FOODLEVERS

WP2 update Meeting

2 Sep2021

Task 2.1 Ecosystem service assessment

CORE organic

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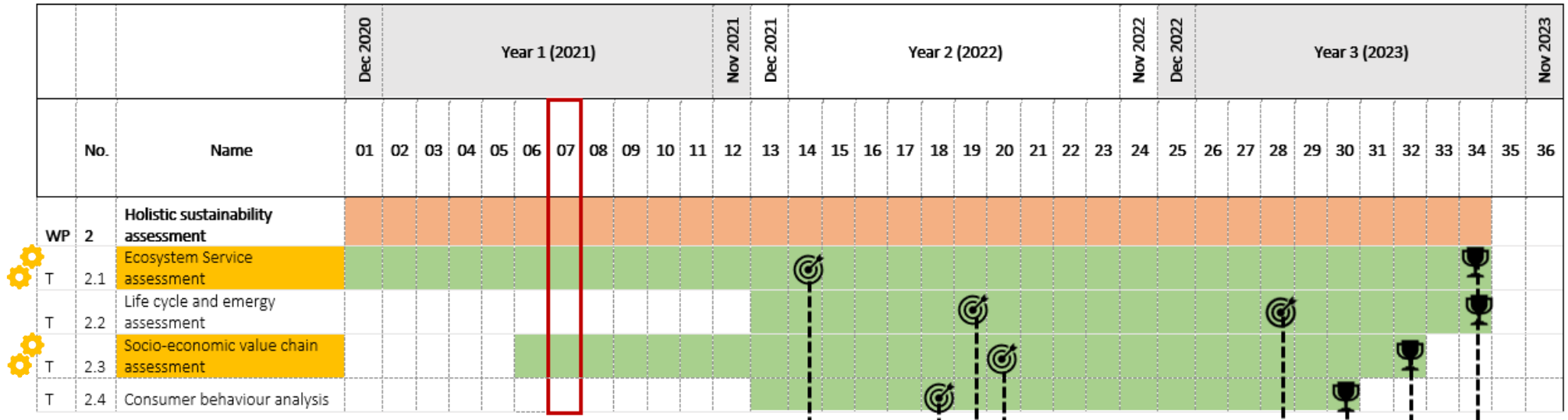
Progress WP2

FOODLEVERS

2nd Consortium Meeting

DAY 2 - 30 June 2021



M2.1: PG tool adapted

M2.5: Implement focus group and surveys

M2.3: Emergy study completed for case studies

M2.4: Status report on value chain analysis

M2.2: LCA data collection completed

D2.1: Report on ecosystem services

D2.2: Combined LCA and emergy report

D2.3: Report on value chain assessment

D2.4: Report on consumer behavior change

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Task 2.1: ecosystem service assessment
EFI lead; all partners involved; month 1-34

Aim: to assess Ecosystem Services provided by agricultural value chains in selected farming systems

Methods: The PG tool is a sustainability assessment tool for farming systems which analyses farm performance based on different parameters and characteristics (soil, water, manure, and nutrient management, landscape and heritage, energy and carbon, food security, agro-biodiversity, social capital, farm resilience, and animal health and welfare).

➔ EFI, Royal Agricultural University, University of Reading, and ORC will lead the work on indicator selection and will provide guidelines to organize indicator workshops, adapt the PG tool and data collection (M2.1: PG Tool adapted, month 14)

➔ Case study partners will select interested farms to collect indicator data. EFI, Royal Agricultural University, University of Reading, and ORC will assist case study partners in analysing the data.

