

Wetlands Solutions *for the Future*

Learning from ALFAwetlands and
REWET Projects

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ALFAwetlands - Matrix tool to quantify biodiversity and ecosystem services (BES) response in Wetlands

Arta Bārdule, Andis Lazdiņš, Ieva Līcīte, Aldis Butlers

Latvian State Forest Research Institute “Silava”, Latvia

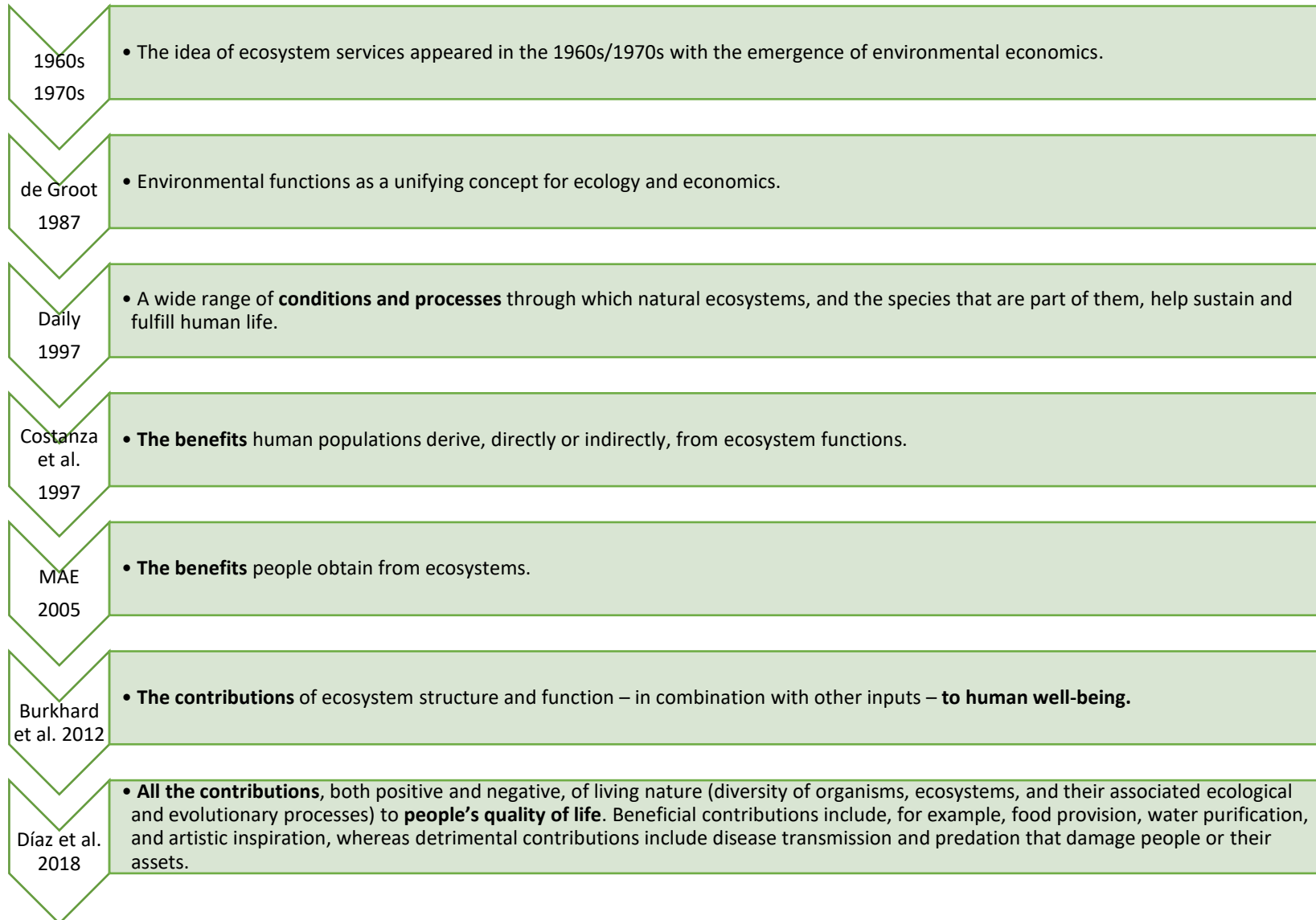
Elora Cazin, Maxime Hovhanessian, Mathilde Joffre, Romain

