Tools for policy makers

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SoilCare

Aim SoilCare policy tools

To answer two key questions:

1. Which SICS can be applied where in Europe to best effect?
2. How can policies support this?

    Considering changes over time due to climate change and socio-economic developments

SoilCare policy tools

1. SICS potential index
   - Assessing potential for applying SICS across Europe
2. SoilCare Integrated Assessment Model (IAM)
   - Impact assessment of SICS under various socio-economic and climate scenarios
3. Integrated participatory and modelling approach for policy support under uncertainty
   - Exploring future uncertainties for robust and context-specific policy recommendations

Tool 1: SICS potential index

- Where in Europe can which SICS be applied?
- Where in Europe is it relevant to apply them?
- How effective are the various SICS under different conditions?

Overarching aim: support of (European) policy development with context specific information and future uncertainties

Tool 1: SICS potential index

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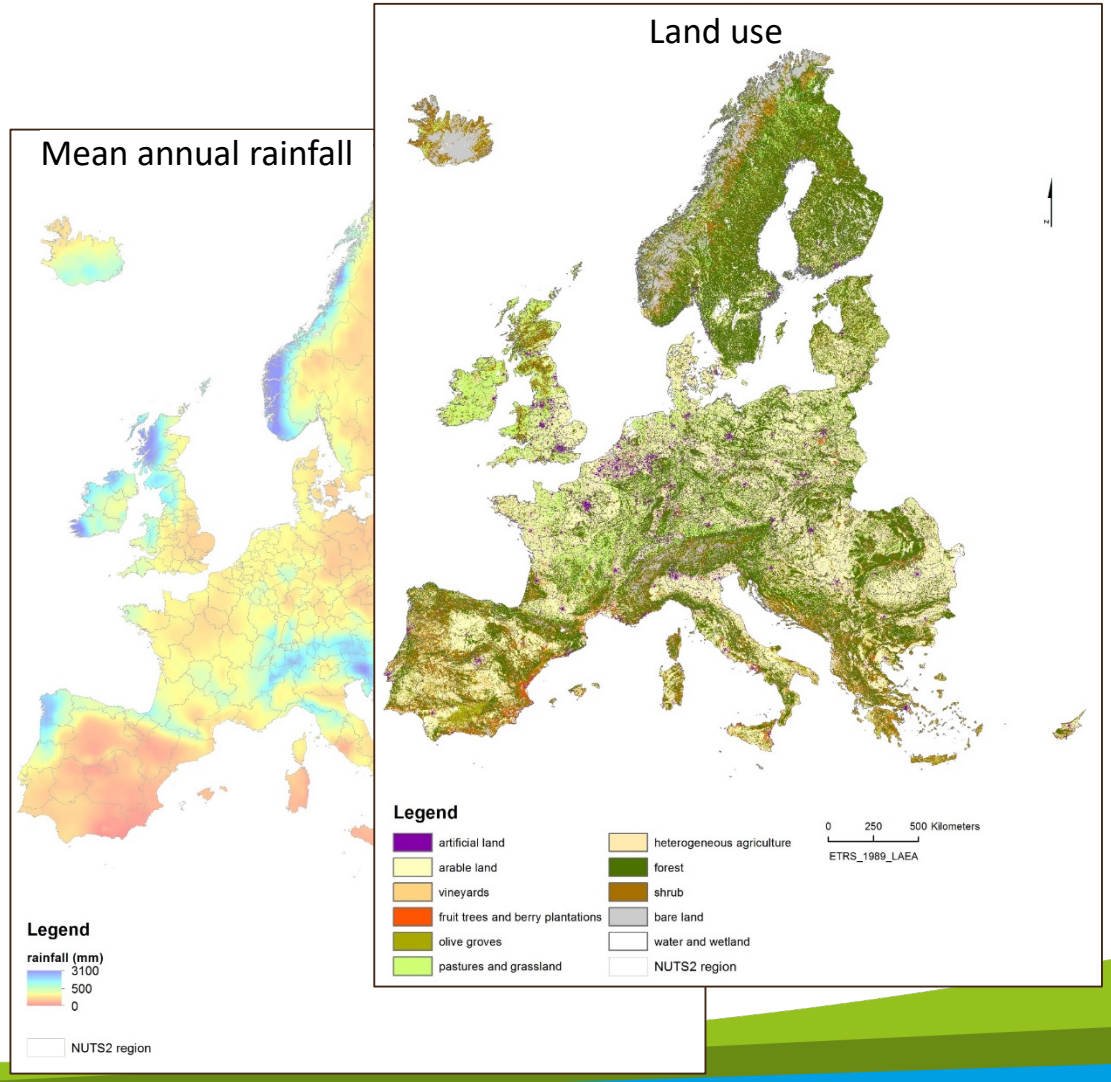
Overarching aim: support of (European) policy development with context specific information and future uncertainties

