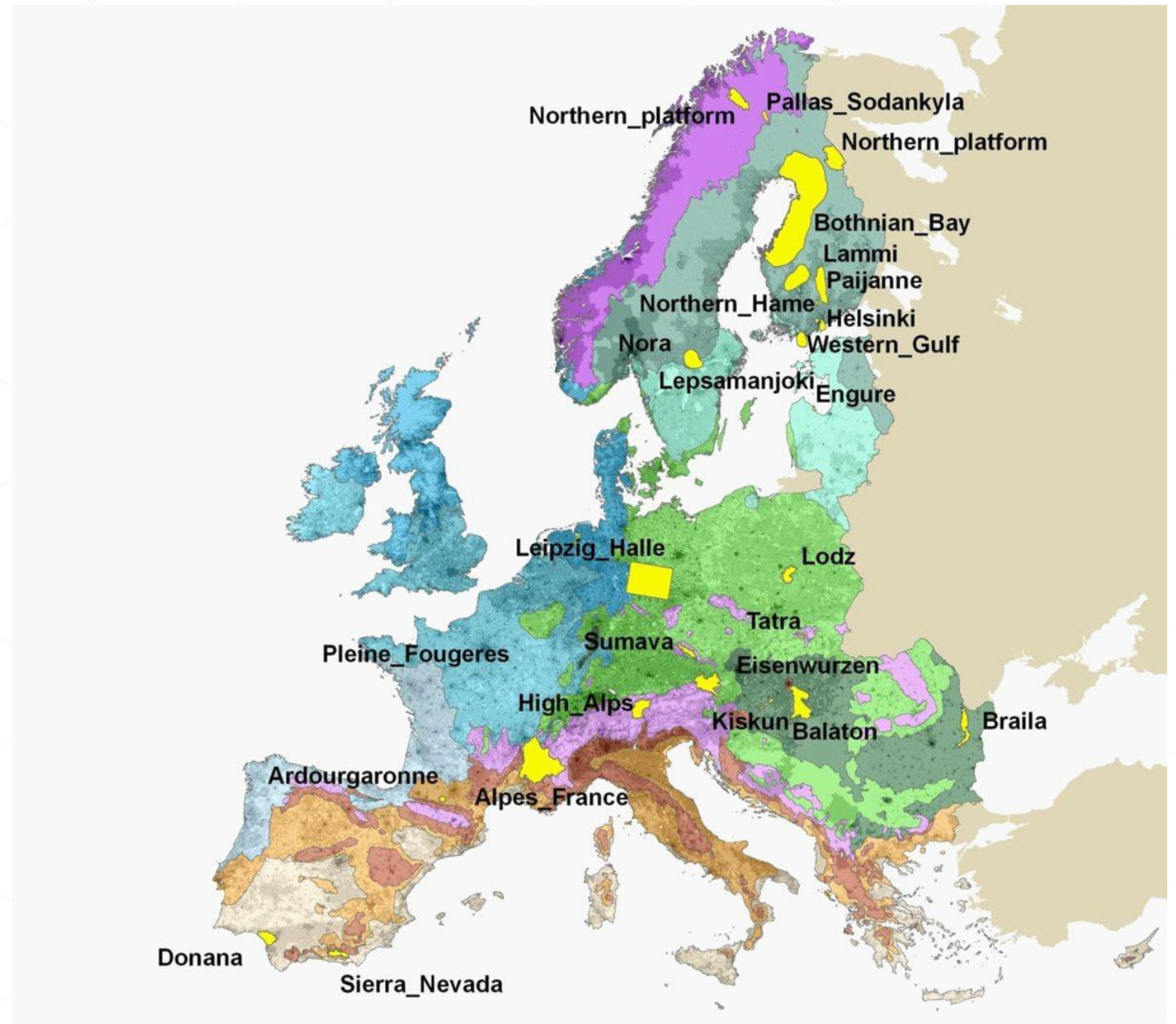
Area (about 1-10 km²)

One ecosystem type

**(processes – biogeochemistry,
selected taxonomic groups,
production, disturbances, etc.)
+/- 570 sites**



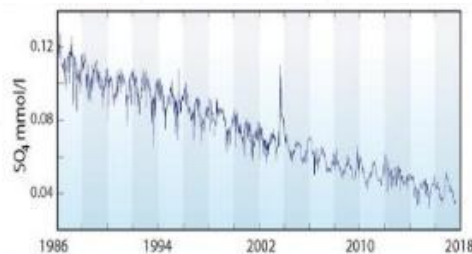
75 LTSER platforms in eLTER-Europe



Mission of eLTER

- **Foster a holistic, transdisciplinary ecosystem science¹**
- served by a unique, pan-European, distributed Research Infrastructure²
 - to provide relevant knowledge³ to address environmental challenges
- ¹ investigating the combined effect of climate & land use changes, pollution on biodiversity, ecosystem functioning
 - ² network of sites + central facilities
- ³ predictive understanding, continent-wide, novel data services/products, co-designed management tools etc.

