17 April 2024

Agroforestry for the Future of European Agriculture

Policy Summit

Session starts at 9am

The Square, Brussels

agromix

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

Agroforestry for the Future of European Agriculture

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WIFI PASSWORD

SSID Network Name:

square-guest

Login:

agroecology

Password:

APS2024!

SUMMIT AGENDA

Agroforestry for the Future of European Agriculture
Policy Summit, 17 April 2024

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This event is being livestreamed

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17 April 2024

Order of the Day

- Welcome
- Agroforestry in the European Context
- Introduction to World Cafe
- Coffee Break
- World Cafe Sessions
- Lunch
- Importance of peasant farming
- Results of morning session
- Debate
- Q&A
- Artistic interpretation
- Conclusions

The Square, Brussels

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Agroforestry for the Future of European Agriculture
Policy Summit, 17 April 2024

Welcome and Introduction

Boglárka Bozsogi
Communication & Policy Officer
Agroecology Europe

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Agroforestry for the Future of European Agriculture

Policy Summit, 17 April 2024

Welcome and Introduction

Professor Dr Ulrich Schmutz

AGROMIX Project Coordinator and Professor of Organic Horticulture and Ecological Economics, University of Coventry

Professor Tommy Dalgaard

Coordinator of EU project MIXED and Manager of the research section for Agricultural Systems and Sustainability, Aarhus University, Department of Agroecology

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Welcome to AGROMIX summit

Prof Dr Ulrich Schmutz, Coventry University

ulrich.schmutz@coventry.ac.uk

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All across Europe's climate extremes from Iceland nearly in America to Malta nearly in Africa, is the answer agromix* ?