Applicability and relevance

- Approach that combines European data layers and expert knowledge on the applicability, transferability and relevance of measures under different conditions
  - Applicability: climate, soil, land use
  - Relevance: soil threats, soil health improvements
- Complemented with a description of the social, economic and institutional factors influencing the adoption of the SICS

Applicability base maps

- Climate
  - Aridity-index
  - Precipitation
  - …
- Soil
  - Landform
  - Slope
  - Soil depth
  - Soil fertility
  - Texture
  - …
- Socio-economic
  - Land use
  - …



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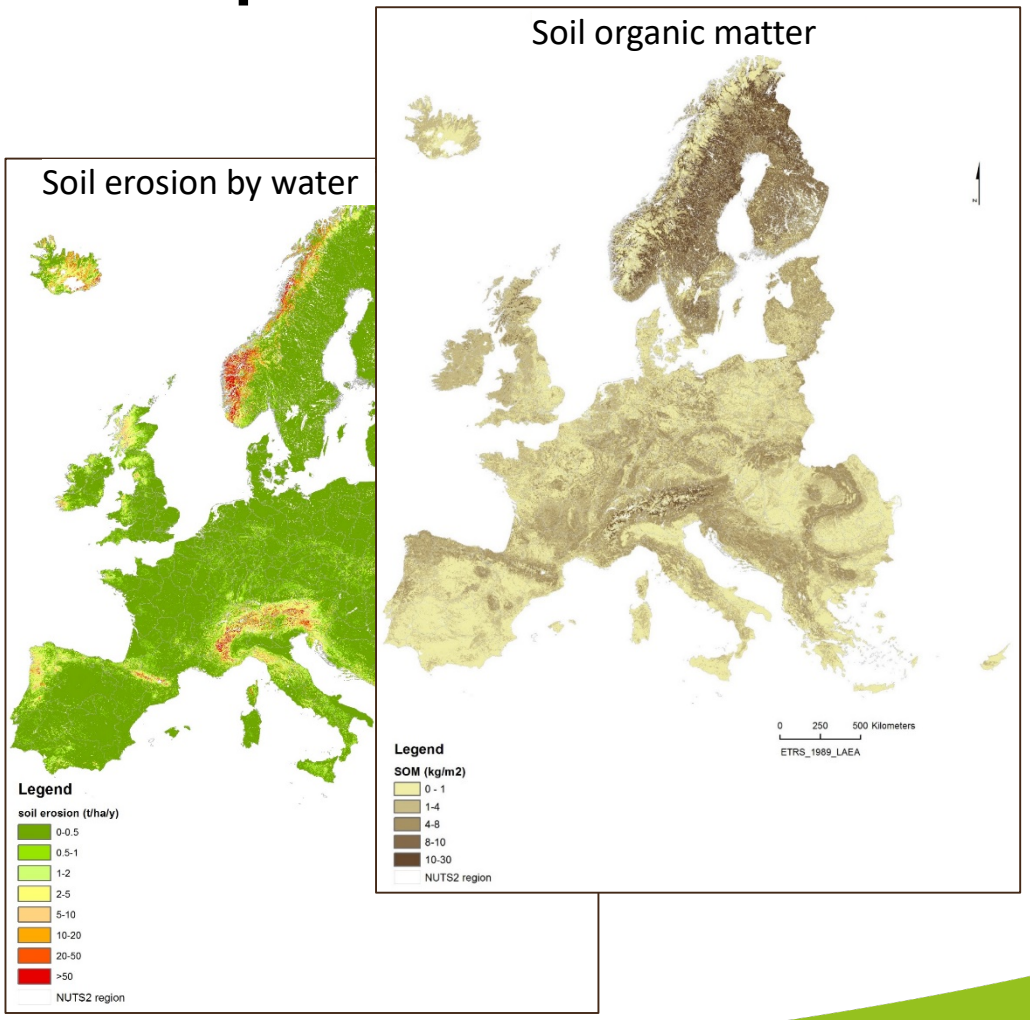
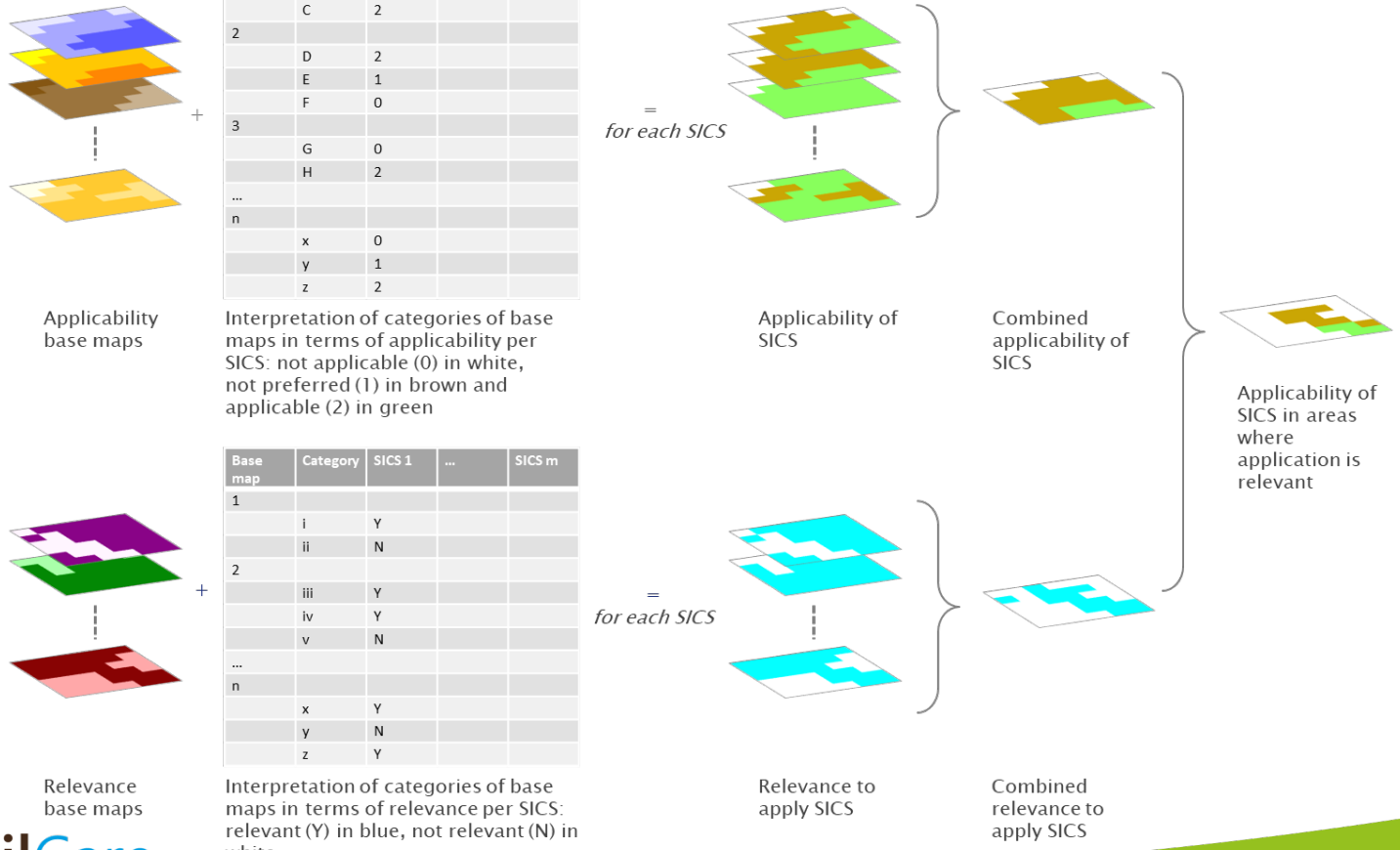
Relevance base maps