➔ D2.1: Report on ecosystem services, month 34

Scoring System

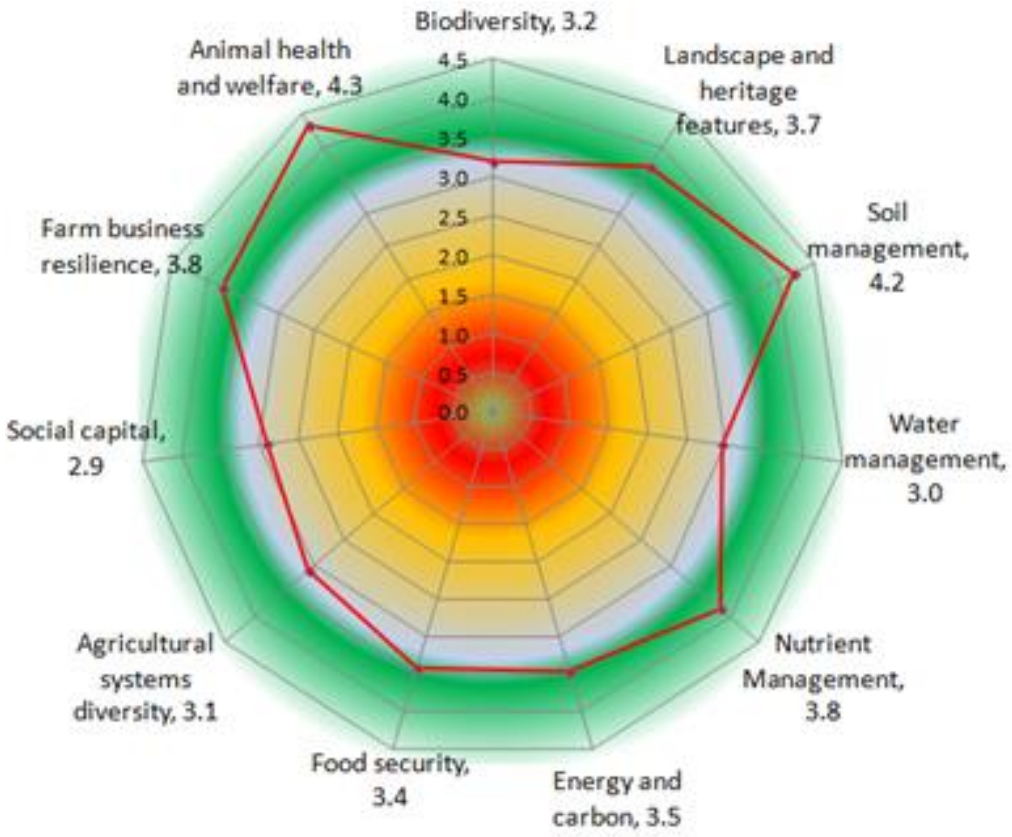
Each question is marked with score between 1 and 5 where 1 is the lowest mark, indicating that no benefit is being provided and 5 is the highest score.

Approach:

- Rapid assessment, about 4 hours on-farm
- Quantitative and qualitative questions
- Simple programming in Excel spreadsheet

Results

- Results sheet gives immediate feedback to the farmer
- Highlights areas where further development is needed
- Highlights areas where performance is good
- Advisor can talk through the results and go through the detailed scoring to discuss



FOODLEVERS – Innovative Case Studies

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» 7 innovative organic and sustainable case studies

Farming systems covered:

- Biodynamic mixed farming
- Silvopastoral systems with walnut & olive grazed by hens (agroforestry)
- Grass-fed organic and silvopastoral systems (agroforestry)
- Permaculture
- Mushroom cultivation in forest farming
- Community-Supported Agriculture

Learning from innovations in Products, Production techniques, Marketing, Organisation and governance (OECD innovation categories):

- Methods of distribution (e.g. use of cargo bikes, food hubs, online platforms)
- Circular bioeconomy (using forestry side products for food production instead of bioenergy production)
- Collaboration with social facilities (providing organic meals & „healing garden“ to hospitals, develop cultivation plan in consultation with the hospital)
- …….