*agroforestry with mixed farming

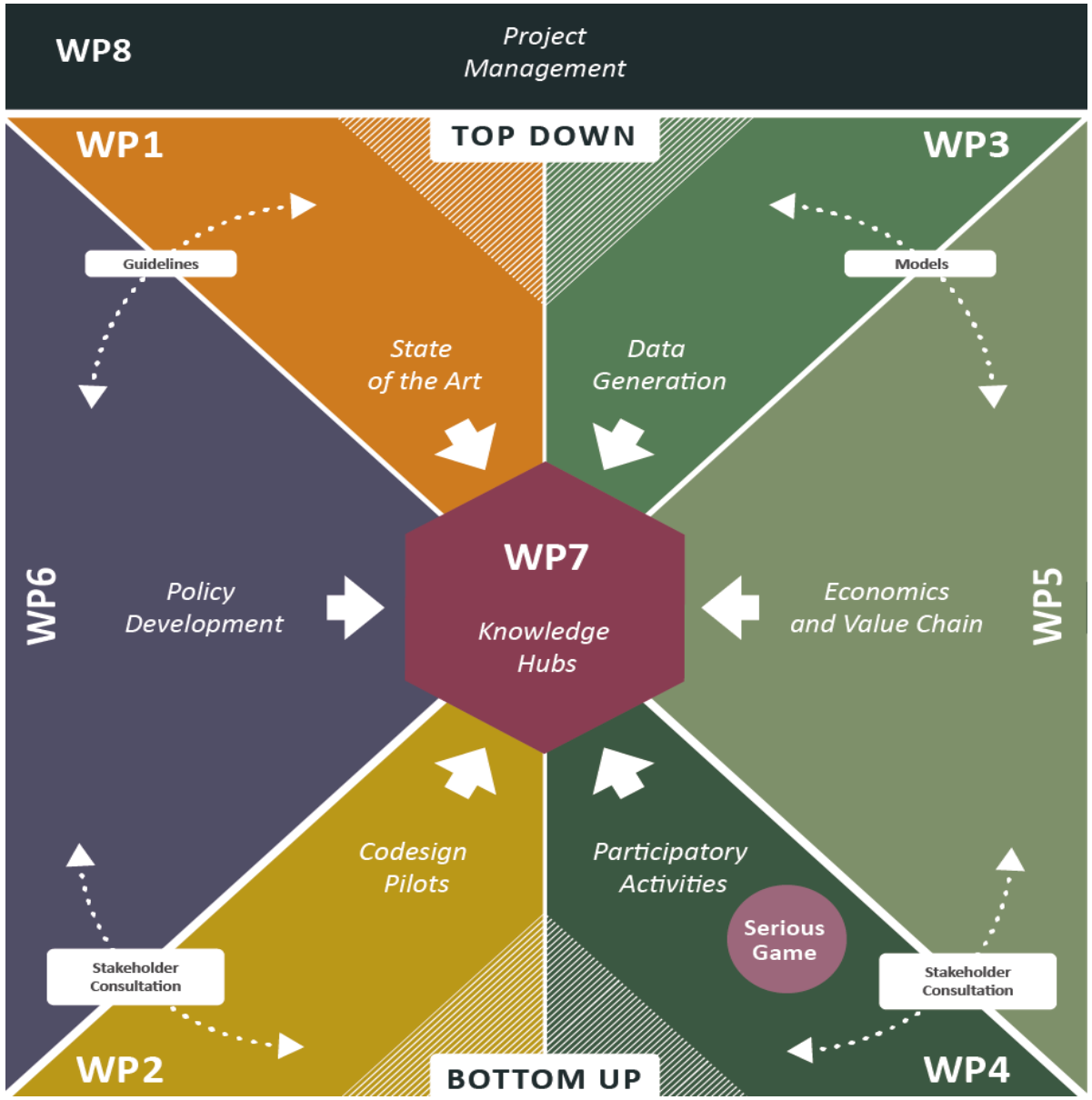
July 2023

March 2024

The
Agroforestry
Show
6 - 7 September 2023 • Eastbrook Farm, Wiltshire
AGROFORESTRY

project overview

- rooted in agroecology
- bio-physical data from replicated long-term core sites
- new co-design agroforestry pilots
- modelling (crops & trees, climate, economic, policy)
- policy co-development
- agroforestry innovation management



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28 Partners:
10 universities
7 research institutes
11 multi-actor partners

14 countries
4 years, 2021 - Oct 2024
€7m Horizon-2020 RIA (Research and Innovation Action)

vision for today's summit

- Summit of stakeholders - not heads of states (bottom up)
- World Café Discussions and co-development
- Vision for a New Green Deal, Greener and co-designed for next EU-commission with agroecology and agroforestry at its heart

vision for next New Greener Deal?

- Increase animal welfare and biodiversity and make at least 20% agroforestry mandatory by 2050
  (for comparison in EU currently 8.8%, UK has 10% target)
- Increase policy target for certified agroecological (=organic) land use to 50% by 2050
- Simplify CAP to support small-scale diverse mixed land use
- Fund free advice and tree establishment Europe wide
- Fund agroforestry innovation actions to improve marketing and supply chains

FORESTRY
AGRICULTURE
AGROFORESTRY
Bridging the GaP
11%
Avoid Mono-cultures
Design?
Silvopasture
Fuel
Biochar
Wire better than Plastic
Nut Trees
cereals
vegetables
fruits
Food Forest Gardening
PiloE
Increased Grants & Premium
Dept. Ag
Silvo-Arable System
emissions

Thank you!

Ulrich Schmutz

Coventry University

ulrich.schmutz@coventry.ac.uk

MIXED-project.eu

Efficient and resilient mixed farming and agroforestry

Prof Dr Tommy Dalgaard, Aarhus University, Agroecology

tommy.dalgaard@agro.au.dk, Land-CRAFT.dk

17th April 2024

The MIXED project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862357

MIXED-project.eu

Efficient and resilient mixed farming and agroforestry

Prof Dr Tommy Dalgaard, Aarhus University

tommy.dalgaard@agro.au.dk

17th April 2024

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MIXED-project.eu

Efficient and resilient mixed farming and agroforestry

Prof Dr Tommy Dalgaard, Aarhus University

tommy.dalgaard@agro.au.dk

17th April 2024

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Efficient and resilient mixed farming and agroforestry

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17th April 2024

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Efficient and resilient mixed farming and agroforestry