- Mitigating soil threats
  - Water erosion
  - Wind erosion
  - Decline in organic matter
  - Compaction
  - Decline in soil biodiversity
  - …
- Soil improvements
  - SOC contents
  - Soil structure
  - …



Combined applicability and relevance maps



Base map	Category	SICS 1	...	SICS m
1				
	A	0		
	B	1		
	C	2		
2				
	D	2		
	E	1		
	F	0		
3				
	G	0		
	H	2		
...				
n				
	x	0		
	y	1		
	z	2		

Base map	Category	SICS 1	...	SICS m
1				
	i	Y		
	ii	N		
2				
	iii	Y		
	iv	Y		
	v	N		
...				
n				
	x	Y		
	y	N		
	z	Y		

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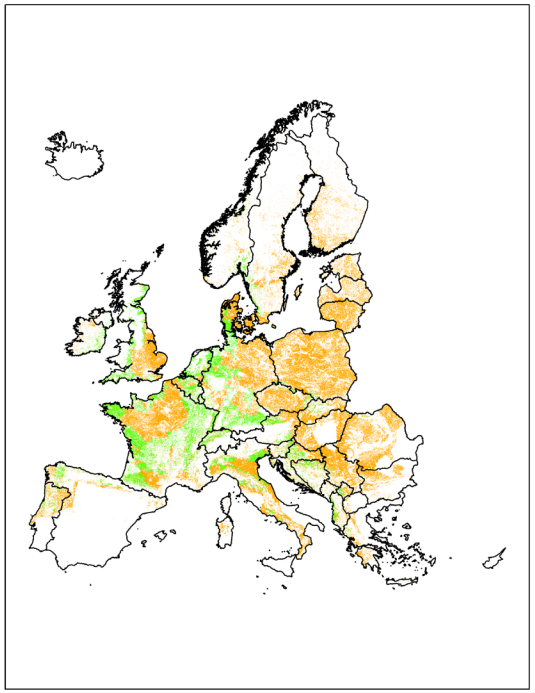
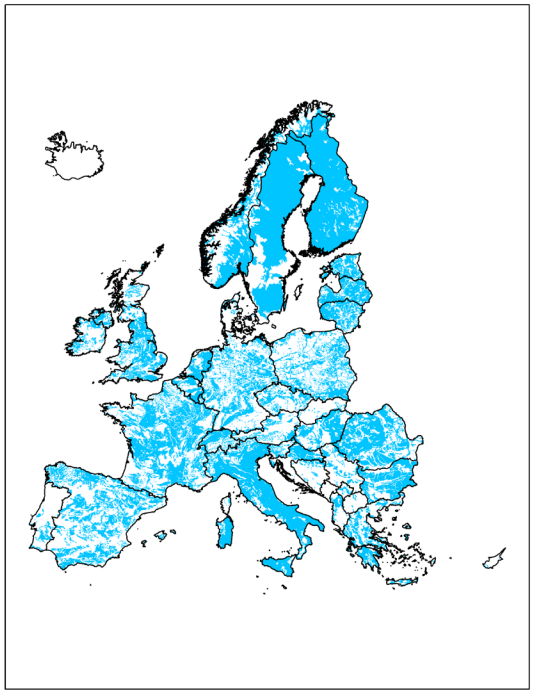
Example grass verges to reduce compaction