Darnajoux, Sabine Sauvage, José-Miguel Sanchez-Pérez

French National Centre for Scientific Research - CRBE, France

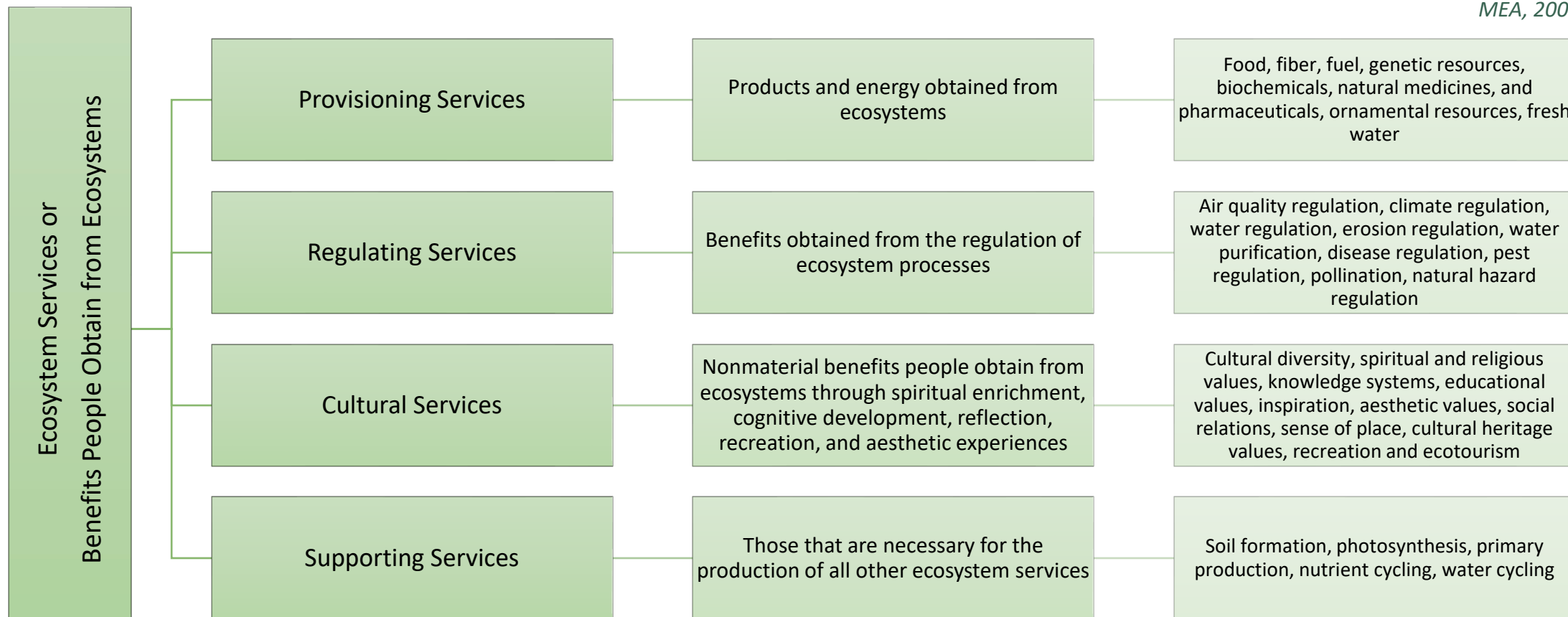


Development of the concept of ecosystem services

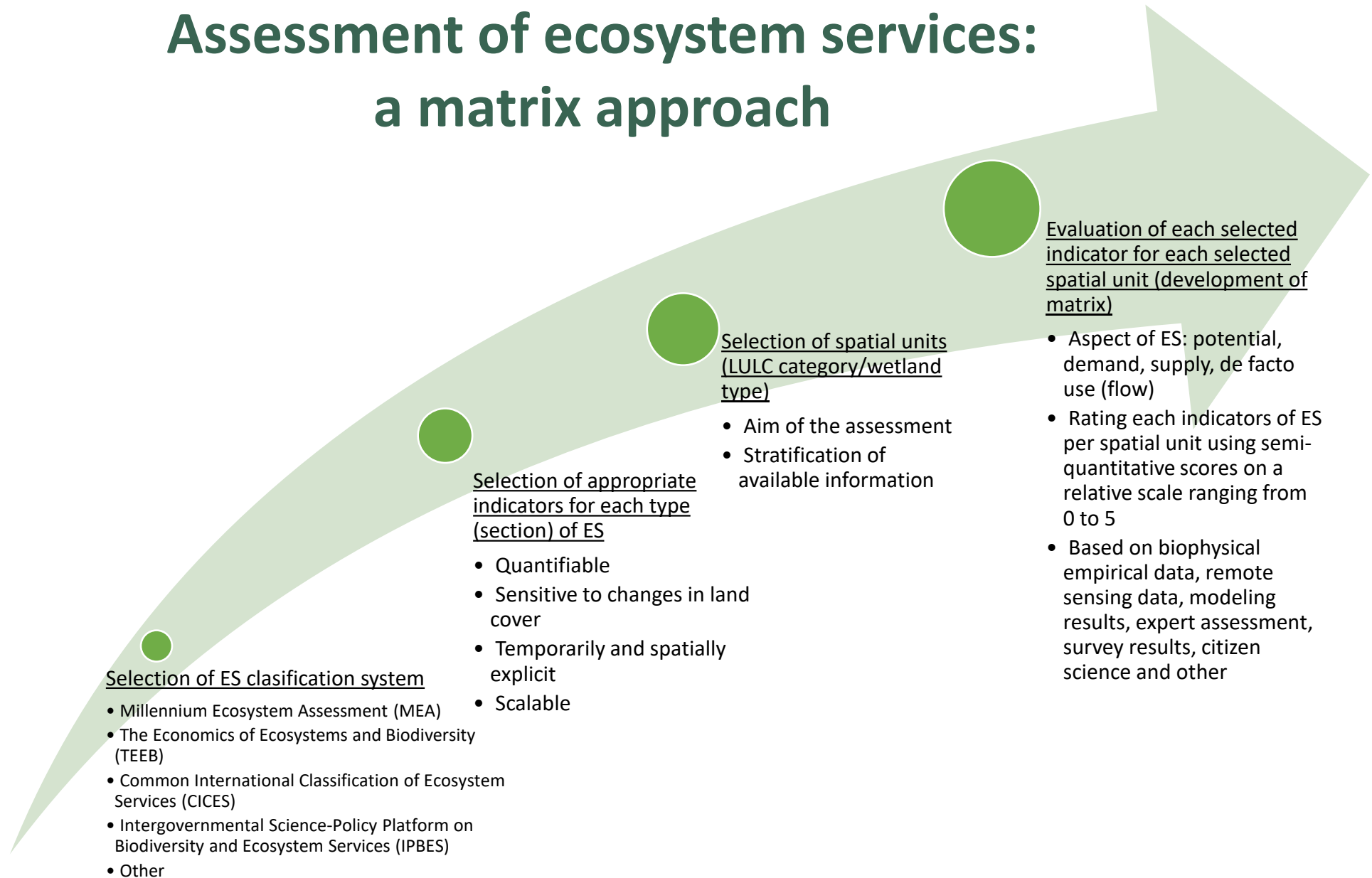


Types or sections of ecosystem services

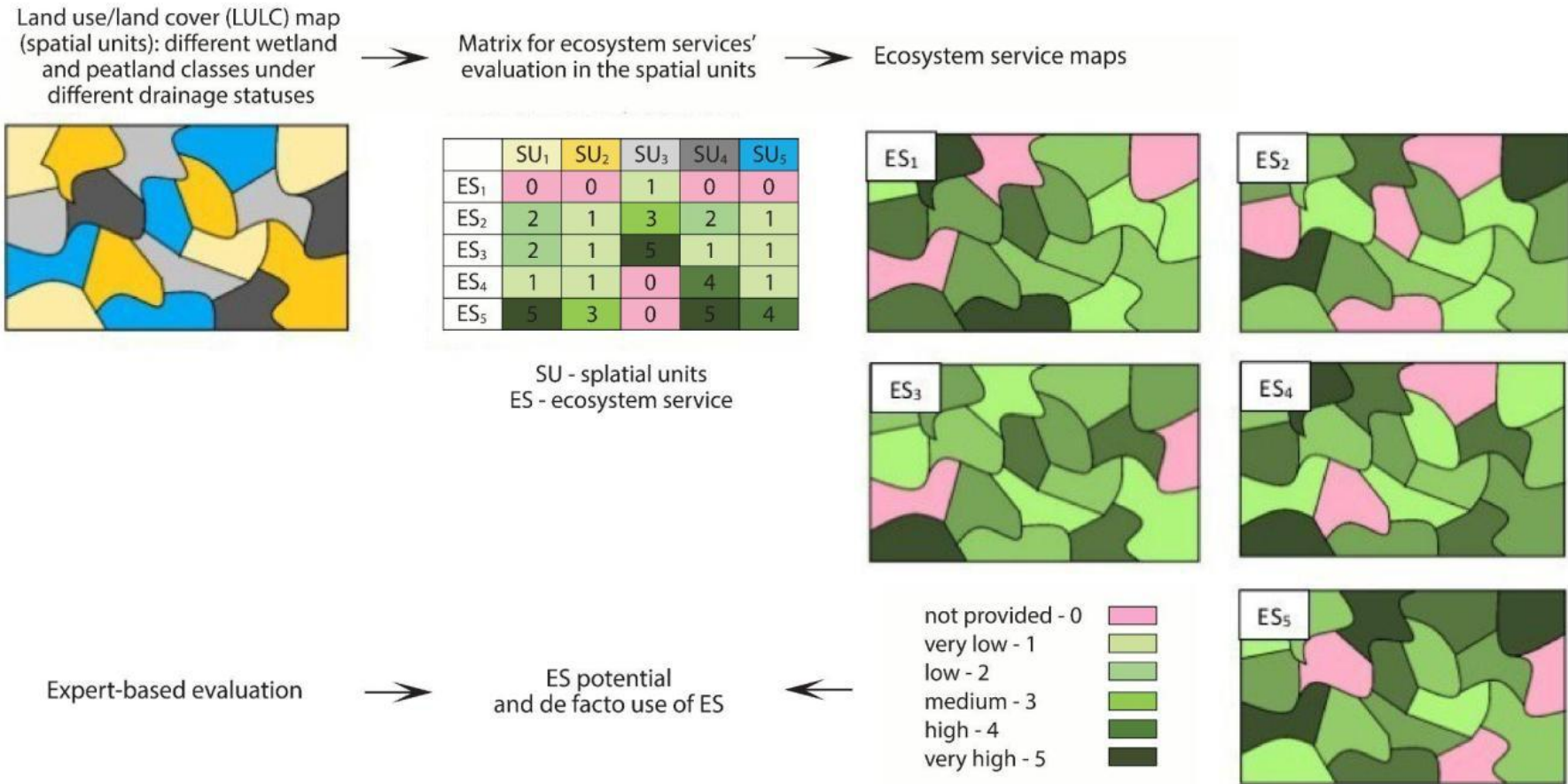
MEA, 2005



Assessment of ecosystem services: a matrix approach



Mapping of ecosystem services: A conceptual diagram using a matrix approach

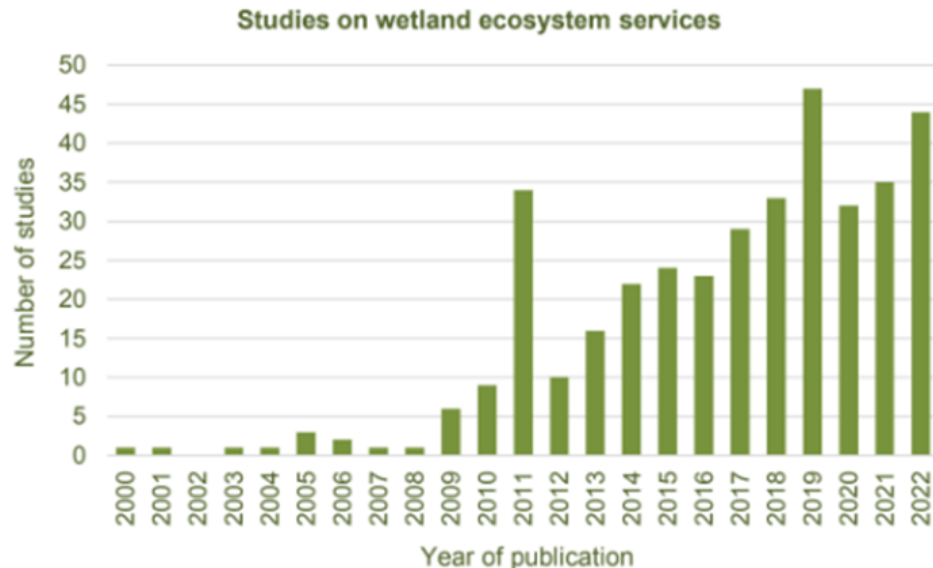
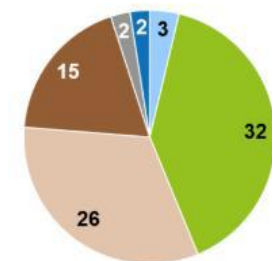


After Burkhard et al., 2009 and
Jacobs et al., 2015

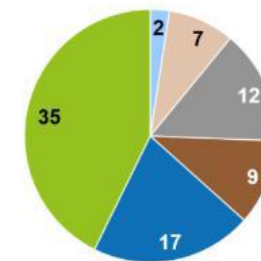
Within the ALFAWetlands...

Selection of ES indicators

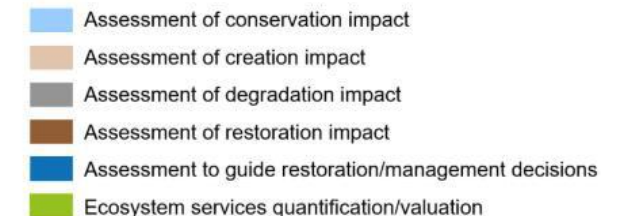
- Literature review to identify indicators used in studies on wetlands
 - 383 articles were selected and studied in detail,
 - 80 articles were included in the database
 - More than 180 indicators were identified, listed, and grouped according to the CICES V5.1 classification:
 - provisioning, regulation & maintenance, cultural
- Selection of the most appropriate indicators from the proposed list by experts
 - 25 experts from both within and without the consortium with different areas of expertise
 - 10 indicators for each ES section that can be applied across different LULC categories/wetland types



a) Number of articles by continent



b) Focus of the articles



Within the ALFAWetlands...