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17th April 2024

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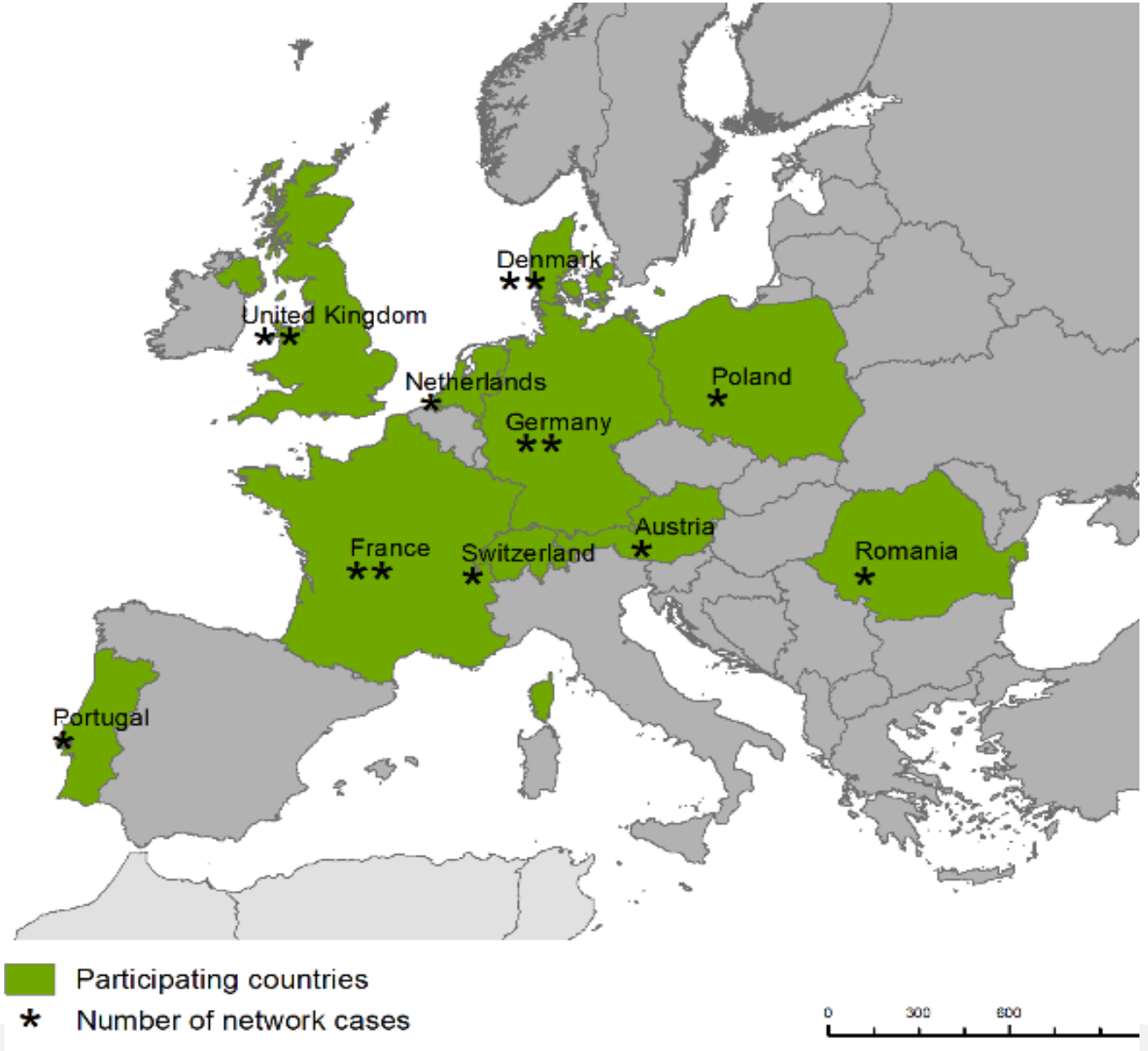
MIXED

Project overview

- EU H2020 research and innovation project (October 2020 – February 2025)

The overall project objective is to: *support the development of European Mixed Farming and Agroforestry Systems (MiFAS) that optimize efficiency and resource use, reduce GHG emissions, and show greater resilience to climate change by considering agronomic, technical, environmental, economic, institutional, infrastructure and social advantages and constraints.*