Using European-wide data and information from Swiss Study Site partner

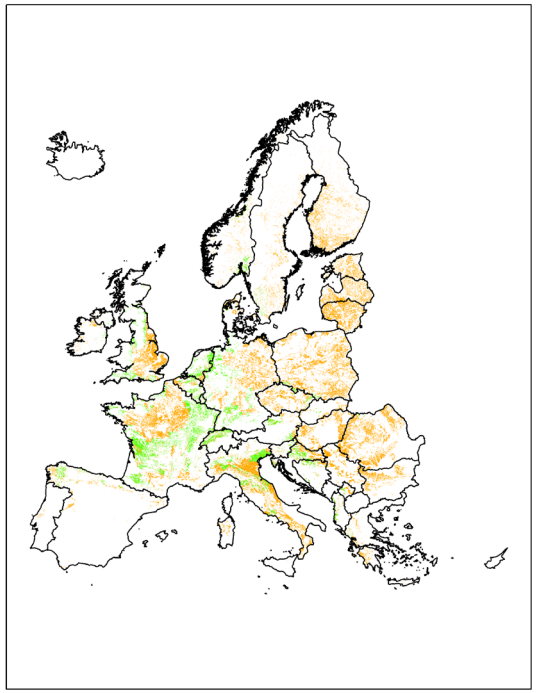
Overall applicability
Grass Verges
Europe



Relevance
Grass Verges
Europe



Combined
Grass Verges
Europe



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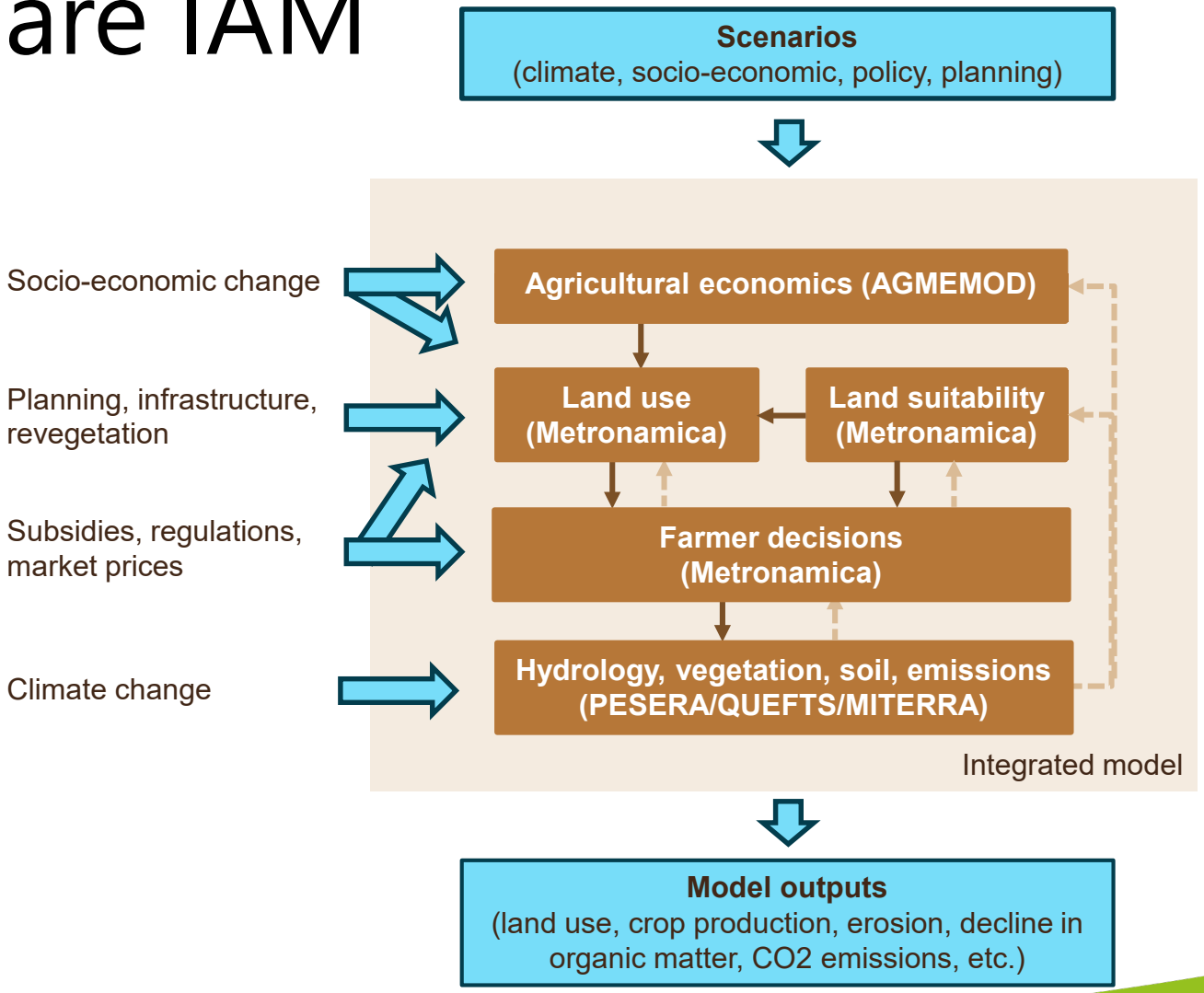
Tool 2: SoilCare integrated assessment model (IAM)