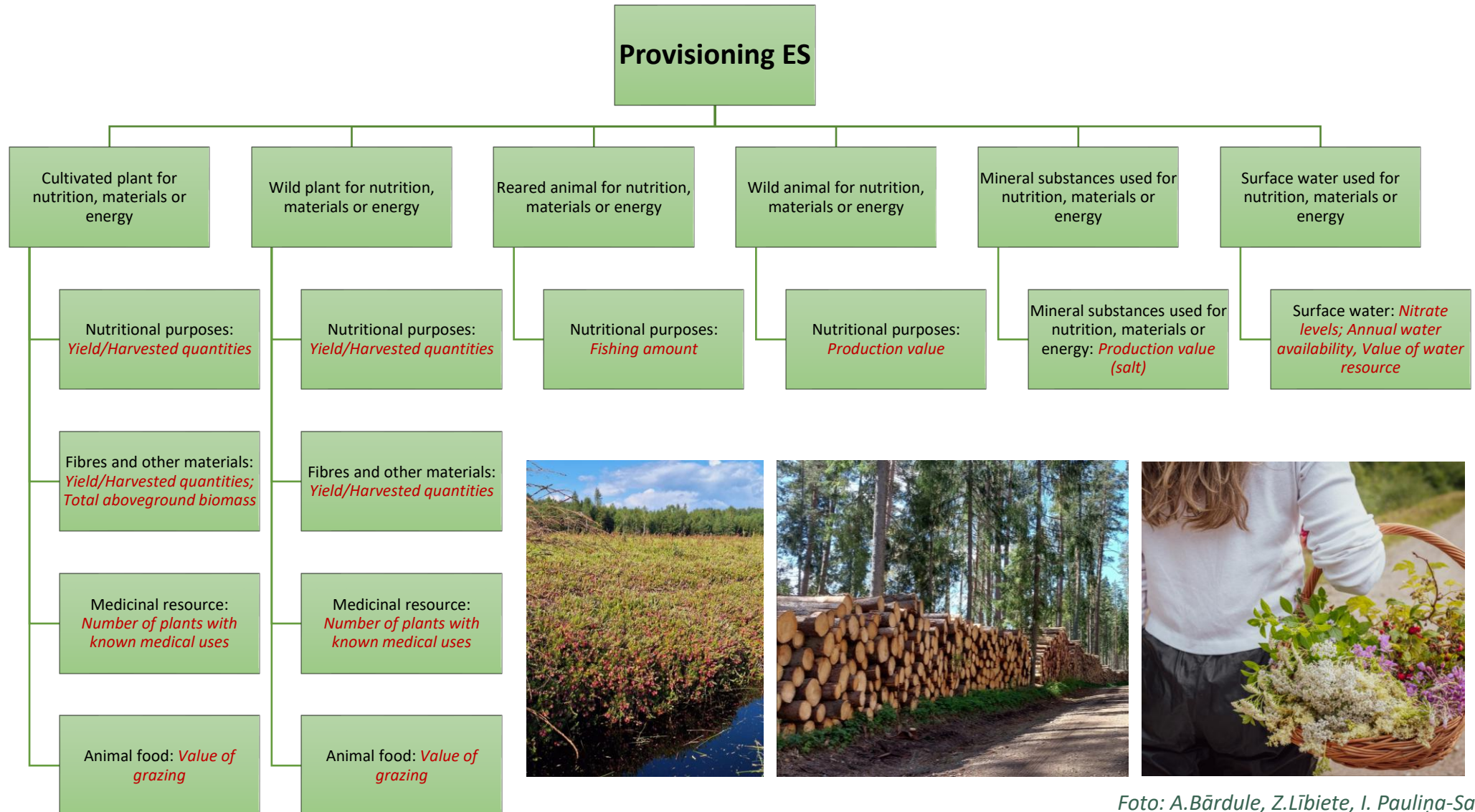


Foto: A.Bārdule, Z.Lībiete, I. Pauliņa-Saltā

Within the ALFAWetlands...