- A multi-actor-project



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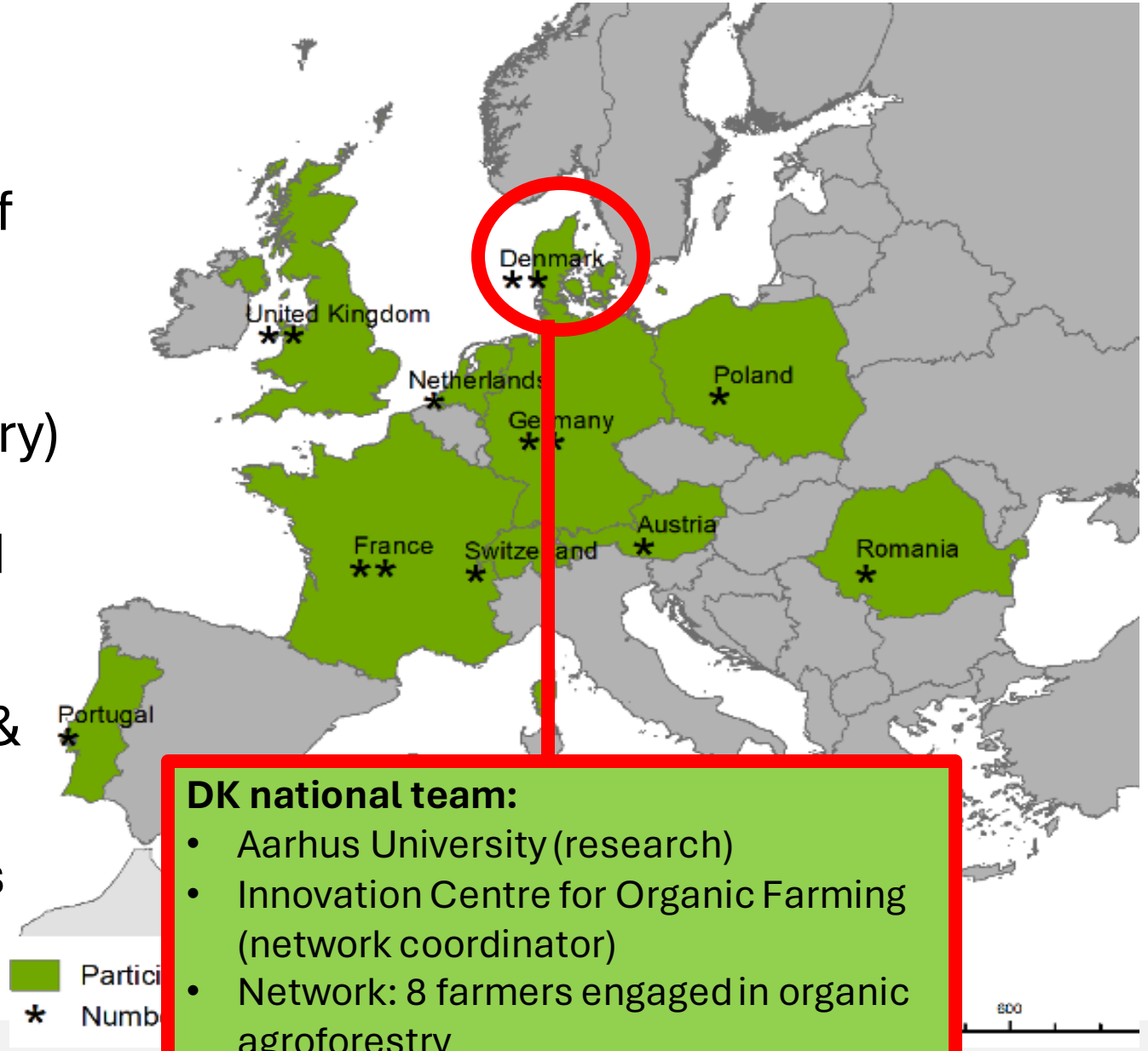
MIXED – a multi-actor project

A collaboration between networks of farmers, farmers' organisations/ consultancies/NGOs and researchers.

In total 14 networks (7 on agroforestry) and 20 partners in 10 countries.

Participatory activities implemented in parallel by national teams in the 10 countries.

National teams: 1 research partner & 1-2 network coordinators collaborating with 1-2 networks of farmers (a total approx. 87 farmers in the project).