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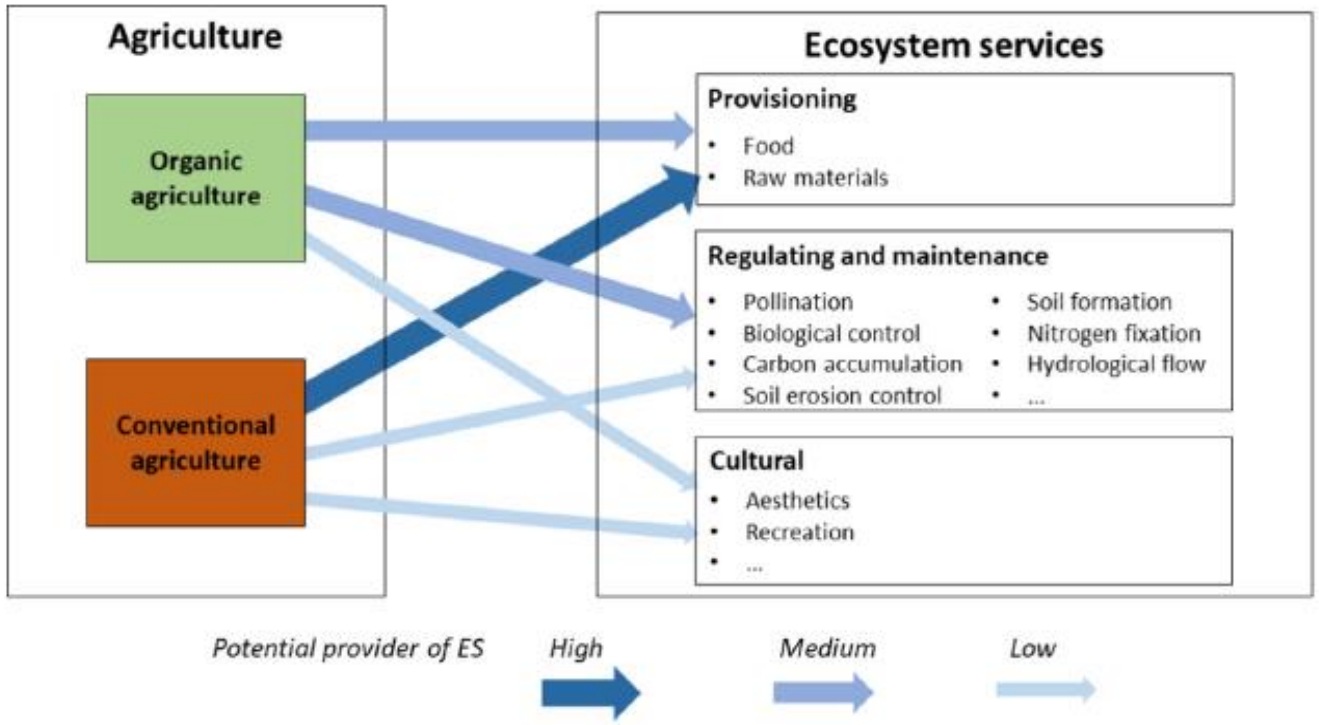
Adapting PG tool with ecosystem service indicators

Literature review on ecosystem service indicators associated with the identified organic production systems.

Particular focus on:

- Human nutrition
- Social well-being
- Biodiversity

- Indicators should capture the essence/uniqueness of each case study



Supply of ecosystem services by agro-ecosystems. Ecosystem services are classified according to CICES www.cices.eu Figure source: Boone et al. 2019.

Literature review on ES indicators

- Suggested search terms to be applied in the selected search databases for each of the innovative organic farming systems

Permaculture (Romania)

"ecosystem service* indicator" "provisioning services" "regulation and maintenance" "cultural services" "human nutrition" "biodiversity" "social-wellbeing"	AND	permaculture AND education permaculture

Mushroom cultivation in forest farming (Finland)

"ecosystem service* indicator" "provisioning services" "regulation and maintenance" "cultural services" "human nutrition" "biodiversity" "social-wellbeing"	AND	"mushroom cultivation" "forest farming" AND mushroom

Literature review data collection

Table 1: Spreadsheet headers.