- Aim: Integrated assessment of (combinations of) soil management practices, under a range of external factors, on sustainability and profitability indicators
- To provide support in:
  - Understanding important processes and their interactions
  - Identifications of current or future problems
  - Evaluation of different alternatives
  - Improvement of communication

Characteristics of the SoilCare IAM

- Modular modelling framework
  - Temporal resolution: months, years
  - Temporal horizon: 2050
  - Spatial scale: Europe (EEA space+)
  - Spatial resolution: 100-500 m grid
  - Dynamic approach with interactions between important model components

SoilCare IAM



Indicators

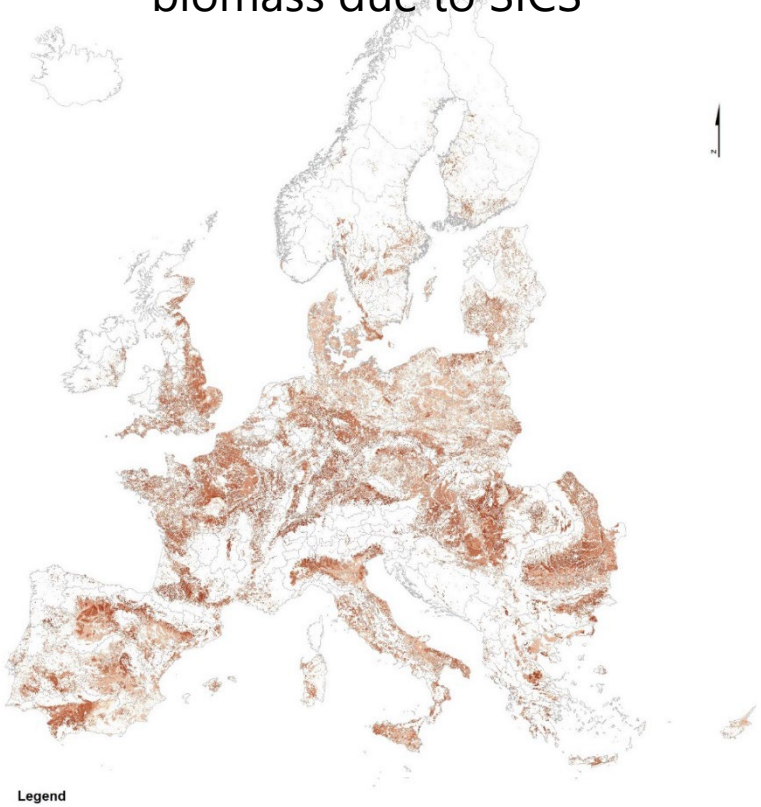
- System conditions
  - Land use, cropping systems
- Profitability
  - Production, long-term costs and benefits
- Soil threats
  - Decline of organic material, erosion
- Sustainability
  - Soil quality, impact of urbanisation on agriculture and related ecosystem services