Long-term



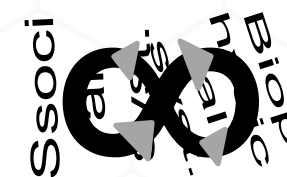
Placed-based



Process-oriented

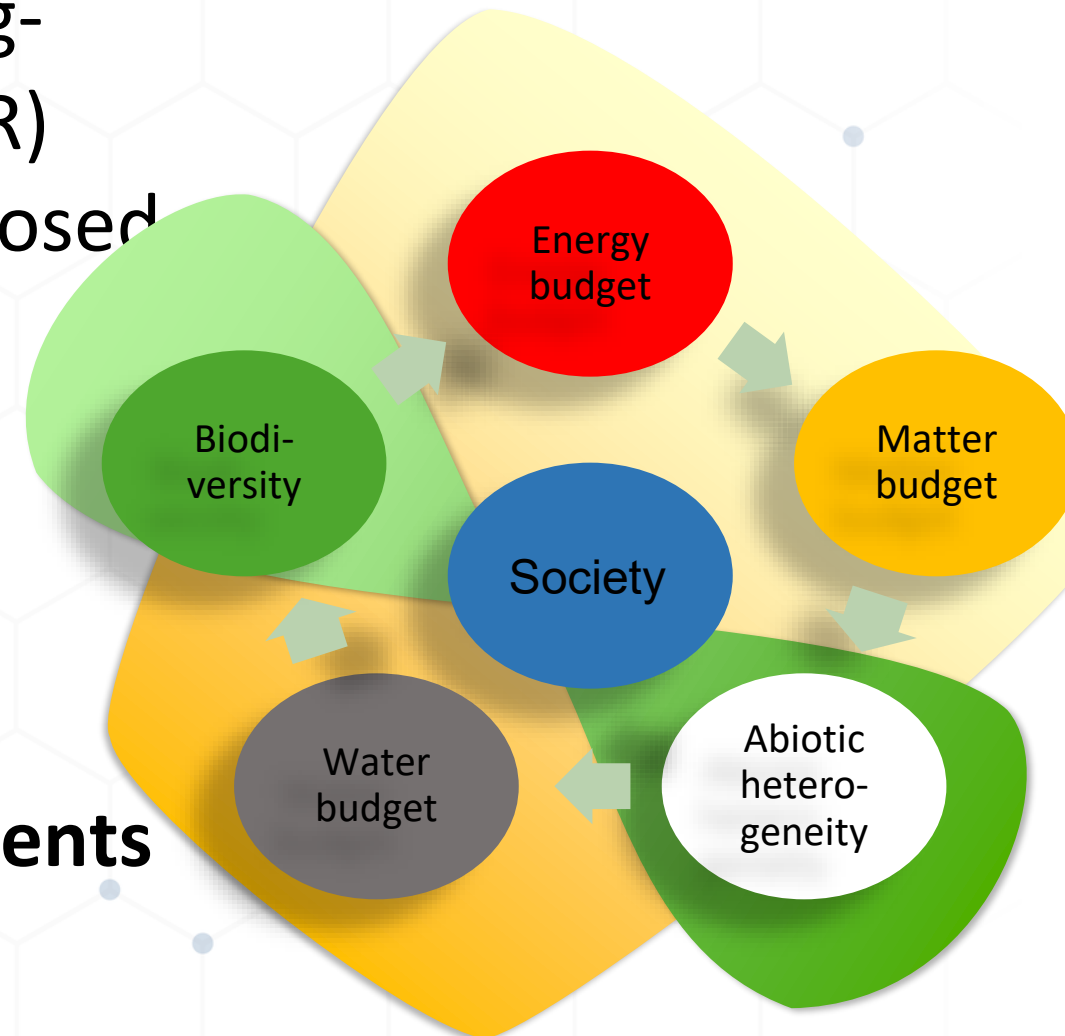


Integrative

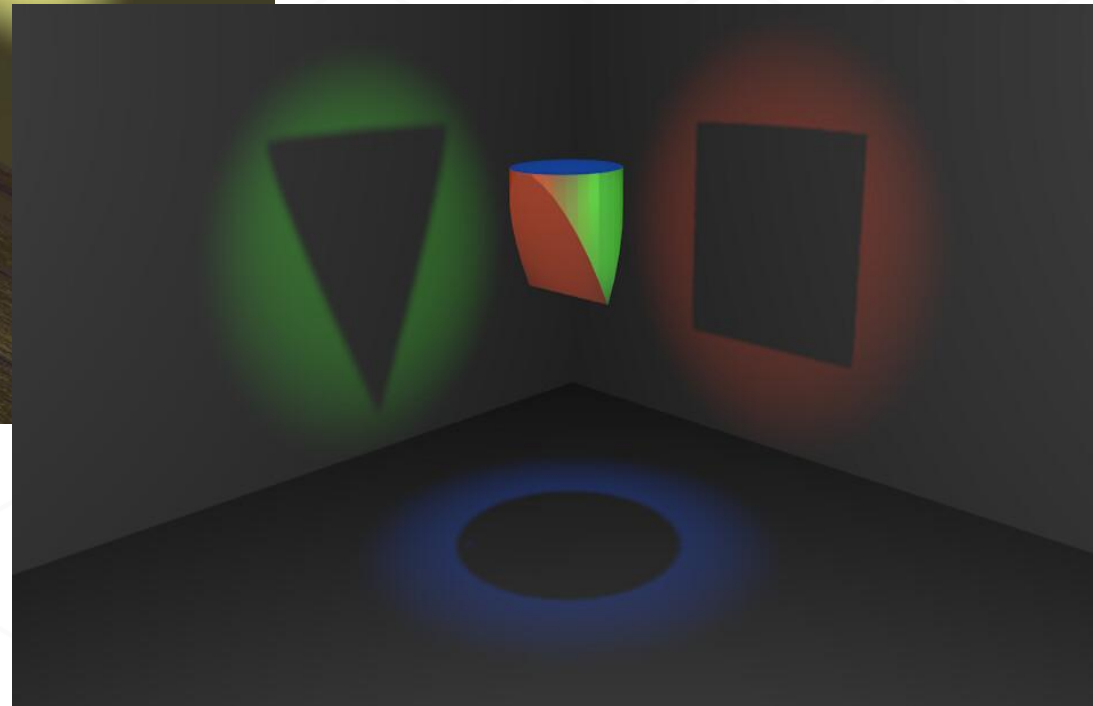
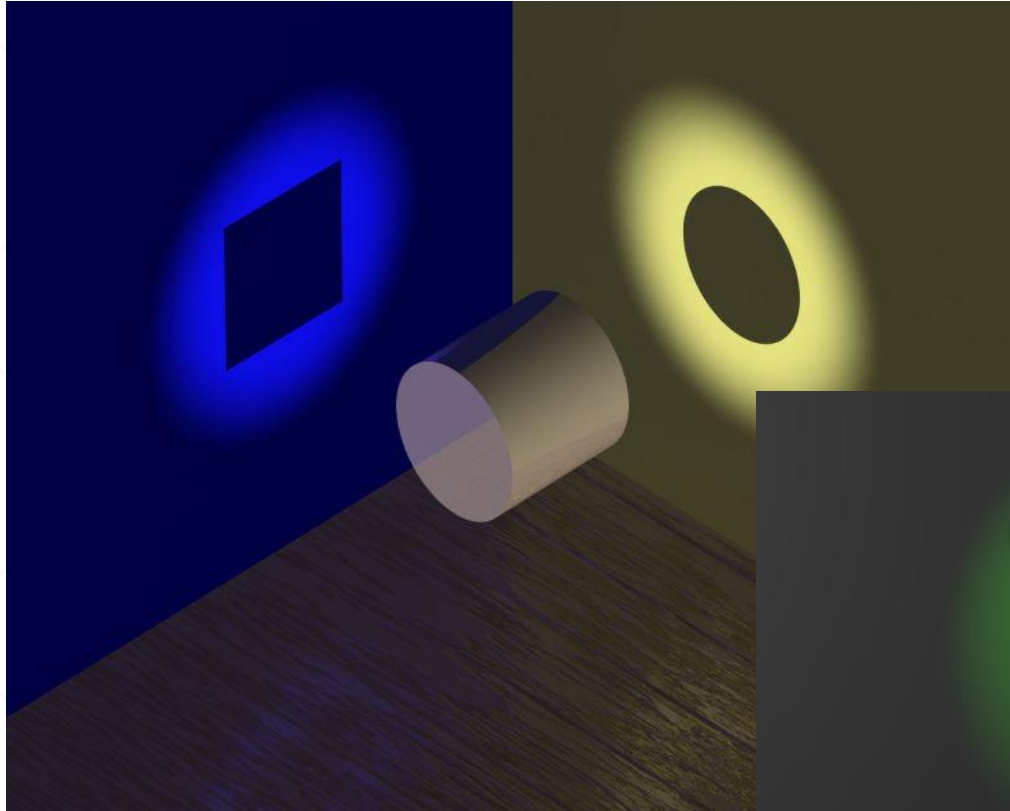


The whole system approach

- A **key concept** in the International Long-Term Ecological Research Network (ILTER)
- The ecosystem is considered to be composed of **structural** components (biodiversity, abiotic heterogeneity) and **functional** components (energy, water and matter budgets) and the society
- An indicator system based on the whole system approach must cover **all components**