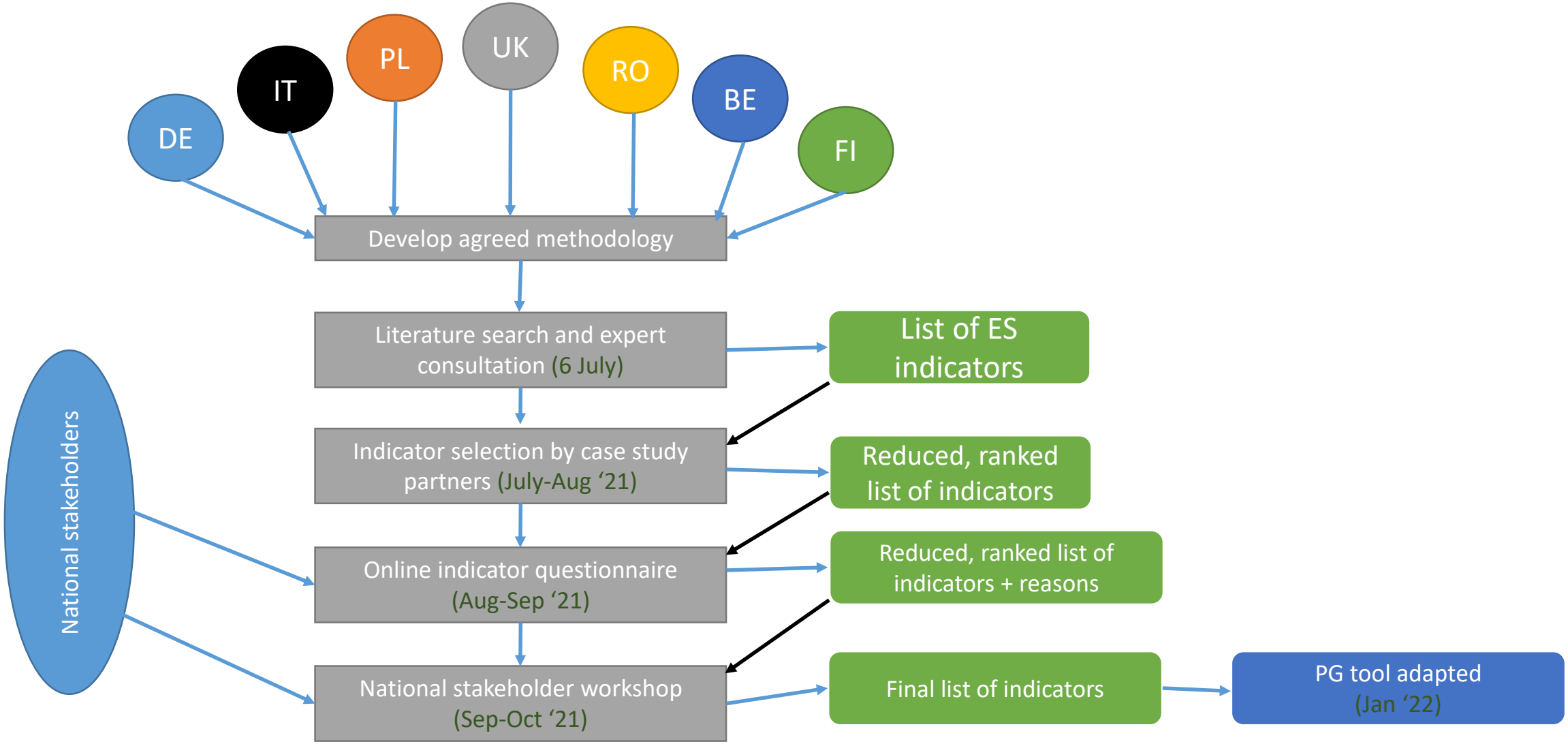
Author	Title	Search no.	Journal, date	doi	Report details	Area covered (forestry, hedges, wood fuel….)	Indicators suggested, listed on separate rows (or indicator topics if there are too many indicators to list)	CICES section	CICES division	Data requirements (for each indicator separately)	Data requirements (score 1=easy, 2=moderate, 3=hard)	Time requirements (score 1(short) to 3 (long))	Scientific Robustness (score 1 (robust) to 3 (not robust))	Geographical relevance (farm-scale/local/regional/national/international)	System relevance (score 1 (very relevant) to 3 (not very relevant))	Comments on usefulness

Note that columns 8 onwards need to be filled in for each individual indicator identified