SoilCare IAM provides input to SICS potential index

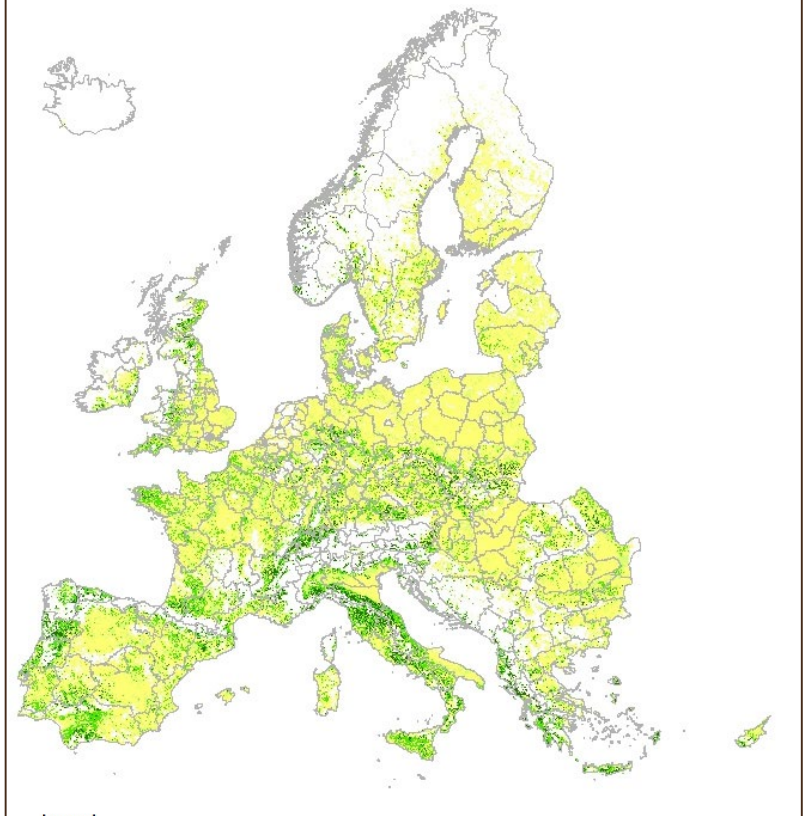
- Where in Europe can which SICS be applied?
- Where in Europe is it relevant to apply them?
- **How effective are the various SICS under different conditions?**

Example SICS impact assessment

Change in living above-ground biomass due to SICS



Change in erosion due to SICS



Tool 3: Approach for policy support under uncertainty

- Development of exploratory scenarios at European scale to enhance the understanding of future uncertainties
- Scenarios used to assess:
  - Policy actions tailored to specific socio-economic conditions
  - Robust policy actions valid across several socio-economic conditions

Scenario and simulation approach

- Combination of participation (interviews, workshops, webinar), analysis and modelling
- Inclusion of qualitative and quantitative aspects
  - Narratives: creative and rich exploration of how the future might unfold
  - Modelling: enhance the consistency and coherence of the narratives, visual and spatially explicit understanding
  - Policy action assessment: use of scenarios to better understand how different future pathways impact on their likelihood of success

Policy-oriented scenario development

- Exploratory scenarios framed around voluntary and mandatory instruments
  - Voluntary: aim to encourage companies, operators or individuals to improve their environmental performance to meet and exceed legal obligations
    - EU Ecolabel, agri-environmental schemes under CAP
  - Mandatory: standards and practices which oblige industry/sectors/operators or individuals to perform/behave as defined by law
    - Cross-compliance standards, limit values for nitrates concentration in groundwater


High challenges voluntary instruments
low challenges mandatory instruments
2020
enabling
support for transit
social pressure & acceptability
High challenges mandatory instruments,
low challenges voluntary instruments.
2020
2050
Market demand
Societal demand
Increased sustainability
Joined up
CREATE NOISE RESIST
Evidence of effectiveness by govt
Grassroot initiatives
NICHE MARKETS
PREMIUM PRICE
Consumer not prepared to pay
Remain niche market
Limit to mainstreaming

