IMPROVING SOIL AND SOIL FUNCTIONS

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LANDMARK
LAND MANAGEMENT: ASSESSMENT, RESEARCH, KNOWLEDGE BASE

WAGENINGEN UR
For quality of life

AGRIRESEARCH CONFERENCE, INNOVATING FOR THE FUTURE OF FARMING AND RURAL COMMUNITIES

BRUXELLES, 3RD MAY 2018

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SOILS ARE A FINITE RESOURCE

...FROM THREATS TO FUNCTIONS

DEMANDS ON OUR LAND

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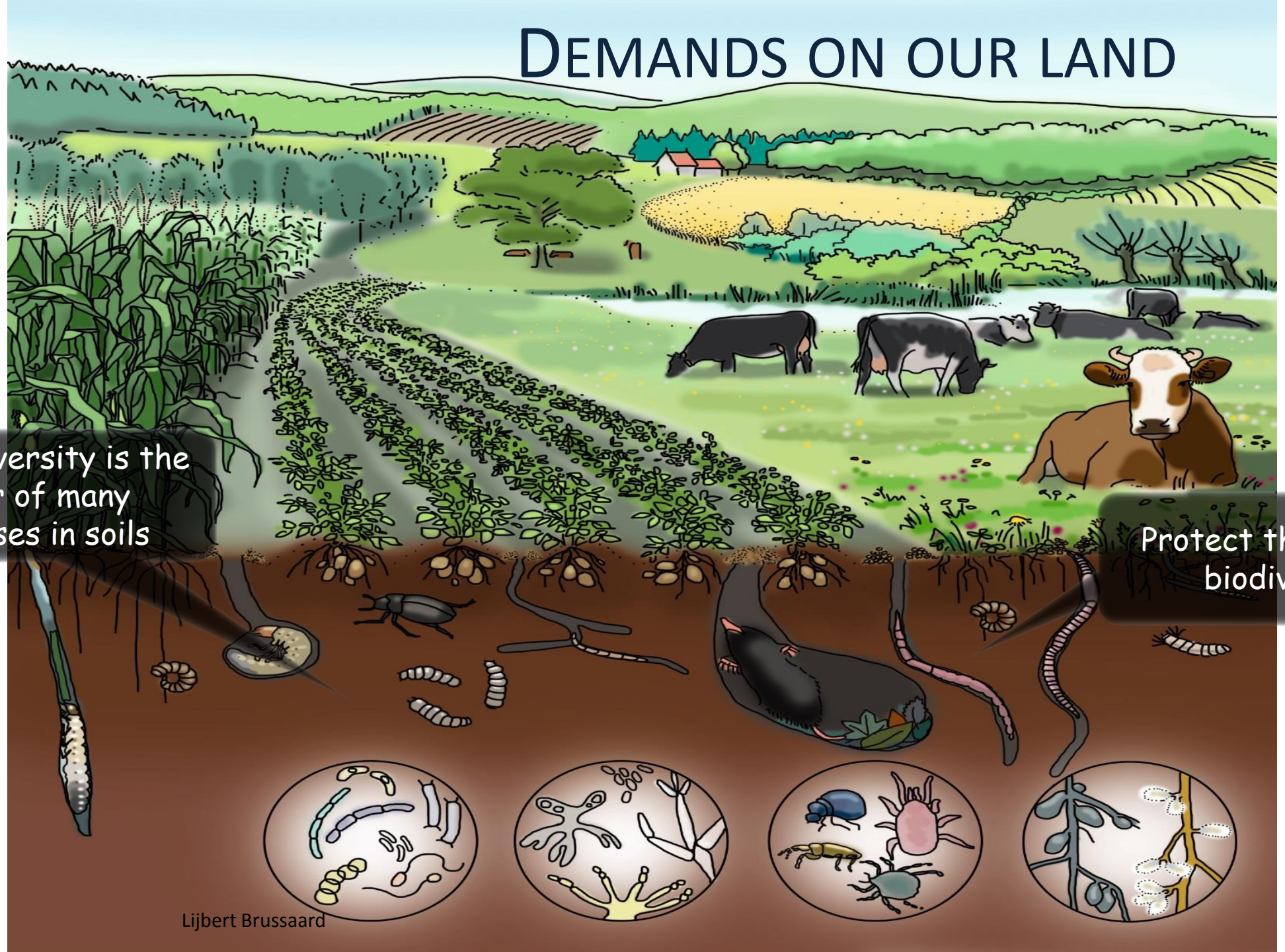


Soil biodiversity is the driver of many processes in soils

Protect the home of biodiversity

Lijbert Brussaard

WHAT CAN OUR LAND SUPPLY?