Timeline for adapting PG tool

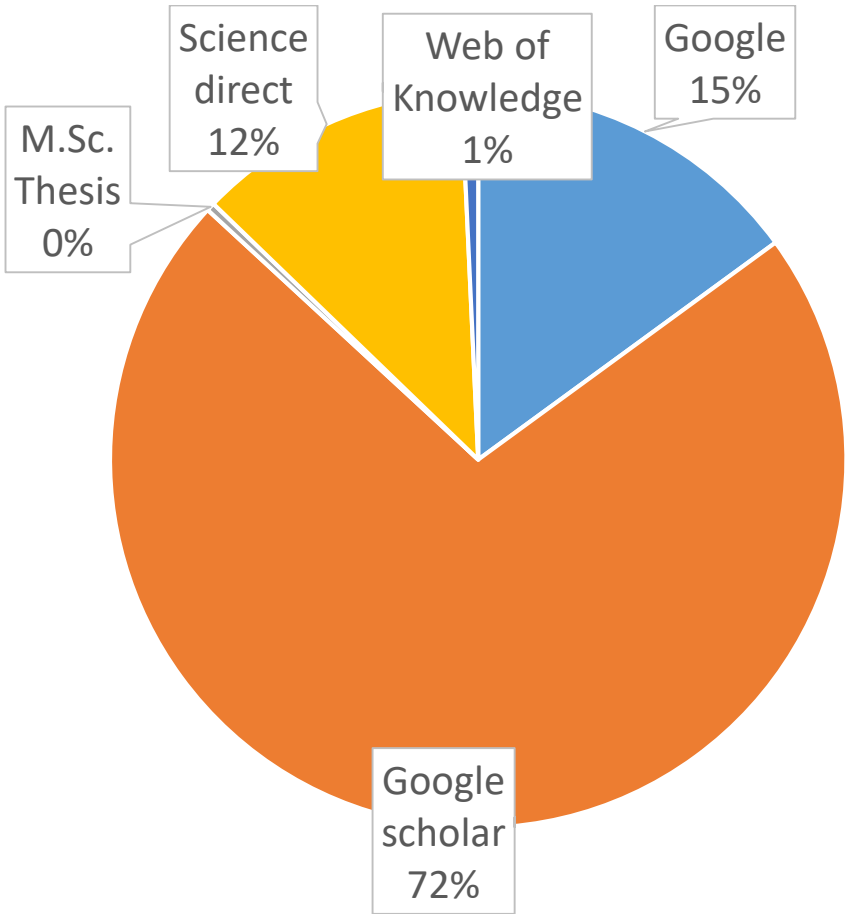
- Literature review (including optional expert consultation) ready: 6th of July
- Indicator selection for inclusion in PG tool by **case study partners**: July-August 2021
- Online-indicator survey to **wider group of case study stakeholders**: August-September 2021
- Indicator workshop with **core group of case study stakeholders**: September-October 2021
- Milestone 2.1 PG tool adapted: M14, 31 January 2022

Timeline & method for adapting PG tool



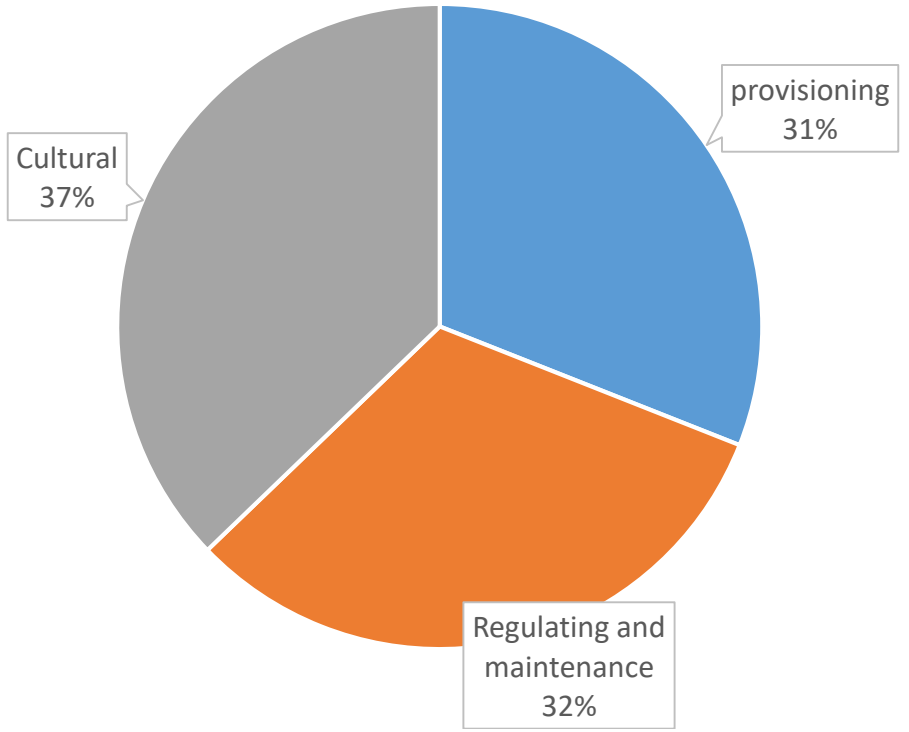
Preliminary results ES indicator review…