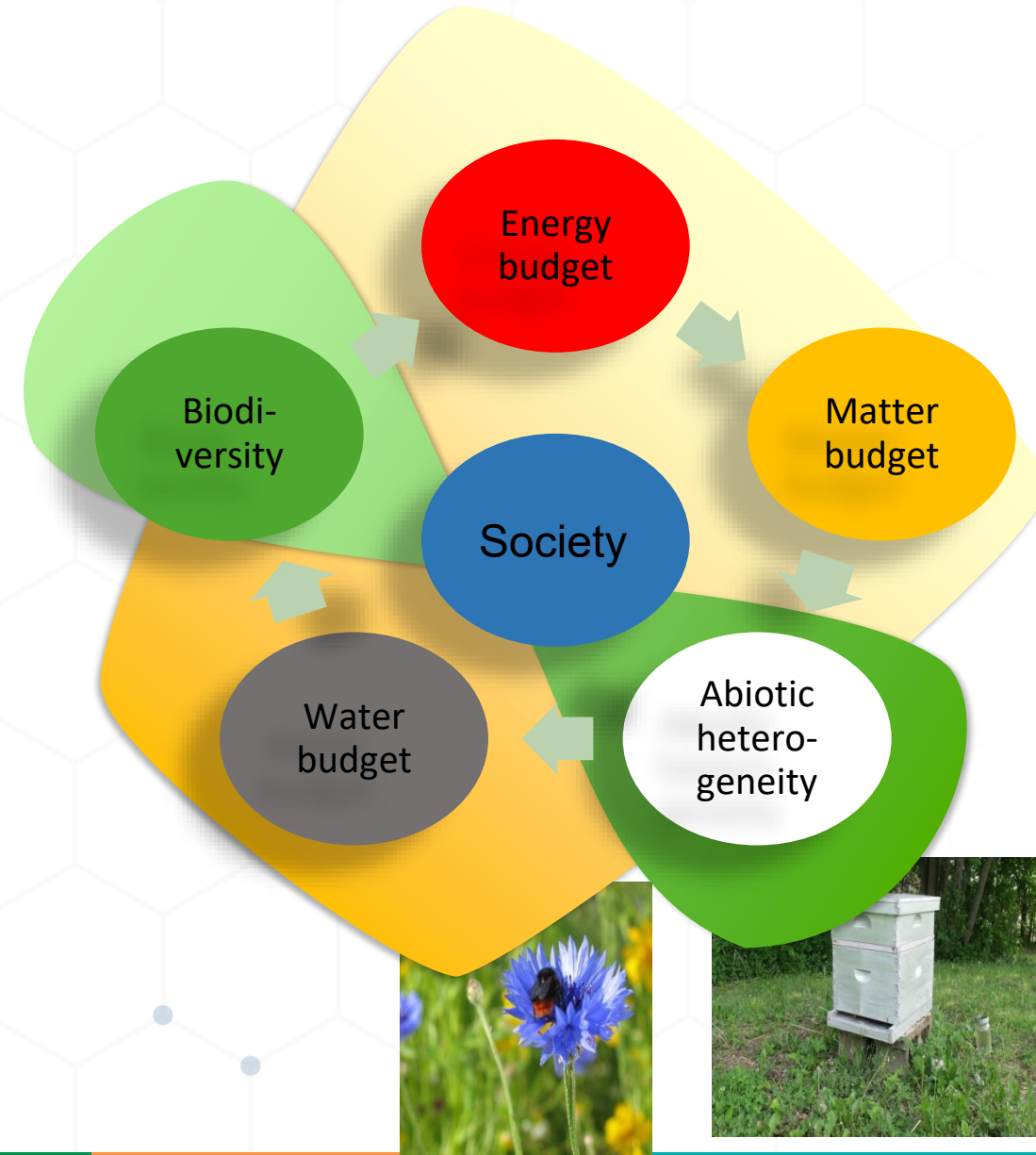


Importance of whole system approach – 3 D.vision

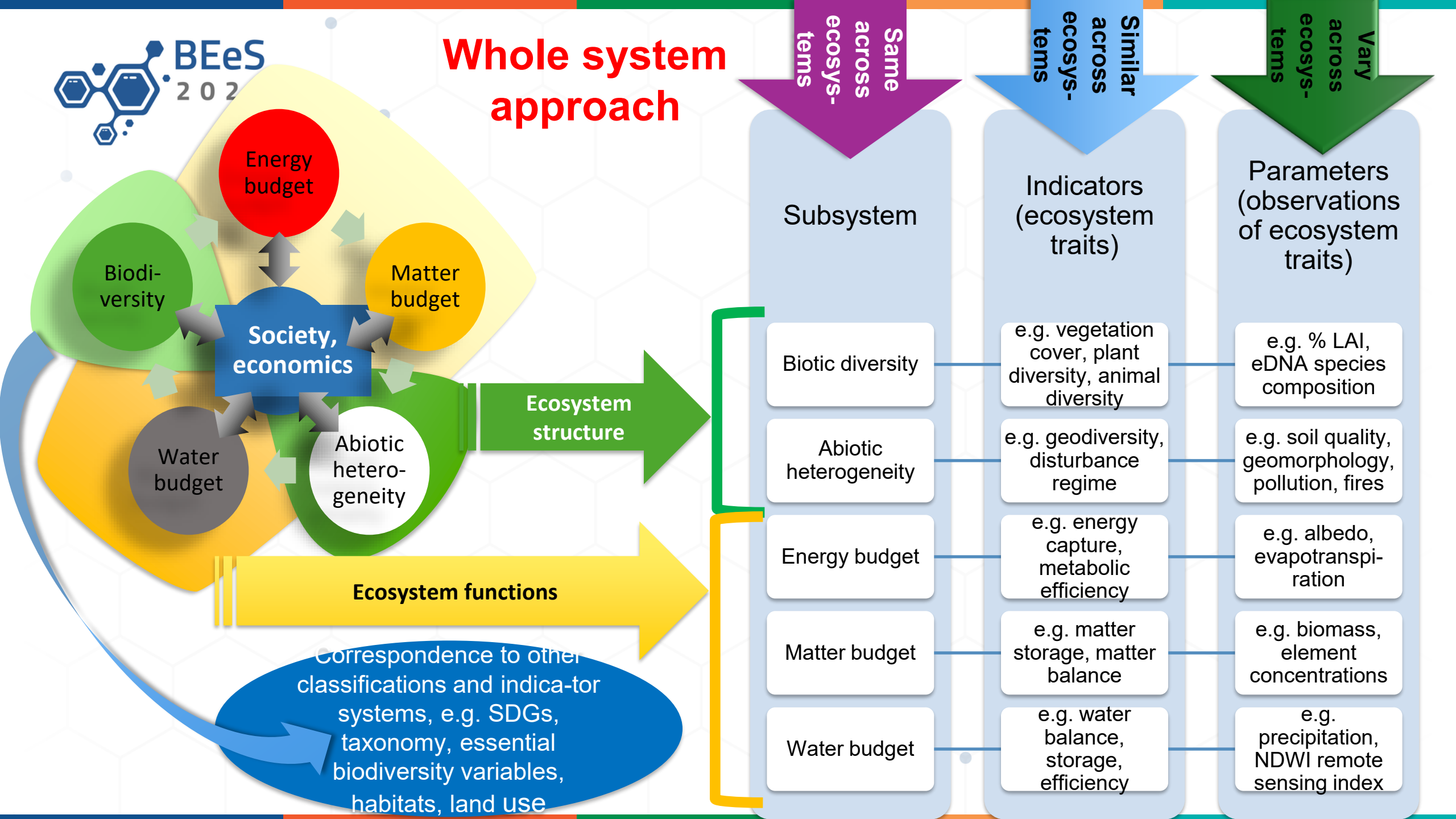


Cognitive blind spots: why we don't see the whole

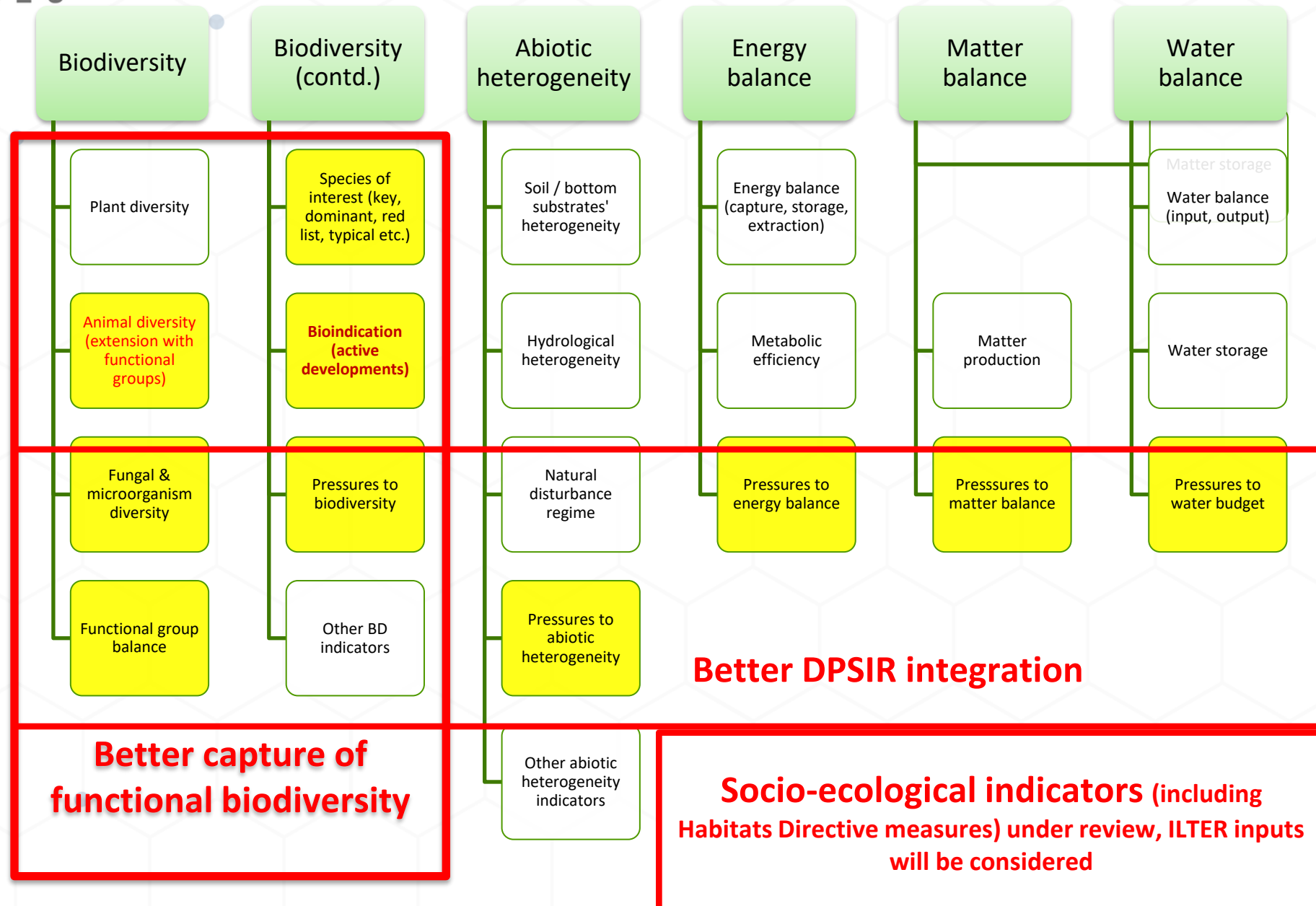
- **Parts are more visible than the system's complexity and interactions.**
 - Harming animals is criminalized in many places but burning forest is only recently becoming a political issue
 - A lot of activist energy is misguided to rescuing animals rather than balancing the ecosystem
- **Structure is more visible than functions:**
 - Habitats have historically been defined by vegetation