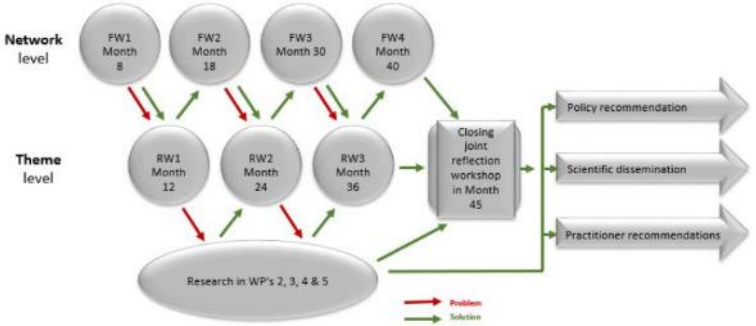
DK national team:

- Aarhus University (research)
- Innovation Centre for Organic Farming (network coordinator)
- Network: 8 farmers engaged in organic agroforestry
- Network: 12 farmers engaged in nutrient cycling and green biomass production

MIXED
FARMING & AGROFORESTRY SYSTEMS

MIXED – multi-actor development of MiFAS

- *Learning hubs with networks of farmers.*
  I. Arable crops ↔ livestock
  II. Energy crops/fodder trees ↔ livestock
  III. Fruit/nut trees/bushes ↔ livestock/arable crops
- *Alternating national field workshops and project level reflection workshops.*
- *Participatory design of mixed farming and agroforestry systems.*
- *Identification of solutions to barriers/bottle-necks at farm level, landscapes and value chains.*
- *Action research identified by networks.*



MIXED
FARMING & AGROFORESTRY SYSTEMS

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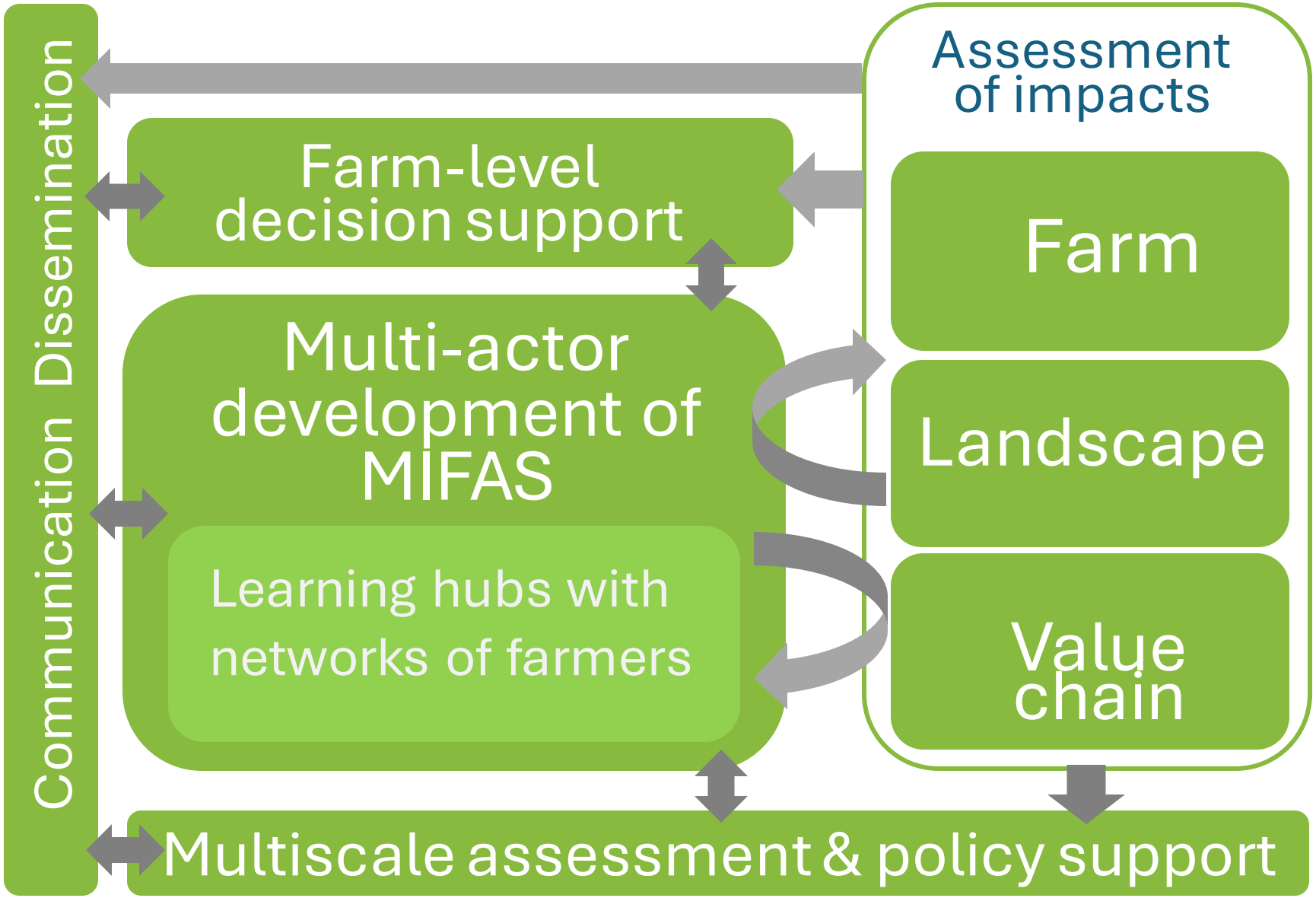
MIXED R&D