Motivating factors driving scenarios

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Under pressure

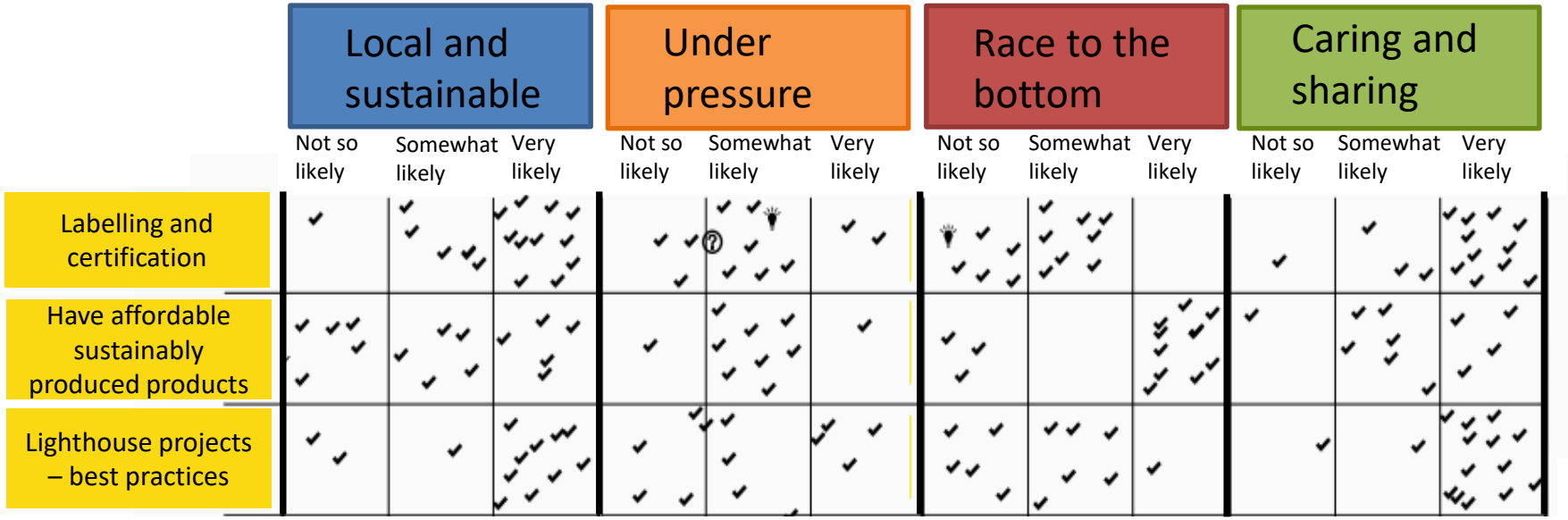
Race to the bottom

Caring & sharing

Local & sustainable

Defining and assessing actions across scenarios

- Listing actions per scenario
- Assessing actions across scenarios



Conclusions policy support under uncertainty exercise

- Learnings about the approach:
  - Approach enables social learning and enhances strategic capacity by considering policy alternatives and uncertain futures
  - Including not just one temporal dimension but alternative future pathways, the spatial dimension, and the range of SICS makes the exercise complex, but does provide the context under which decisions on policy actions should be considered
  - A better understanding of the plausible futures and the challenges and opportunities related to them facilitates the design of appropriate actions
- Results of the exercise will be presented in the next session and provided in the SoilCare reports

Use of policy tools

- Tools for thinking!
- Better understand the range of plausible future pathways ⟶ scoping uncertainty
- 'Future-proof' policy actions or actions that can be supported by policy
  - Assess if specific actions are needed under specific socio-economic conditions
  - Assess if actions are robust under a range of socio-economic conditions
- Mapping and modelling helps to understand spatial differences and related potential for SICS

The SICS potential index will be available as an interactive webtool by September 2021 !!

THANK YOU!

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Questions?