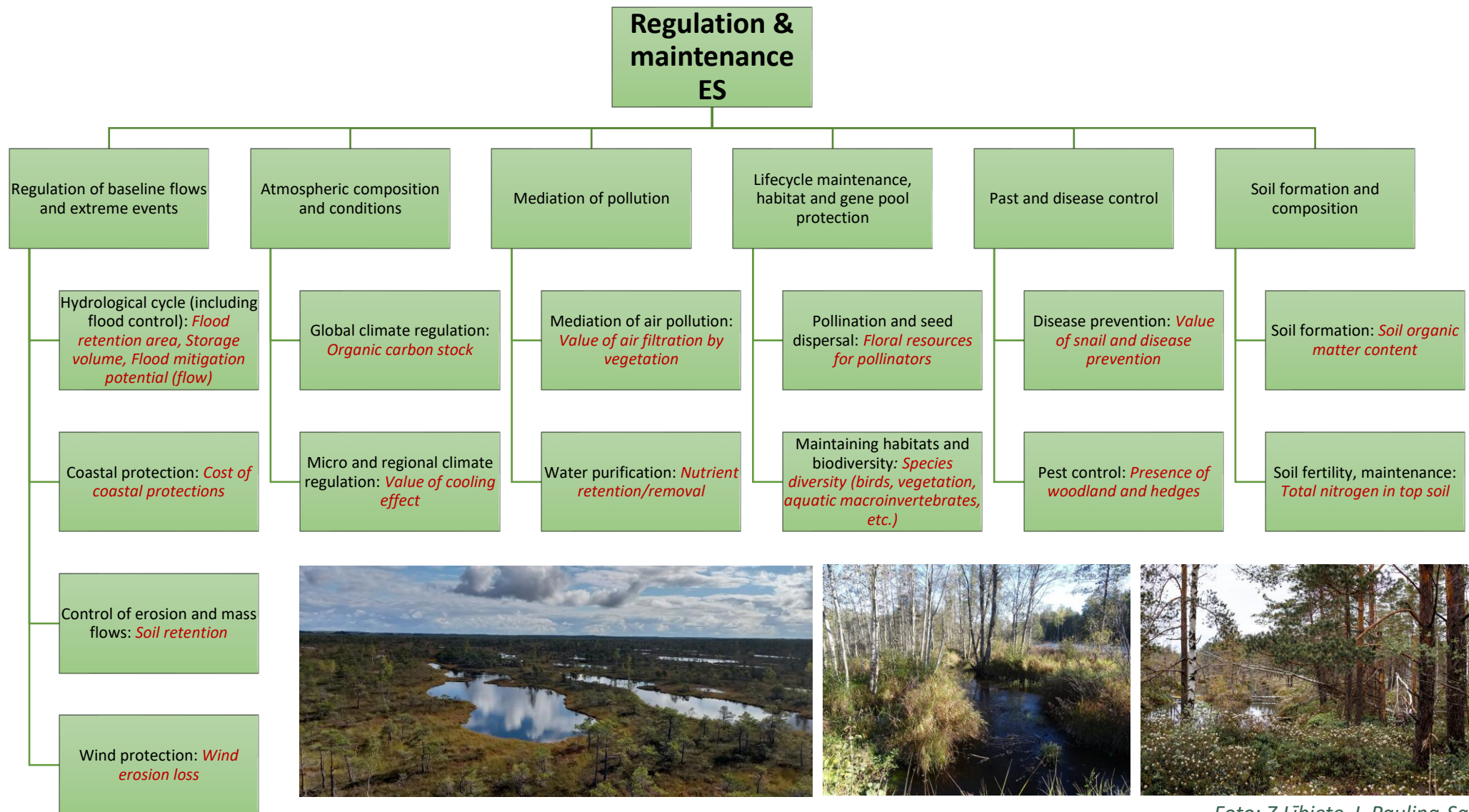


Foto: Z.Lībiete, I. Pauliņa-Saltā

Within the ALFAWetlands...

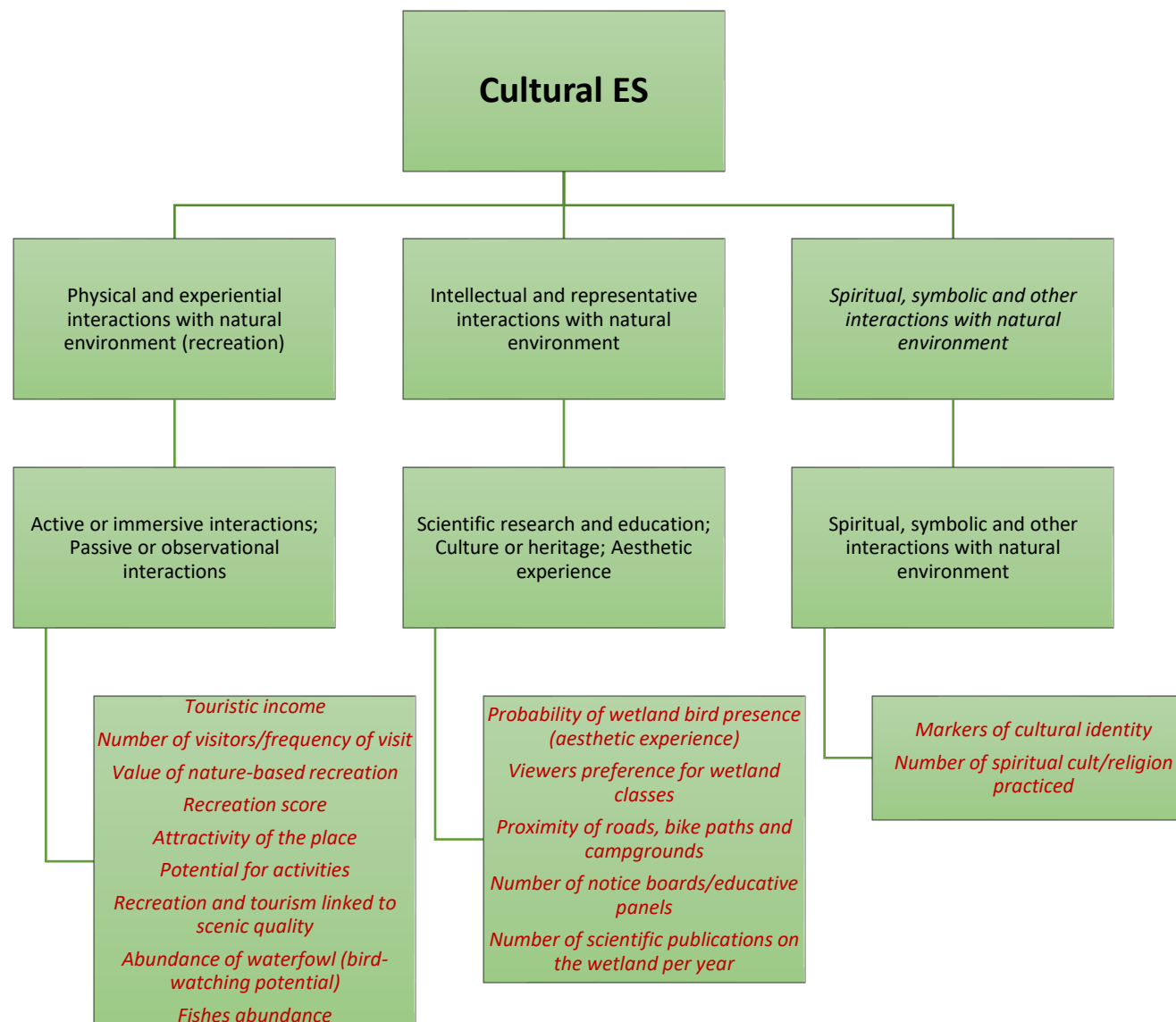


Foto: Z.Lībiete, I.Pauliņa-Saltā

Within the ALFAWetlands...

Construction of the matrix

- Initially selected indicators were summarized in a table (as rows), while each column represented a different LULC category, including different wetland types.
- The ES evaluation matrix was distributed via various channels (both within and without consortium), and experts were invited to assess two aspects of ES:
 - potential of the specific LULC category/wetland type to provide a particular ecosystem service;
 - the actual (de-facto) use of this ecosystem service.
- Experts scored each indicator from 0 (no relevant potential or actual use) to 5 (very high/maximum relevant potential or actual use) for each LULC category/wetland type.
- In total, 21 experts from 8 countries participated in the scoring exercise.