Water Provision and purification

Carbon sequestration

Habitat for biodiversity

Primary Production

Nutrient Cycling

All soils / land perform all functions ...but different parts of the land(scape) are better at delivering different functions

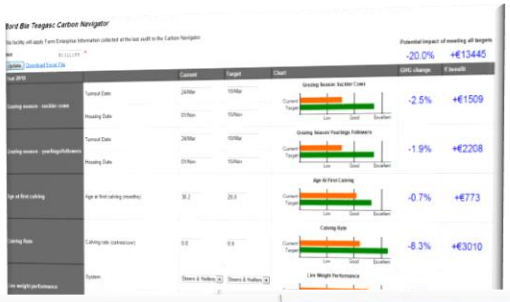
Schulte et al., 2014

More info - interactive glossary http://landmark2020.eu/landmark-glossary/

LAND MANAGEMENT: ASSESSMENT, RESEARCH, KNOWLEDGE BASE

Objective: to quantify the supply of soil functions across the EU as determined by soil properties, land use and soil management practices.

OUR OUTCOMES FOR A SUSTAINABLE MANAGEMENT AND USE OF SOILS



Pillar 1: Farm scale: Develop an agricultural Decision Support Tool (DST) for soil management “”soil navigator”

Pillar 2: Country scale: Design a monitoring scheme for Soil Functions that is applicable at regional scale, for a range of soil types, land uses and pedo-climatic zones;

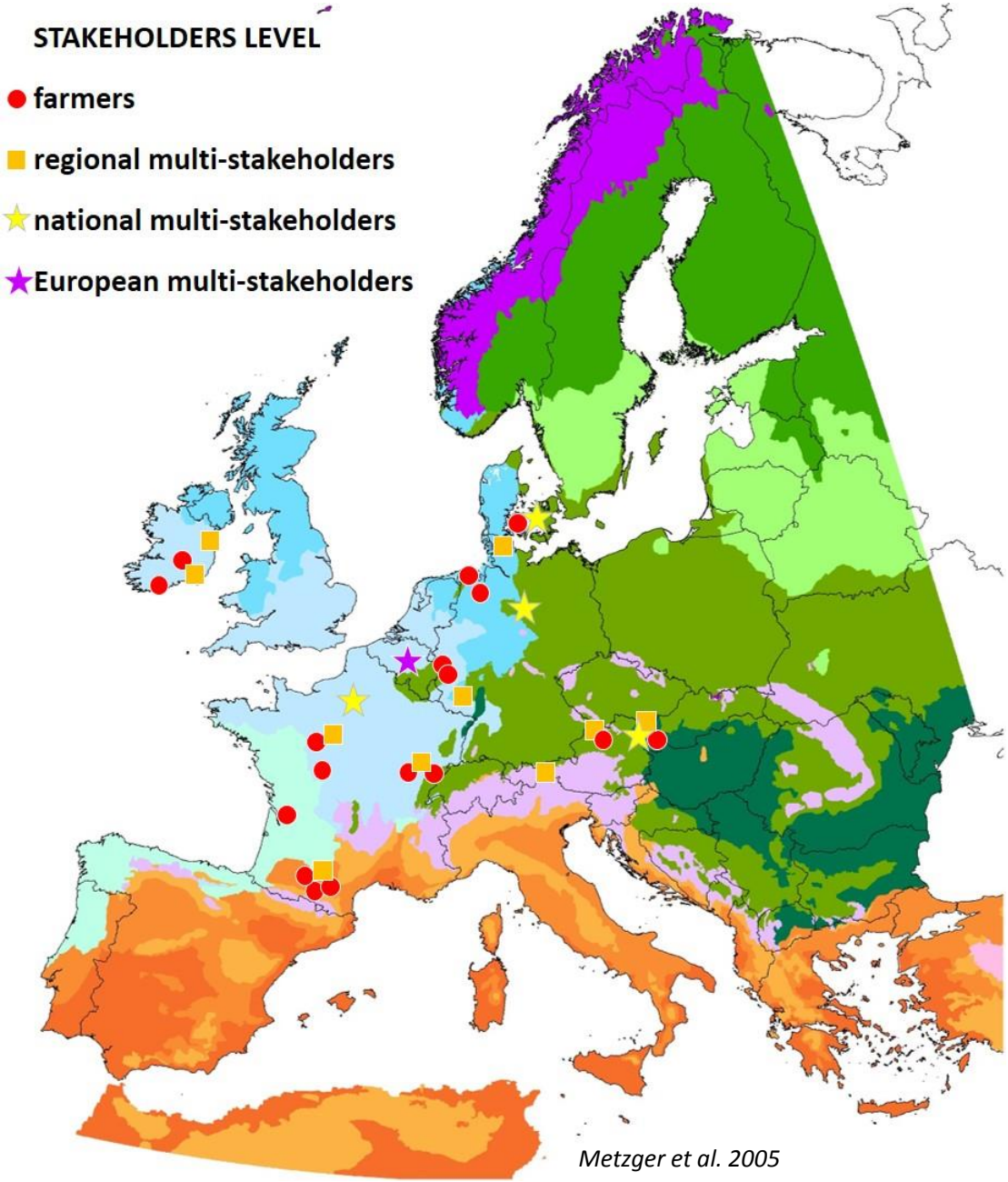
Pillar 3: EU scale: Develop a policy framework for ‘Functional Land Management’ at European scale that aims to optimise the sustainable use of Europe’s soil resource