 - Provisioning ecosystem services are more prominent and visible than the regulating and cultural services
- **We value only what we work with**
 - Economically important ecosystem functions are not appreciated in the wild
 - Hence the "production boundary" in natural capital accounting
- **Single metric is a double edged solution:** see how carbon becomes synonymous for climate change



Whole system approach



Preliminary structure of the revised indicator set



Whole system from continental scale ...

Comparison can be:

Direct where same measures are available (e.g. nitrogen deposition)

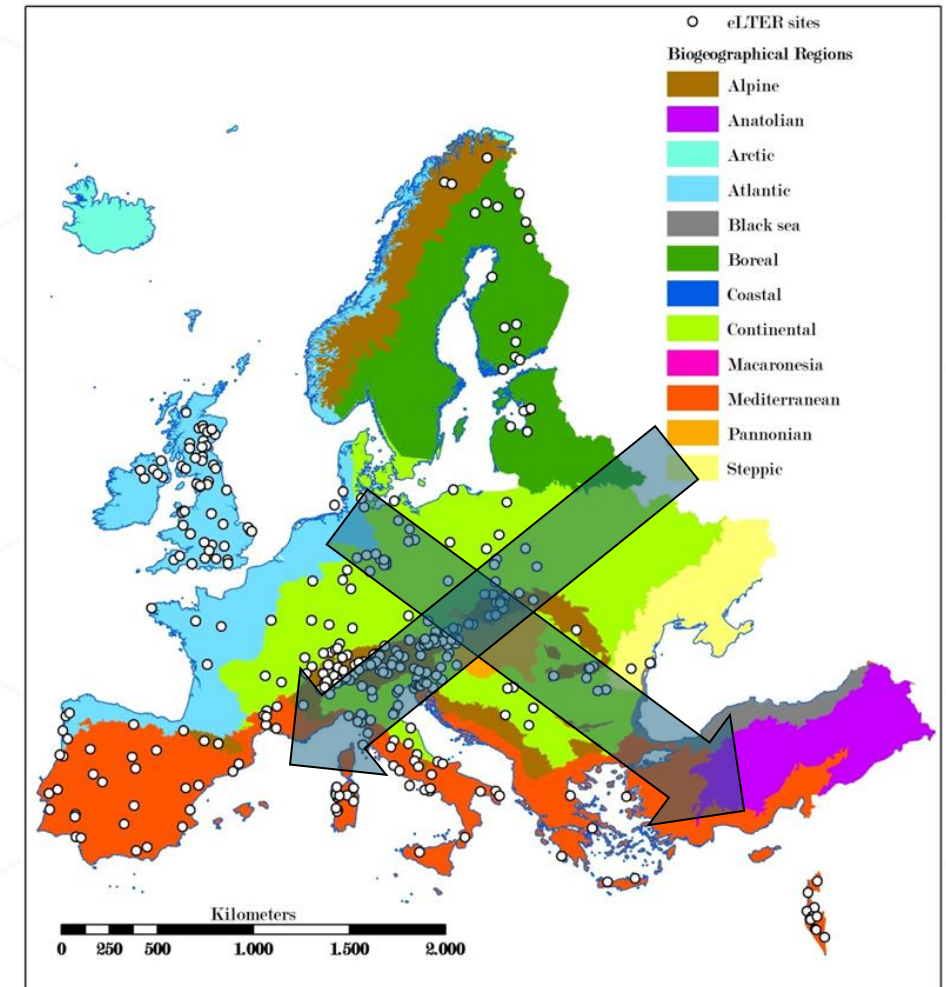
Relative where measures have similar context (e.g. % change)