- So far, the literature review revealed 525 potentially useful ES indicators (some were duplicate)
- We used 67 different search term combinations
- We found 86 sources containing useful indicators
- Most sources were found using Google scholar



Preliminary results ES indicator review…

- Most indicators found were “Cultural” indicators
- However, all three groups were quite well represented



Next steps…

- Scoring and indicator selection by us researchers continues in September… we use a 2-step selection process

1. Needs from the case studies

- Each country mark with “x” (absolutely needed) or “m” (maybe needed)

2. 2nd step: We use this step to condense our list and select those indicators which are do-able for us. Indicator selection criteria:

- Data requirements
- Time requirements
- Scientific robustness
- Geographical relevance (preferably farm scale or all scales)
- System relevance

3

6.1 What is the total area of your farmyard?
Area of green space (areas of designed elements such as parks, gardens or urban farms, as well as of se
Average number of crops cultivated in a farm
Crop diversity: Number of crop species cultivated
crop yields per hectare
documented product traceability systems
Family labour
Farm visits
Fixed salaried labour
Food production
human labour intensity
human-nature connectedness
Increased employment of rural population
n. of products
Number of attendees
Number of customers or € of sales
Number of hours of employee trainings (Investment in labour qualifications)
Number of jop positions created
Number of recreation visits
Nutritional and health value: Number of products with labels
Presence of landscape elements
Sale of farm's products to the local community
Temporary salaried labour
Training sessions
Valorization of waste mushroom substrate: kg for compost
Visits
Visits for educational, scientific and research pruposes
Working conditions: Employment quality: average salary
Working conditions: Employment size: average number of employees
Working conditions: equality: Employment of women
Yield

Indicators which are absolutely needed (3 countries marked “x”)

2

% income or number of jobs contributed by aquaculture
1.1 Do you grow one or more crops on your farm?
1.2 Do you grow more than 1 variety of some crops?
1.3 Do you use green manure crops?
1.4 Do you have grassland on the farm?
1.5 Do you have different species of livestock on your farm?
1.6 Do you have several livestock breeds of a single species?
2.1 How do you perform crop protection?
2.1 Richness of landscape elements
2.11 Which measures do you apply to get flowers (pollen/nectar) within your parcels (arable land, ex
2.12 Do you apply organic materials, fertilisers or additives to stimulate the soil life?
2.9 Which measures do you apply at your parcels (> 1 ha) to stimulate soil biodiversity or natural en
3.1 Do you have a management agreement or grant for nature on agrarian fields (whole plots, on lar
3.2 Do you cultivate cereals?
3.3 Which measure do you take in favour of the field fauna or flora?
3.4 Which measures do you take to encourage field flowers in your grassland?
3.5 Do you sometimes see meadow birds on your land in the spring?
3.6 Which measures do you take in the field to protect grassland birds?
4.1 Do you have a management agreement or grant for nature on field margins or small/linear natur
4.2 Are there smaller wet elements (areas <0.5 ha and ditches) present on your farm?
4.6 Are smaller herbaceous elements present on your farm?
4.8 Are small wooden natural elements present (areas <0.5 ha and linear laments) on your farm?
5.1 Do you have ground in property, rent or land use agreement designated for nature conservation
6.2 What % of the farmyard is vegetation (i.e. no buildings or hard surfaces)?
6.3 Which of the following green elements are found in your farmyard?
6.4 Do you have nesting facilities on your farm?
Appreciate, produce, buy: meat, eggs, dairy, honey, vegetables, garden products, other
B10 Valorisation and quality of local heritage (buildings, local know-how and natural resources
B11 Accessibility of space

Indicators which are absolutely needed (2 countries marked “x”)

Further reading

- Boone, L., Roldán-Ruiz, I., Van linden, V., Muylle, H., Dewulf, J., 2019. Environmental sustainability of conventional and organic farming: Accounting for ecosystem services in life cycle assessment. Science of The Total Environment 695, 133841. https://doi.org/10.1016/j.scitotenv.2019.133841
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- Haines-Young, R., Potschin, M., 2018. Common International Classification of Ecosystem Services (CICES) v5.1 and Guidance on the Application of the Revised Structure. www.cices.eu.
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- de Olde et al. 2016. Assessing sustainability at farm-level: Lessons learned from a comparison of tools in practice. Ecological Indicators 66, 391–404. https://doi.org/10.1016/j.ecolind.2016.01.047