- **Co-creation of knowledge and innovations for transition to MiFAS**
- **Development and assessments of benefits and trade-offs of MiFAS**
- **Decision support for farmers and multiscale assessments for policy support**



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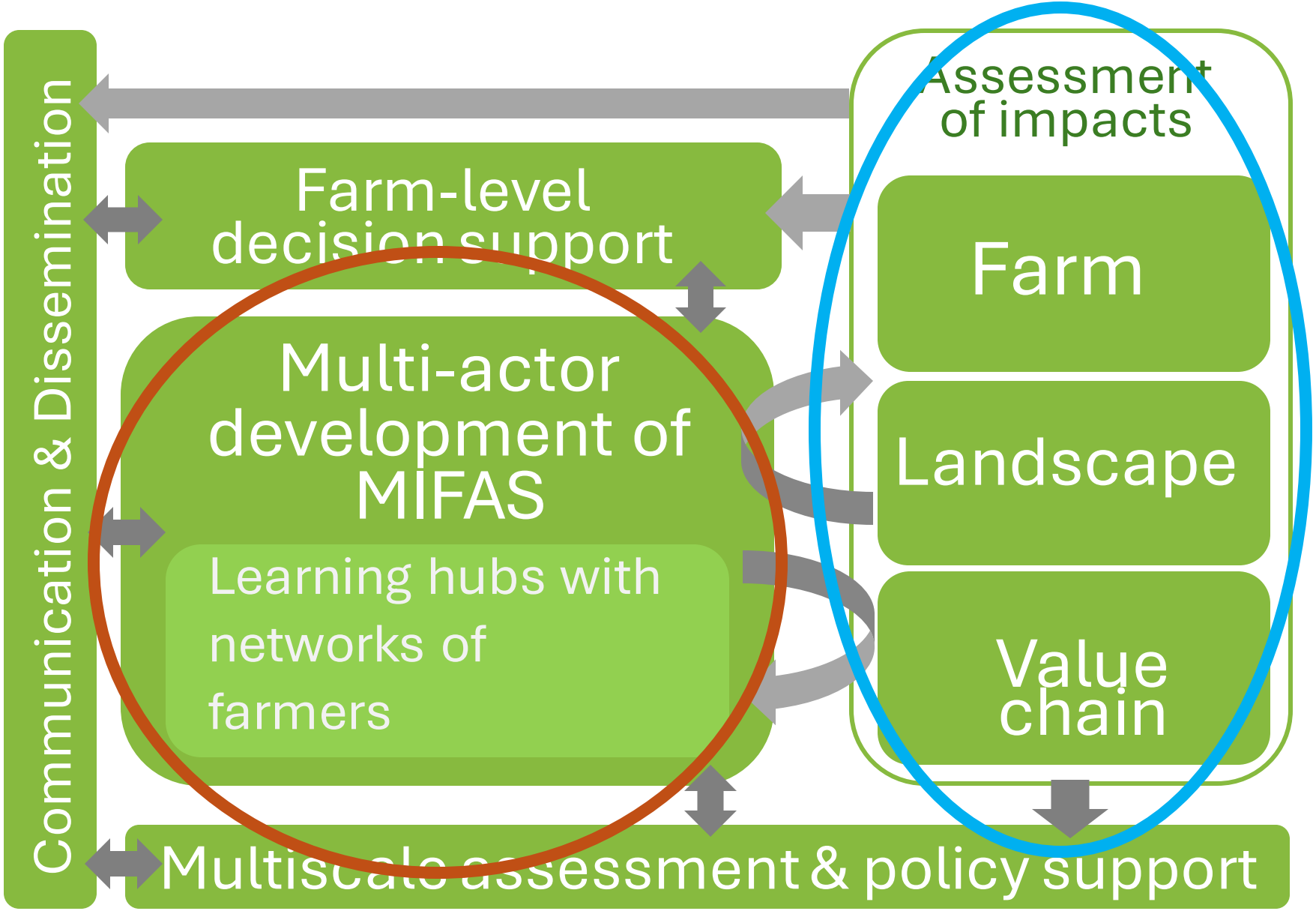