Synthesised where metrics are derived from integrated analysis (e.g. position on PCA axes)

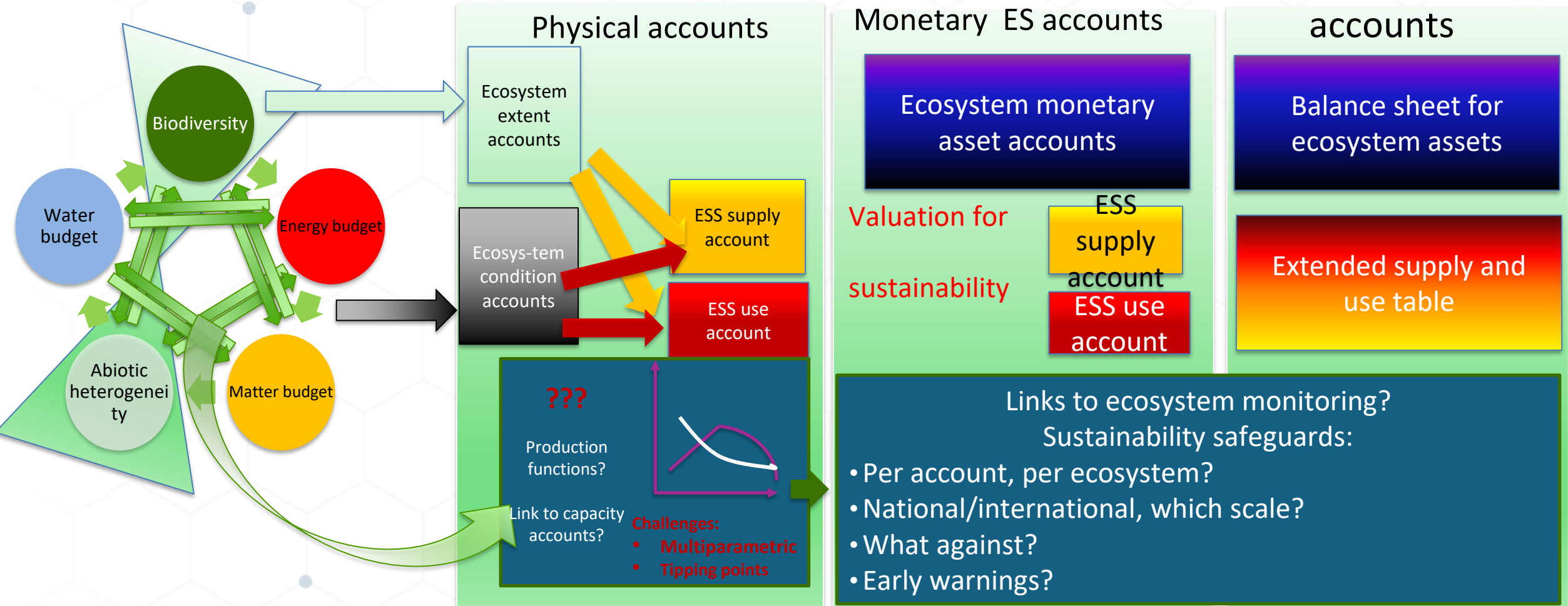
Meta analysis where synthesized metrics are normalized to detect an common signal (e.g. phenological effects)

New methods using machine learning techniques (e.g. BHPMF, to impute and extrapolate along transects and across scales)

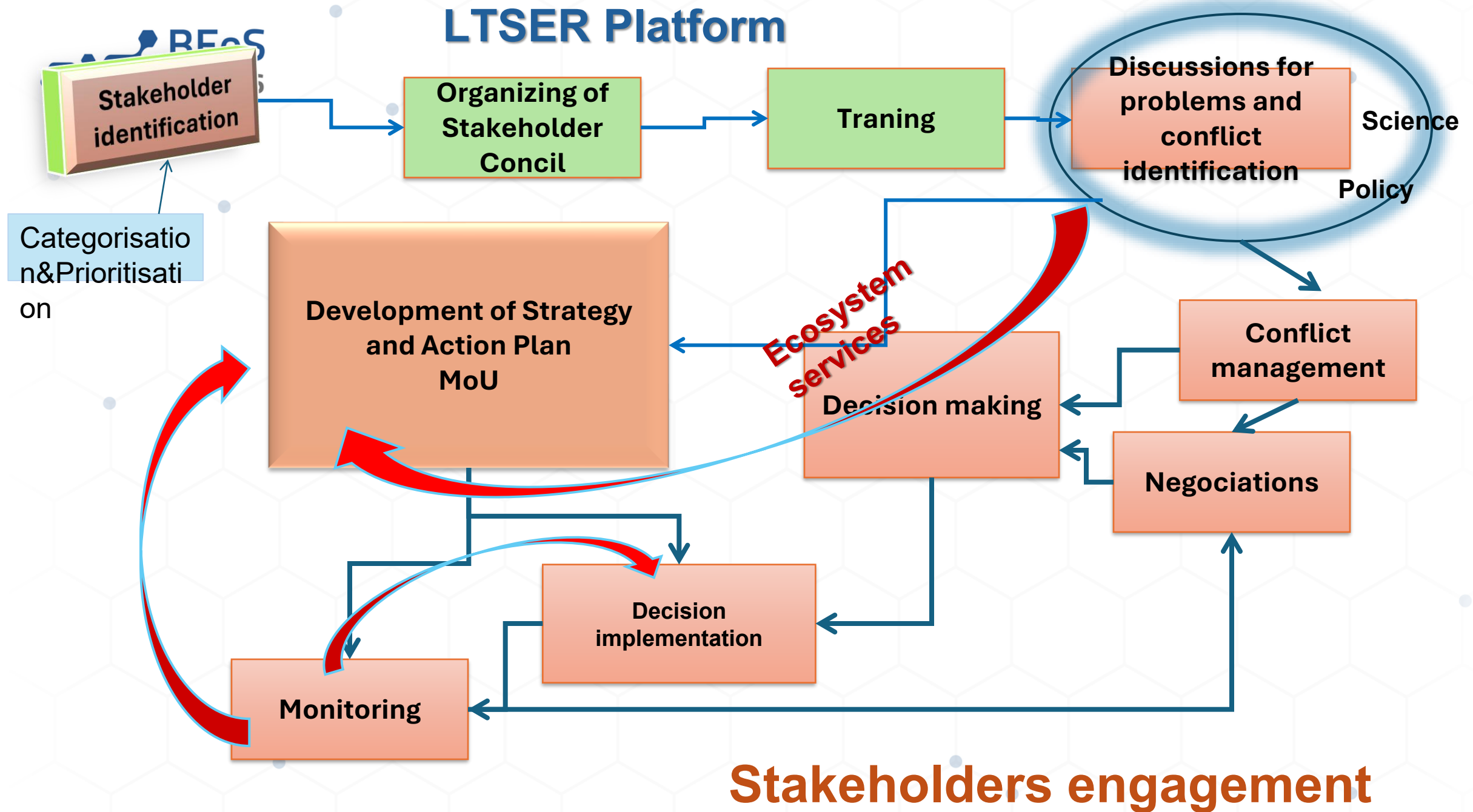
Continental scale, long term field data series **could also be used to compare with EU level datasets, field verify earth observation data products and monitor ecosystems**