More info http://landmark2020.eu/pillars/

STAKEHOLDER CONSULTATION:

KNOWLEDGE AND NEEDS ON SOIL AND LAND MANAGEMENT

1 year
5 countries
32 workshops
473 participants



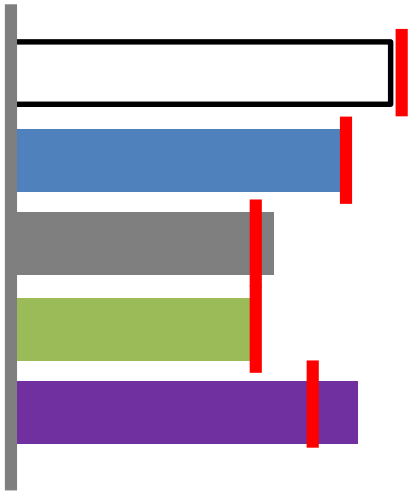
Metzger et al. 2005

More info http://landmark2020.eu/work-package/work-package-1/

PILLAR 1: LOCAL SCALE – SOIL NAVIGATOR

Permanent grasslands (cheese production) in Mediterranean North in two different fields.

October 2017, Roundtable 6, Parma, Italy. Field exercise organised by Parma University in collaboration with Emilia-Romagna Region and EIP-AGRI Operational Groups coordinators and partners (Scalabrini and Burini farms)



Recommendations:

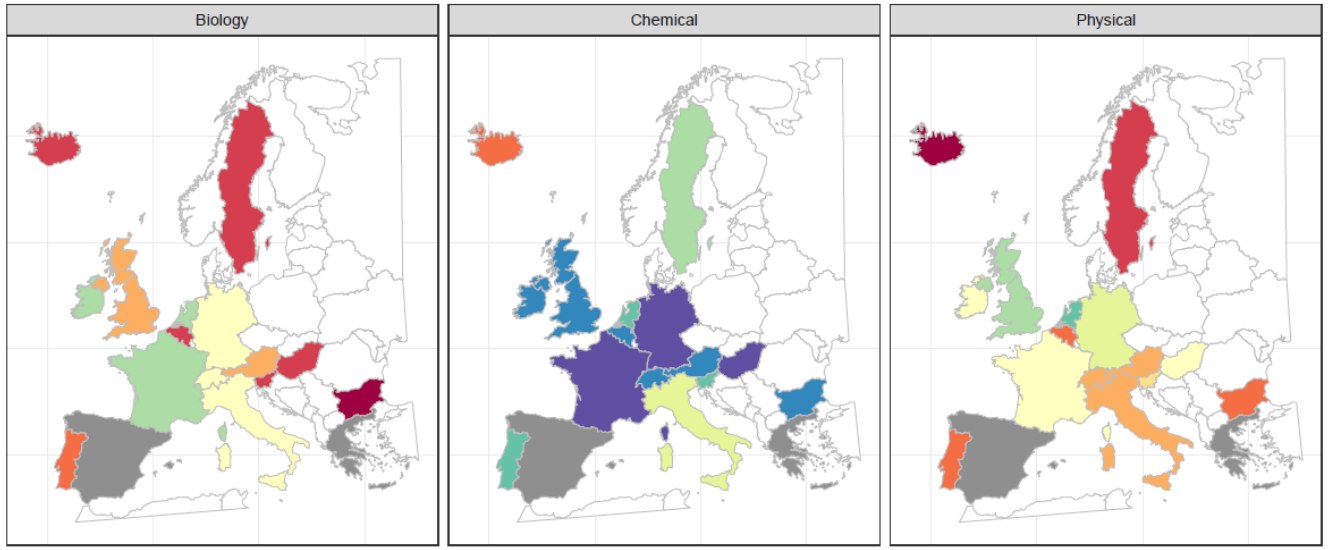
- ☑ Buffer strips
- ☑ Nutrient management plan
- ☑ Minimum tillage
- ☑ Lime application

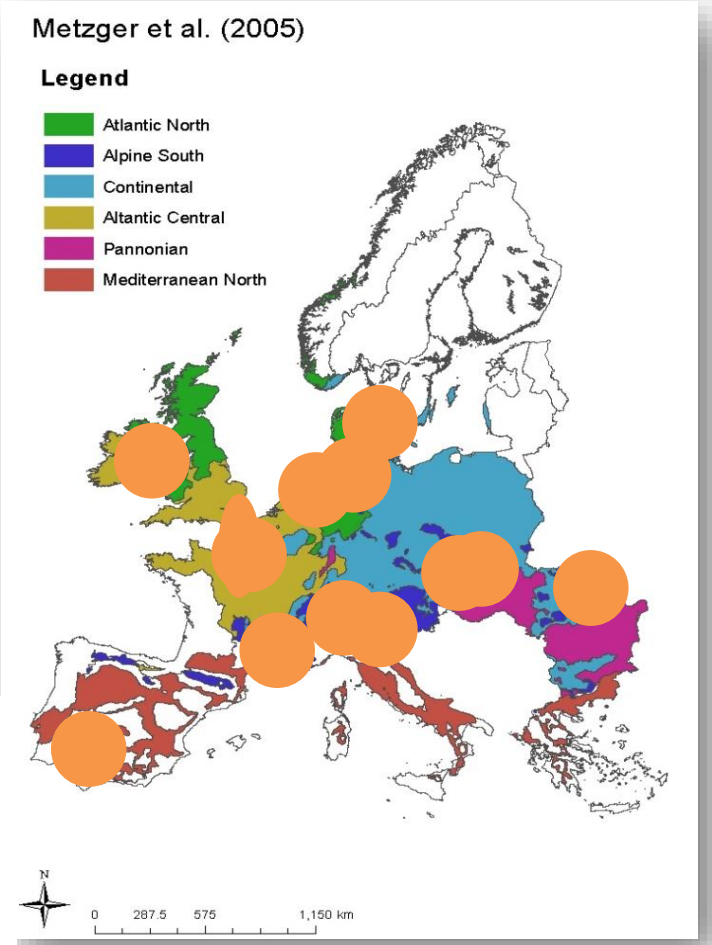
More info http://landmark2020.eu/pillars/soil-navigator-pillar1//