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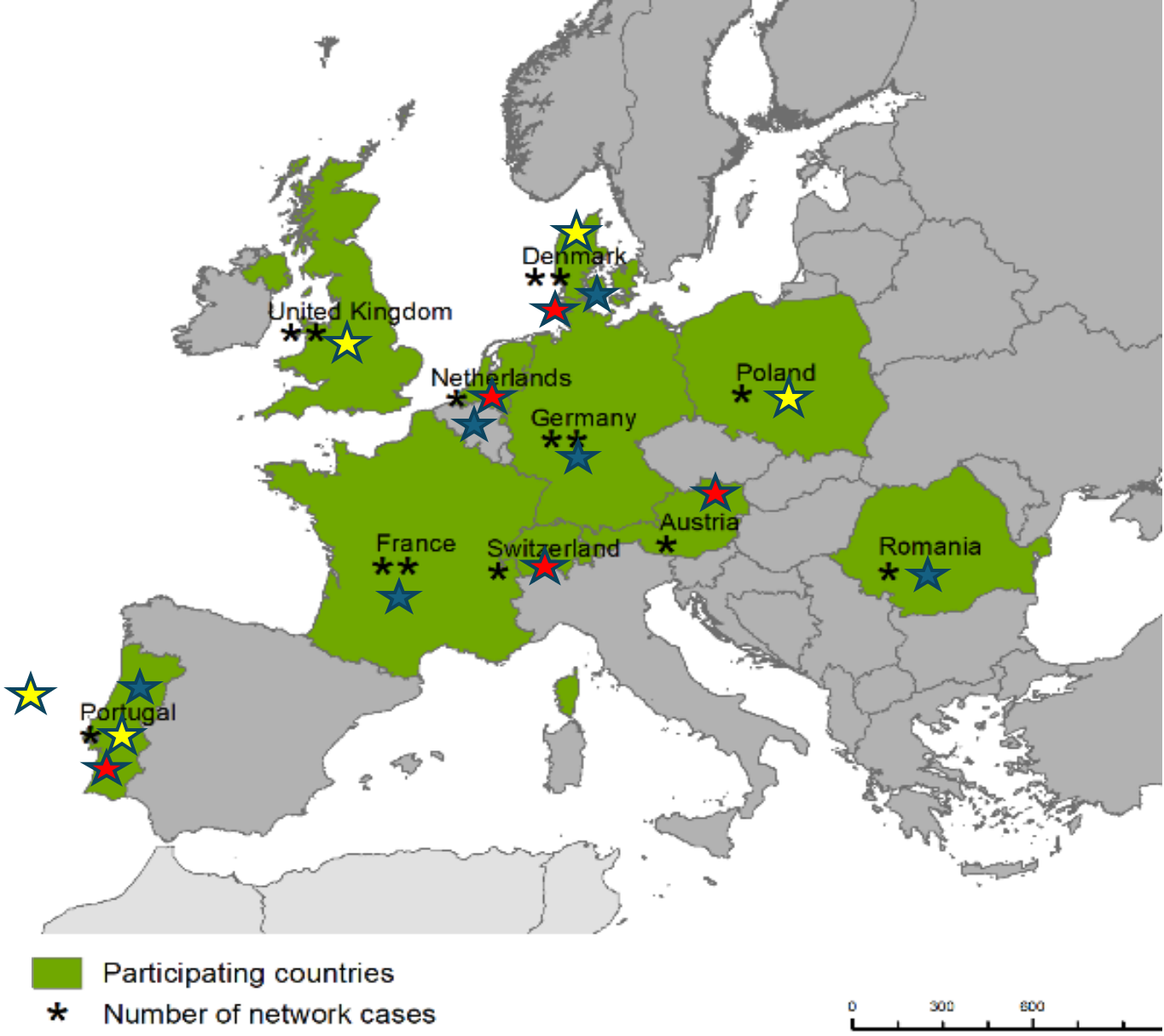
Assessment of impacts