... and from ecosystem assessment to natural capital accounting



**Stakeholder
identification**





LTER Bg



- The Bulgarian Network for Long-Term Ecosystem Research LTER Bg is part of the Global and European Network ILTER and eLTER RI.
- LTER Bg is part of National Roadmap for RI (2020-2027)
- We are part of a coordinated effort to create a European scientific infrastructure for long-term ecosystem research.





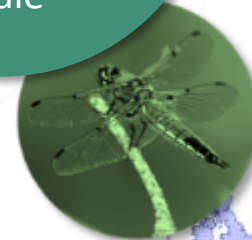
МИНИСТЕРСТВО
НА ОБРАЗОВАНИЕТО
И НАУКАТА

ЗЕЕ
202



Filling a critical
gap
for top-class
science at the
continental
scale

Our scientific sites



Our sites



Belasitsa

Black sea

Mesta

Petrohan-Ponor

Sozopol

Srebarna

Parangalitza

Bulgarian LTER network

SITES: the result of a long-term evaluation effort !



A future LTSER: **Valley of Roses**

- Funded by a standalone seed funding project between IBER and the Thracian University and benefiting from the National Roadmap funding, this will be the first agroecosystem LTSER in Bulgaria
- Third year of monitoring in the same plots, active stakeholder engagement
- Essential oils are high value added raw material for perfumery, mainly gauged towards export. Local tourism co-benefits from the attractiveness of the crops which became a national emblem
- A number of SOs are being covered, legacy data collected.
- Site outline is drafted with the aim is to register the site with LTER-BG
- **Partner - Thracian University – Stara Zagora**



LTER-BG – object of NRoadMapRI (2020-2027)

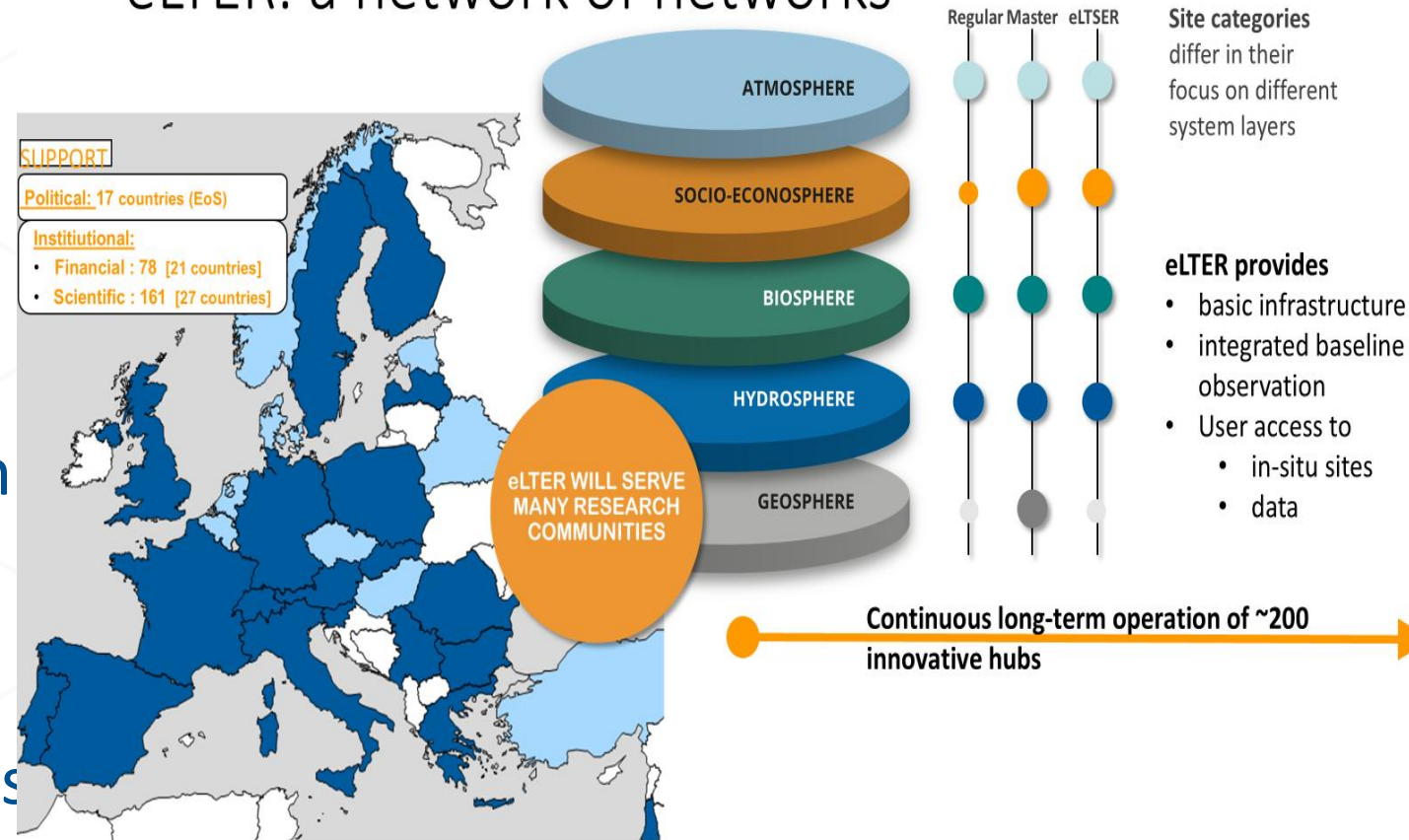
Synergy



Standard observations and network policies

- Standard observations: a number of comments in most spheres; significant contributions made to defining SOHYD SOs, and currently active in removing ambiguities and bringing them back to the SO list
- A active national dialogue on implementing SOs; most activities in the project
- Policy development: current focus on data policy. Outline is drafted, ongoing work together with the sites

eLTER: a network of networks



Ecosystem monitoring and research

- Reviewed the **monitoring protocols** of the sites. Harmonization of protocols by habitat type started on national level
- Observations on changing environment – development of **hypothesis, scientific experiments**
- Ongoing work on conceptualization of links between **SOs** and ecological and social factors in the sites
- A **mobile lab** was started by procuring the equipment and employing a specialist to
- Provide **remote sensing** covering the Prime Standard observations on LAI and LIDAR
- Publications:** a number of standalone publications as well as participation in eLTER initiated publications