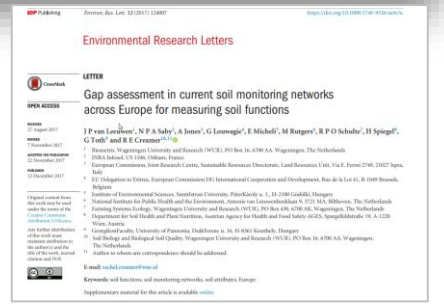
PILLAR 2: REGIONAL SCALE- MONITORING

Testing **NOW** the feasibility of the monitoring design in 100 sites, spread over 6 climatic zones, 2 land uses, 2 dominant soil types/diagnostics.

Site n 1. Grassland in Villadose di Rovigo, Veneto region, Italy, April 2018






Environmental Research Letters

Gap assessment in current soil monitoring networks across Europe for measuring soil functions

Van Leeuwen et al. 2017

More info http://landmark2020.eu/publication-tree/publication-tree-n6-gap-assessment-current-soil-monitoring-networks-across-europe-measuring-soil-functions/

PILLAR 3 – EU SCALE

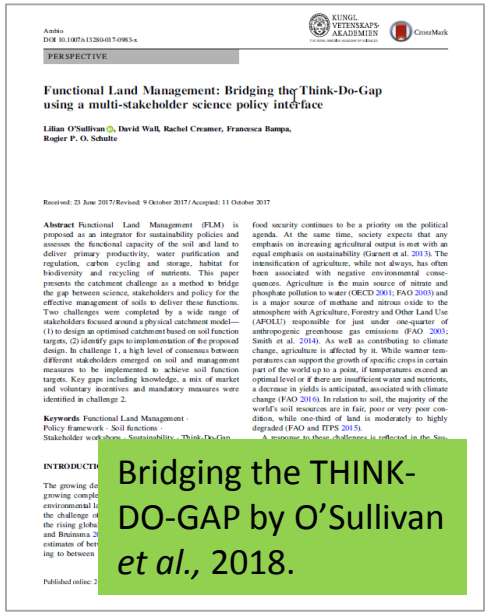
A POLICY FRAMEWORK FOR FUNCTIONAL LAND MANAGEMENT

sustainability MDPI

Article

The Impact of Policy Instruments on Soil Multifunctionality in the European Union

Impact of policy instruments on soil multifunctionality in the EU by Vrebos *et al.*, 2017.

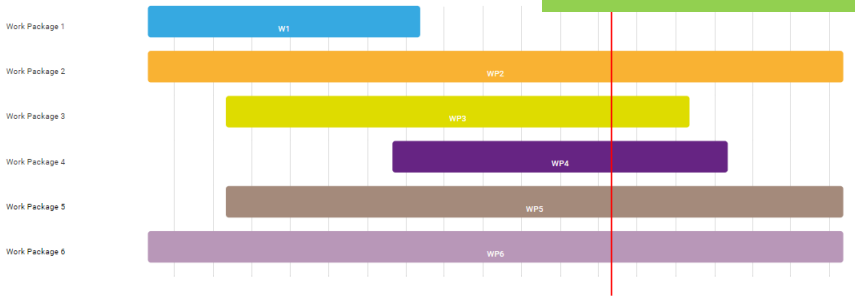

PERSPECTIVE

Functional Land Management: Bridging the Think-Do-Gap using a multi-stakeholder science policy interface

Bridging the THINK-DO-GAP by O'Sullivan *et al.*, 2018.

More info http://landmark2020.eu/pillars/eu-policy-tools-optimising-soil-functions-pillar3/

EMERGING PRIORITIES FOR FURTHER RESEARCH

- Pillar1 (local scale) – **mainstreaming soil functions management into the advisory service**
- Pillar2 (national scale) – **harmonisation of references for monitoring soil functions**
- Pillar 3 (European) – **economic assessment of soil functions at EU scale**

LANDMARK activities at April 2018