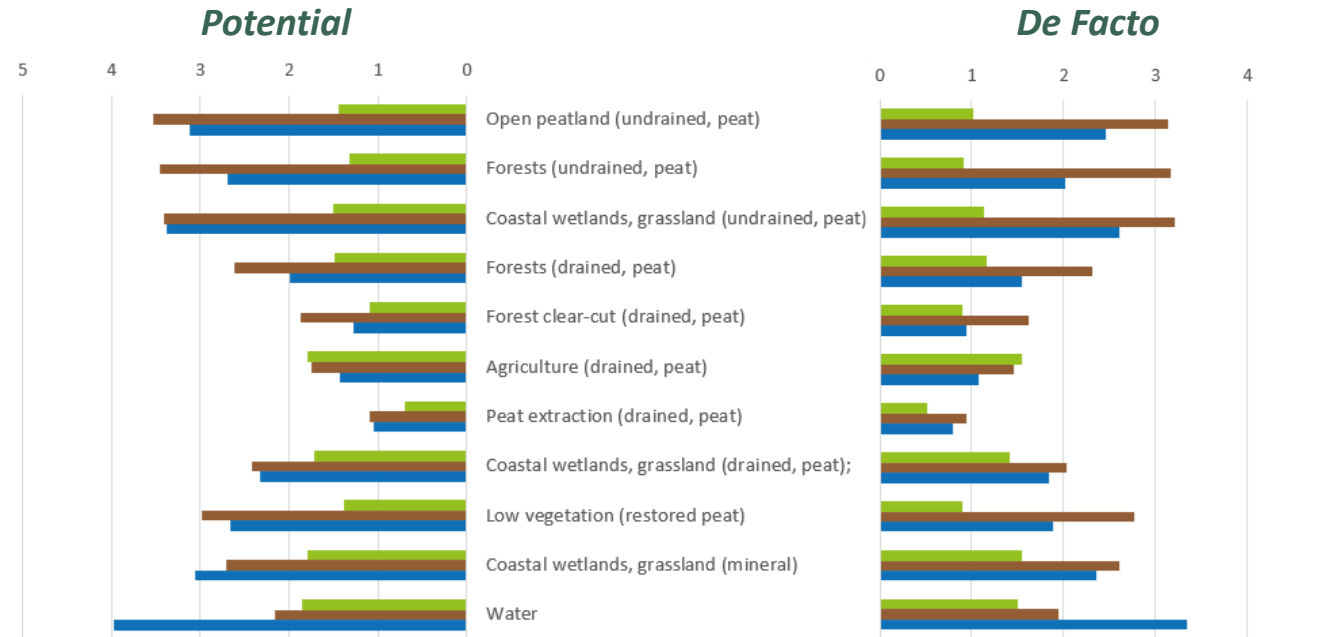
Matrix for ecosystem services' evaluation in the spatial units →

	SU ₁	SU ₂	SU ₃	SU ₄	SU ₅
ES ₁	0	0	1	0	0
ES ₂	2	1	3	2	1
ES ₃	2	1	5	1	1
ES ₄	1	1	0	4	1
ES ₅	5	3	0	5	4

SU - spatial units
ES - ecosystem service

Within the ALFAWetlands...

Results of scoring by experts



Ecosystem service scores:

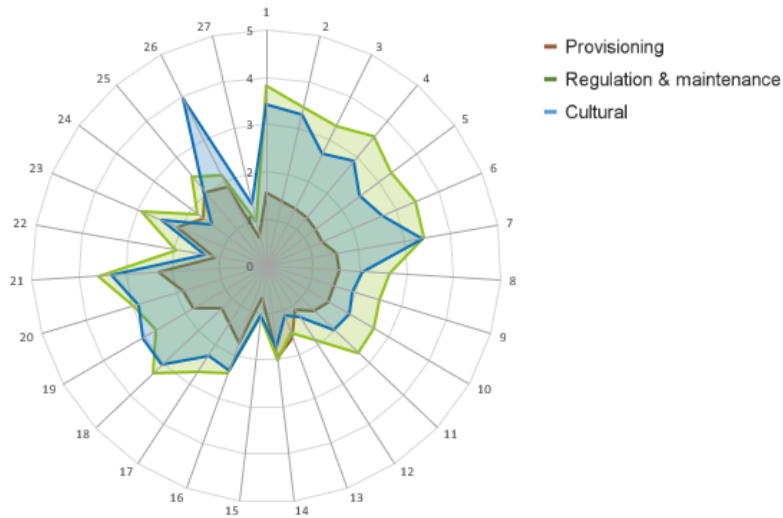
- 0—ES not provided;
- 1—ES value very low;
- 2—ES value low;
- 3—ES value medium;
- 4—ES value high;
- 5—ES value very high

Ecosystem service scores (mean values of expert-based evaluation): Potential and De facto use

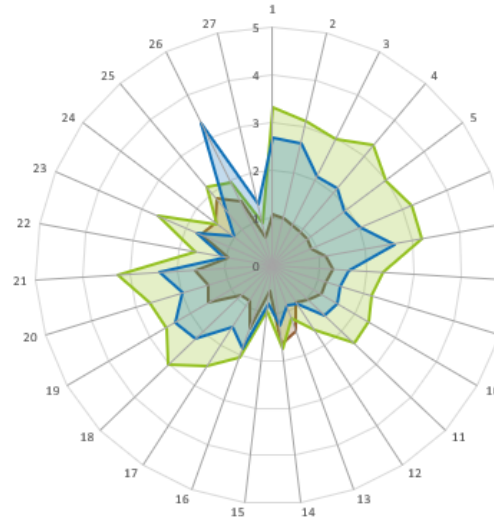
Within the ALFAWetlands...