- Legacy data mobilization:
 - Consultations with sites, ongoing tidying, cleaning of data and quality control
 - Custom scripts and queries designed to process (relatively) uniform legacy data
- Procured equipment for data storage
- Data management

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA	
1	Проект _____
2	ПРОТОКОЛ № _____
3	с личными данными от гидробиологического исследования на реке _____
4	Район за бассейновое управление Западнo-беломорскoе _____
5	Область Благоевград _____
6	Поречие/Река Места 3 0 0
7	Пункт Места при Банята _____
8	Код на притока B G _____
9	Тип водно тело Код на водно тело B G _____
10	Дата на събиране: ден 2 мес 1 год 2 0 1 0
11	Брой на таксономи (попълва се 99 при отсъствие на изобитие в пробите) 3 4
12	Метод на събиране: Кан Кон Титлява абсолютно количестван ТТС 9 2
13	Установки видовогрупи Код на вида Брой
14	Hydra sp. 3 0 1 2 0 0 1 1 0
15	Nematoda 3 0 1 6 0 0 0 0 3 0
16	Nais barbata 3 0 9 9 0 5 4 2 1 0
17	Nais communis 3 0 9 9 0 5 7 1 1 0
18	Nais elinguis 3 0 9 9 0 5 6 1 0 0
19	Nais parvialis 3 0 9 9 0 5 9 3 0 0
20	Limnodrilus g. sp. juv. 3 0 9 9 0 4 3 6 0 0
21	Psammoryctides barbatus 3 0 9 9 0 3 8 4 0 0
22	Rhyacodrilus coarctatus 3 0 9 9 0 3 9 4 0 0
23	Tubificax tubifex 3 0 9 9 1 1 3 5 0 0
24	Enchytraeidae g. sp. juv. 3 0 9 9 0 0 0 2 0 0
25	Dina lineata 3 1 1 0 0 1 3 2 0 0
26	Erbopdella octoculata 3 1 1 0 0 2 0 1 0 0
27	Anoxyus fluviatilis 3 1 1 1 0 0 3 6 9 0
28	Asellus aquaticus 3 1 1 6 0 0 1 1 0 0
29	Baetis sp. 3 1 1 6 0 0 2 2 1 0
30	Ecdyonurus sp. 3 1 1 6 0 0 3 1 0 0
31	Rhithrogena sp. 3 1 1 6 0 0 3 1 0 0
32	Seratella ignita 3 1 1 6 0 0 3 1 0 0
33	Caenis sp. 3 1 1 6 0 0 3 1 1 0
34	Leuctra sp. 3 1 1 9 0 0 6 0 1 0
35	Nemoura sp. 3 1 1 9 0 0 7 2 2 0
36	Hydropsyche sp. 3 2 1 1 0 0 9 1 9 0
37	Trichoptera sp. 3 2 1 5 0 0 3 9 0 0
38	Coleoptera 3 2 2 6 0 0 0 1 0 0
39	Diptera 3 2 2 6 0 0 0 1 0 0
40	Ceratopogonidae g. sp. 3 2 2 6 0 0 2 0 5 0
41	Chironomidae g. sp. 3 2 2 9 0 0 0 0 1 0
42	Cricotopus sp. 3 2 2 9 0 0 4 2 2 0
43	Eukiefferiella sp. 3 2 2 9 0 0 6 3 4 0
44	Tanytarsus sp. 3 2 2 9 0 0 1 1 0 0
45	Limoniidae g. sp. 3 2 2 9 0 0 1 1 0 0
46	Tonnioella sp. 3 2 2 9 0 0 1 1 0 0
47	Simuliidae g. sp. 3 2 2 4 0 0 0 5 0 0
48	Общ брой на таксономи 34
49	Общ индекс PAB (PUB) 1.789
50	Общ индекс BR (BROT) 55.652
51	Видово разнообразие 8.312
52	Индекс на различие 3.052
53	Доминация (DOMIN) 0.173
54	Изразеност (EVNS) 0.600
55	Биотичен индекс (BI) 3-4
56	Биотичен индекс (BIBI) 8
57	Бележки:

A	B	C	D	E	F	G	H	I	J	K						
1	Институт по биоразнообразие и екосистемни изследвания, БАН															
2	София, 1113, ул. "Юрий Гагарин" №2															
3																
4	ПРОТОКОЛ № 021-1															
5	за хидробиологичен анализ на повърхностни стоични води (категория "езера")															
6																
7	"Езеро": Вельов вир		код:			дата:	22.09.2013		час:	15.45						
8	пореци: Ропотомо		пункт:	езеро Вельов вир												
9	Тип: L5															
10	точно място на вземане на проба: езеро Вельов вир, средата на езерото от могозалащия бряг															
11	водно тяло:		Географски координати надм. в.: N 42 17 59.3 E 027 42 36.7 / 6 м													
12	n O ₂ %: 23.9		МИКРОХАБИТАТИ в обследваните участъци													
13	рO ₂ mg/l: 2.45		забитат		%		бр. мрежи/дълб.		забитат		%		бр. мрежи/дълб.			
14	pH: 7.3		скапно легло				глина, сарпелит				15		1			
15	t°C: 20.1		калкан		> 40 см		глина (< 6 см)									
16	ил прв: 324		калкан		(40 - 20) см		обработана									
17	Сезои: 0.23		малки калкан		(6 - 2) см		погосена растителност				70		8			
18			филц		(2 см - 2 мм)		мъртва растителност									
19			пясък		(2 мм - 0.5 мм)		плаваща растителност				15		1			
20			тънък пясък (2 мм - 0.5 мм)										Общ брой мрежи: 10 (0.30/3 м ²)			
21													Пробовабрва площ, м ² : 0.9 м ²			
22	МАКРОФИТИ И ВОДОРАСП. (описателно)															
23	обследван		потопени		плаващи		крайбрежни		дънски видове							
24	участък за МХ		Sceratophyllum demersum		Spirodelia polytricha				Asci platanoideis							
25	ширина (см): 18		Sceratophyllum submersum		Nuphar lutea, Riccia fluitans				Salix fragilis, Carepinus benthus							
26	дължина (г): 4				Salvinia natans				Alnus glutinosa, Fraxinus sp.							
27	дълб. (м): 0.2-1								Quercus sp.							
28	бряг		водна повърхност		варианти на живото		гълъвоноси		Algae							
29	отвесен		чиста		слаби (<1 м)		х		ниски		Rhyacotillius					
30	мн. стръмен		запекане		средни (1 - 5 м)				нормални		Sphaerocystes					
31	ср. стръмен		х		отпадъци		х (растителни)		високи (> 5 м)		гълъвоноси		Други:			
32	попегат								високи инфо							
33	ПРОЗРАЧНОСТ										МАКРОБЕГЪРЪБНАЧНИ					
34	прозрачност		земеноложи				количество		разнообразие		брой таксои					
35	клетка		х		Земноводни змии		ниско		ниско							
36	оцветена		х		Горски флис		средно		средно		6					
37					Подморския резерват "Д		високо		високо							
38	МАКРОБЕГЪРЪБНАЧНИ ТАКСОНИ (бр. инд./м ²)															
39	азинични (1-5)						бр.		присъстване (6-20)				бр.			
40	Cloacis dipetum, Baetidae						6									
41	Ptyocoris cimicoides, Neuxoridae						2									
42	Gerris sp., Gerridae						6									
43	Psephenus, Psephenidae						1									
44	Coenagrion sp., Coenagrionidae						1									
45	Tubificidae						1									
46	срещни сепи (21-50)						бр.		многобройни (51-100)				доминиращи (100+)			
47																
48																
49																
50																
51																
52																
53	Забележки: Водното ниво е ниско, като в южния край крайбрежната растителност е останала на суто. Наличие на заековата органична тия с мизризма на гниене. Осигнат отделни екземпляри от макрозообентоса										Семков материал		№0100		Общ брой инд.	
54											да		БН			
55											не		PETI			
56	Метод за										Ръчна мрежа (10x1.5 м, 500 см, 0.25 x 0.25 м), рутини, обилни, плаващи					
57																
58	Визп. пробата:															
59	/С. Казанов/															
60																
61																
62																
63											Ръководител:					
64											/Д. Пелливанов/					
65																

Upgrading the research equipment and facilities

Coordination of
procurement

Gap analysis of equipment
per standard observation

Renovation of facilities





Improving the human and research potential

- Bottom-up approach in identifying **training** topics and organizing tailored trainings for the wider LTER community
- Regular dissemination of information on eLTER, ILTER **webinars, trainings** and other events
- Despite COVID related delays, a number of **exchanges and study visits**, including strong eLTER related networking in SPF, bilateral exchanges between sites, etc.
- First **TA/RA project participation** from Bulgaria (Parangalitsa site will send researchers to Doñana-Spain) and second in Portugal
- Recruit **young scientists**, support PhD students, encourage post-doc specializations
- National dialogue on **academic exchange** identified needs for communication by habitat, incl. within eLTER



Scientific meetings

- Steady presence in national forums; some of our members initiate conferences and round tables, such as Parangalitsa (90 years of the reserve in 2023), Mesta (together with Blagoevgrad University), Belasitsa
- Planning, facilitation and funding of international conference participations
- Special highlights of this year's 20 anniversary of LTER-BG:
 - Scientific session in the national Seminar of Ecology
 - A standalone scientific conference of the national network



Working with local stakeholders

- Started in the two future LTSEs (Belasitsa and Valey of Roses) with structured interviews and fuzzy cognitive mapping
- Extending it to other sites in this and the next year: sites without platform but with vibrant stakeholder interactions
- National level stakeholder work develops slower. Political instability prevents the good expert level interaction from having a lasting policy impact.





МИНИСТЕРСТВО
НА ОБРАЗОВАНИЕТО
И НАУКАТА

БЕЕ
202



Filling a critical
gap
for top-class
science at the
continental
scale



LTER Bg & LIFE WATCH Bg

Collaboration across RIs

Objectives

- Enhance **synergies** across European RIs
- Define actionable **collaborative initiatives**
- Strengthen **data interoperability and sharing**
- Enhance **open science** practices
- Support **integrated ecosystem research** across Europe
- Strengthen the **link** between **science**, innovation, and **policy**

Thematic Priorities & Actions

■ A. Data & Digital Integration

- **Current status:** Each RI has its own data platform; interoperability is limited
- **Identified gaps:** Lack of standardized metadata; no common portal
- **Proposed actions:**
 - Establish a shared data portal for cross-network access
 - Develop common metadata and data standards
 - Launch pilot interoperability project among eLTER, ICOS, ICP and LifeWatch

■ B. Ecosystem Processes & Services

- **Current status:** Networks operate largely independently
- **Identified gaps:** Limited coordinated campaigns and experimental integration
- **Proposed actions:**
 - Design joint experimental and observational campaigns
 - Integrate ecosystem service indicators across LTER and LifeWatch
 - Harmonize long-term monitoring protocols where feasible
 - Common publications and projects

■ C. Policy & Societal Relevance

- **Current status:** RI outputs are often research-focused, limited policy uptake
- **Identified gaps:** Fragmented communication with stakeholders
- **Proposed actions:**
 - Co-create policy briefs summarizing network insights
 - Organize stakeholder workshops at national & EU level
 - Develop a communication toolkit for policy-relevant outputs

Thematic Priorities & Actions

Theme	Proposed Actions
Data & Digital Integration	1. Shared data portal 2. Common metadata & standards 3. Pilot interoperability project
Ecosystem Processes & Services	1. Joint experimental & observational campaigns 2. Harmonized ecosystem assessment and services indicators 3. Harmonized and standardized monitoring protocols
Policy & Societal Relevance	1. Co-created publications and policy briefs 2. Stakeholder workshops

VARNA 14-16.10.2026 – the event's website <http://lterbg26.eu/>

Title: LTER-BG International Scientific Conference 2026
“Long-Term Ecosystem Research: Contributions,
Challenges and Future Perspectives” 20 years LTER-
Bulgaria as part of eLTER

Dates and Place: 14-16.10.2026, Varna, BULGARIA

Scientific sessions

- Monitoring and Understanding Ecosystem Dynamics,
- Ecosystem Services and Stakeholder Engagement in Long-Term Ecological Research: What We Lose When We Win,
- Ecosystem Restoration and Nature-Based Solutions,
- Emerging Technologies in Ecosystem Research, Data Management, and Open Science in eLTER,

Special sessions

- "Collaboration and co-location with other European research networks, with an emphasis on enhancing the impact of scientific results.",
- Special session "Rethinking generational change in Long-Term Ecological Research: from mentorship to partnership."

First announcement



The graphic features a scenic background of a forest and mountains. At the top, the LTER-BG logo is displayed with the text "Scientific Conference 2026". Below this, the main title "Long-Term Ecosystem Research: Contributions, Challenges and Future Perspectives" is written, followed by "20 years Bulgarian LTER network as a part of eLTER" and "Varna, Bulgaria - 14-16 October". Three circular inset images show a microscope, hands holding a plant, and a close-up of leaves. At the bottom, logos for IER Bulgaria, IBER, and eLTER are shown, along with the text "with the support of PENSOFT". A QR code is located in the bottom right corner with the text "For more information:" above it.

Acknowledgments

- The work presented here was funded by the following projects:
 - National long-term data collection: funding from the **National Roadmap for Research Infrastructure (2020-2027)**, Ministry of Education and Science of Republic of Bulgaria, through agreement No DO1-163/28.07.2022 (LTER-BG)
 - Research on the Whole System approach with focus on standard observations and co-development of data services: European Union's **Horizon 2020** research and innovation programme, through grant agreements No 871126 (**eLTER PPP**) and 871128 (**eLTER PLUS**)



The LifeWatch ERIC Biodiversity
& Ecosystem eScience Conference

PLOVDIV, BULGARIA

7-10 JULY 2026

THANK YOU!

Questions?
sbrat@abv.bg