Results of scoring by experts

Potential



De Facto

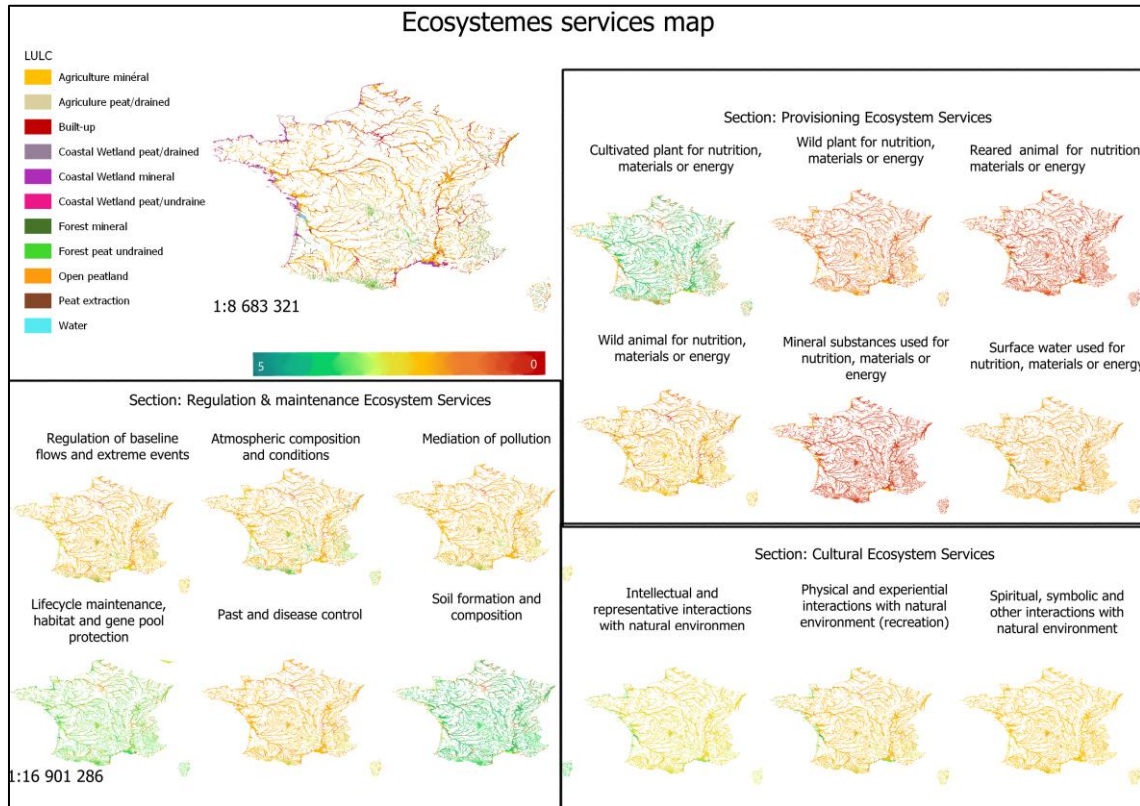


Mean values of ecosystem service scores: Potential and de facto use of ecosystem services provided by different LULC categories/wetland types

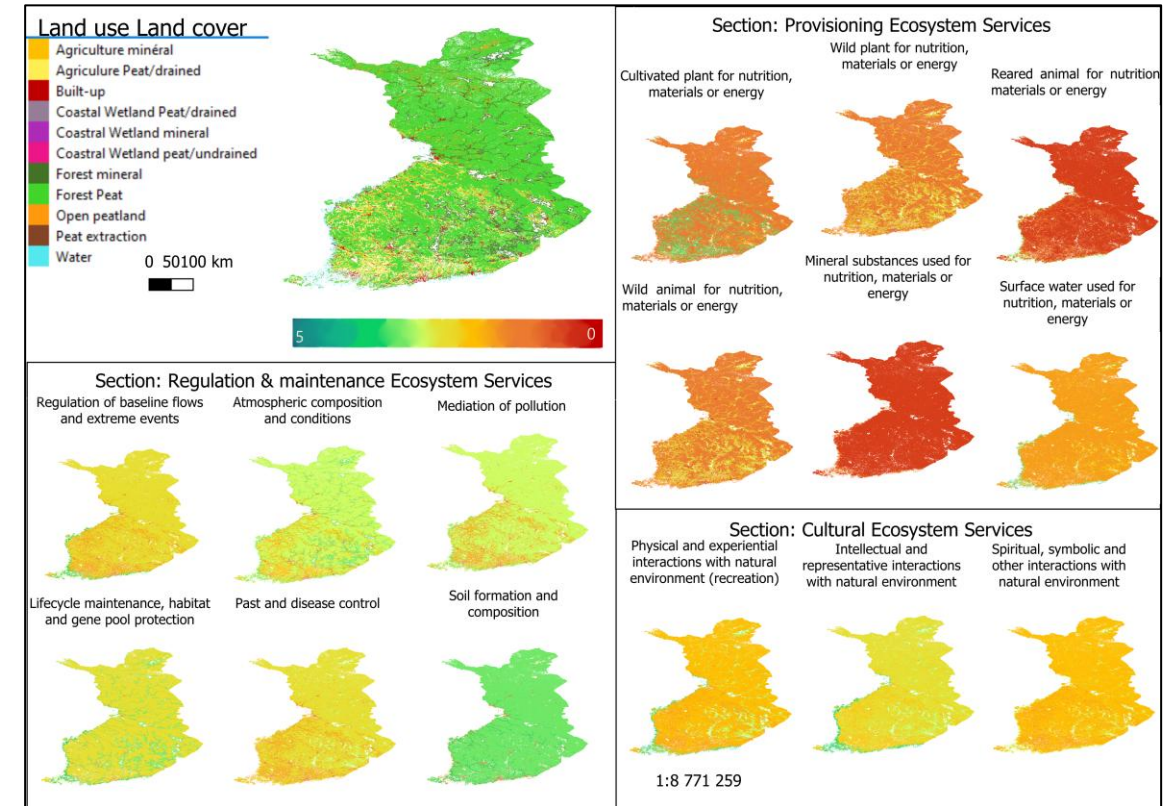
Land use / land cover (LULC)	LULC class name	Soil type	Drainage type	Categories of wetlands
1	Fen	Peat	Undrained	Open peatland (undrained, peat)
2	Bog	Peat	Undrained	
3	Treed bog	Peat	Undrained	
4	Deciduous swamp forest	Peat	Undrained	Forests (undrained, peat)
5	Coniferous swamp forest	Peat	Undrained	
6	Mixed swamp forest	Peat	Undrained	
7	Coastal wetland / grassland	Peat	Undrained	Coastal wetlands, grassland (undrained, peat)
8	Drained pine bog	Peat	Drained	Forests (drained, peat)
9	Drained deciduous swamp forest	Peat	Drained	
10	Drained coniferous swamp forest	Peat	Drained	
11	Drained mixed swamp forest	Peat	Drained	
12	Forest clear-cut	Peat	Drained	Forest clear-cut (drained, peat)
13	Agriculture: cropland	Peat	Drained	Agriculture (drained, peat)
14	Agriculture: grassland	Peat	Drained	
15	Peat extraction	Peat	Drained	Peat extraction (drained, peat)
16	Coastal wetland / grassland	Peat	Drained	Coastal wetlands, grassland (drained, peat)
17	Revegetated peat extraction site	Peat	Restored	Low vegetation (restored peat)
18	Rewetted for nature development	Peat	Restored	
19	Coastal wetland / grassland	Mineral	NA	Coastal wetlands, grassland (mineral)
20	Coniferous forest	Mineral	NA	
21	Deciduous forest	Mineral	NA	
22	Forest clear-cut	Mineral	NA	
23	Mediterranean shrubland/forest	Mineral	NA	
24	Agriculture: cropland	Mineral	NA	
25	Agriculture: grassland	Mineral	NA	
26	Water	NA	NA	Water
27	Built-up	NA	NA	

Within the ALFAWetlands...

Mapping of ecosystem services (potential)



Ecosystem services map for France



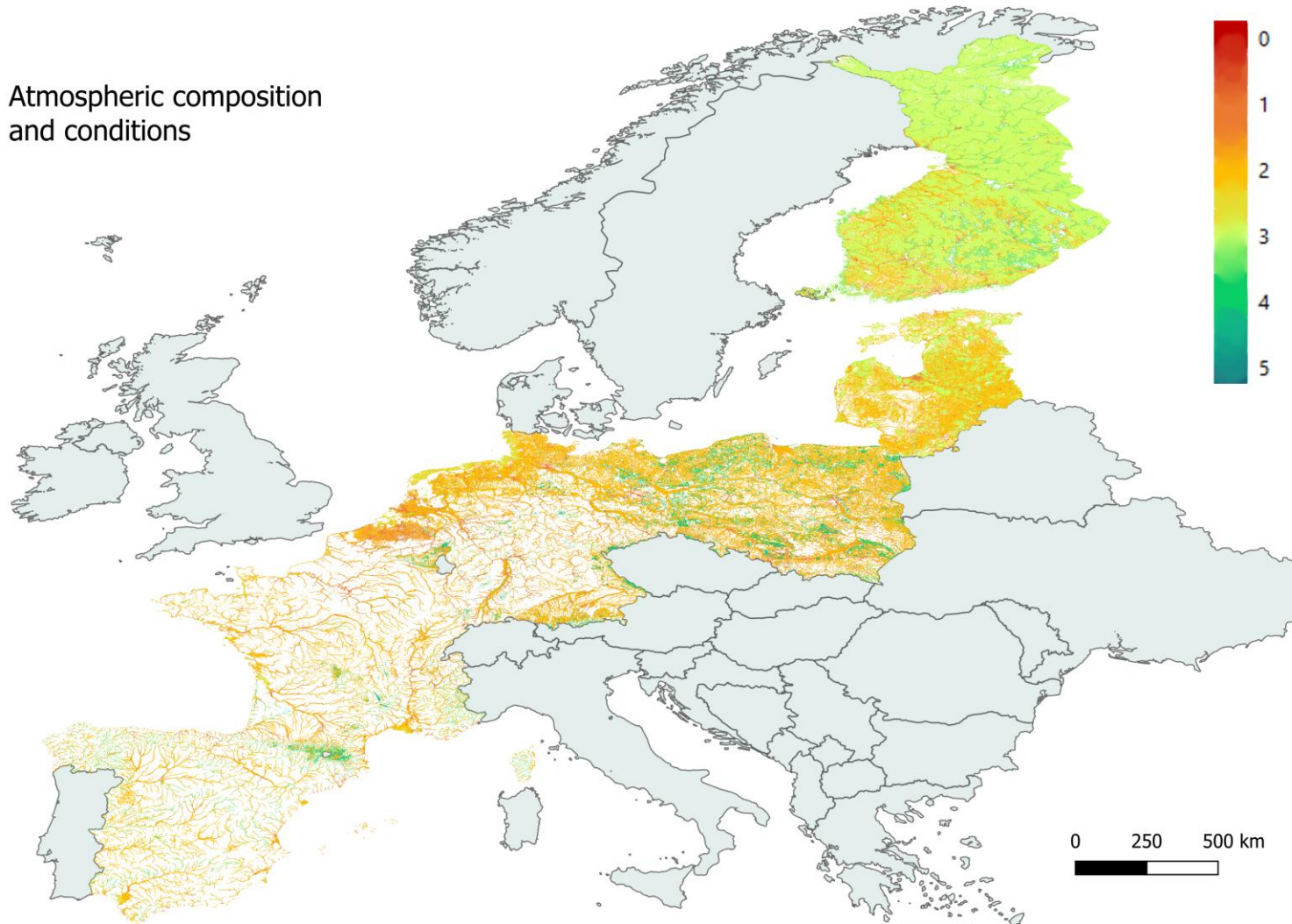
Ecosystem Services map for Finland

- The Land Use/Land Cover map -> Map for each group of ES.
- Some ES are similarly widespread across countries (e.g., reared animals for food, materials or energy), whereas others show marked differences in their distribution (e.g., cultivated plants for food, materials or energy).

Within the ALFAWetlands...

Mapping of ecosystem services (potential)

Atmospheric composition
and conditions



Extract from the matrix:

Section: Regulation & maintenance Ecosystem Services			
Group	Class	Indicators	Type
Atmospheric composition and conditions	Global climate regulation	Organic carbon stock	Supply
	Micro and regional climate regulation	Value of cooling effect	Value

- Atmospheric composition and conditions are characterised by the mean of the scorings of the two indicators.
- A strong south-north gradient:
 - South: The majority of wetlands potentially provided little or no climate regulation, except in very localised areas where climate regulation potential was high.
 - North: The majority of wetlands potentially provided medium to high levels of climate regulation.

THANK YOU

Contacts:

Arta Bārdule
arta.bardule@silava.lv

Sabine Sauvage
sabine.sauvage@utoulouse.fr