Using:

- Existing data sets (national, FADN, EUROSTAT)
- Data collected from 14 networks
- Farm-level innovation case studies
- Landscape level case studies
- Value chains case studies



MIXED FARMING & AGROFORESTRY SYSTEMS

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MIXED practice abstracts

- PA 1: MIXED multi-actor and participatory approach
- PA 2: Common visions for mixed farming and agroforestry systems in EU - but different pathways there
- PA 3: New comprehensive catalogue of scientific literature about mixed farming and agroforestry
- PA 4: Framework for development of mixed-farming and agroforestry systems
- PA 5: Handbook of indicators - to be used in the collection of farm level data in MIXED
- PA 6: Integrated production of pastures, cork, and high value meat products (Montado mixed system)
- PA 7: Improved nutrient cycling and green biomass production via biorefinery and farm collaboration

Austria

- Austria: Apple hens - Laying Hens in Biodynamic Orchards

Denmark

- Denmark: Agroforestry with organic outdoor sows
- Denmark: Farm collaboration for improved landscape and nutrient management

France

- France: Territorial collaboration among crop and livestock farmers
- France: Key issues to reflect on when returning livestock on an arable farm
- France: Do we have to reduce the number of pigs to avoid soil erosion?
- France: Improving the Pig Agroforestry system

Germany

- Germany: Sustainable wetland farming in Donaumoos – choice of crops and how to establish them
- Germany: Sustainable wetland farming in Donaumoos – use and marketing of wetland crops
- Germany: Sustainable wetland farming in Donaumoos – how to organise and support
- Germany: Livestock in sustainable wetland farming in Donaumoos
- Germany: Visualising the multifunctionality of agroforestry systems with citizen science
- Germany: Chicken forest - semi-natural diversity in agroforestry

Poland

- Poland: Getting trees from your own tree nursery made easy

Romania

- Romania: Improving valorization of local agrifood products and MiFAS through agritourism

Switzerland

- Switzerland: The example of a Swiss network to promote high stem fruit trees

United Kingdom

- United Kingdom: Grazing winter cereals with sheep in Scotland

See all the MIXED practice abstracts in the EU CAP Network Database

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projects.au.dk/mixed/mixed-farming-and-agroforestry-systems-mifas/mixed-project-publications

MIXED project publications

- A european MiFAS 'state of the art' and future scenario publication (D.1.1)
- Handbook of indicators and methodology for assessing changes in system functioning, farm management for efficiency and resilience (D.2.2)
- Literature study and review of relevant research projects addressing MiFAS (D.3.1)
- A graph-based modelling approach for farm interactions (D. 3.2.)
- Identifying the potential for expansion of mixed farming in European regions (D.3.3)
- An analysis of the performance of mixed and agroforestry systems (D.5.1)
- A report on strategies for managing specific labour demands of MiFAS (D.5.2)
- Prototype of a 'serious game' for application at landscape level (D.5.3)
- A 'serious game' for application at landscape level (D.5.6)
- Report on the MIXED multi-scale framework for assessment of MiFAS (D. 6.1)
- A report on efficiency and resilience analysis at farm level (D.6.2)
- A report on upscaling of efficiency and resilience analysis to community, regional, national and EU-level (D.6.3)
- Key learnings and results by month 18 presented in Practice Abstracts (D. 7.8)
- Data Management Plan (D.8.1)

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MIXED farming perform better!

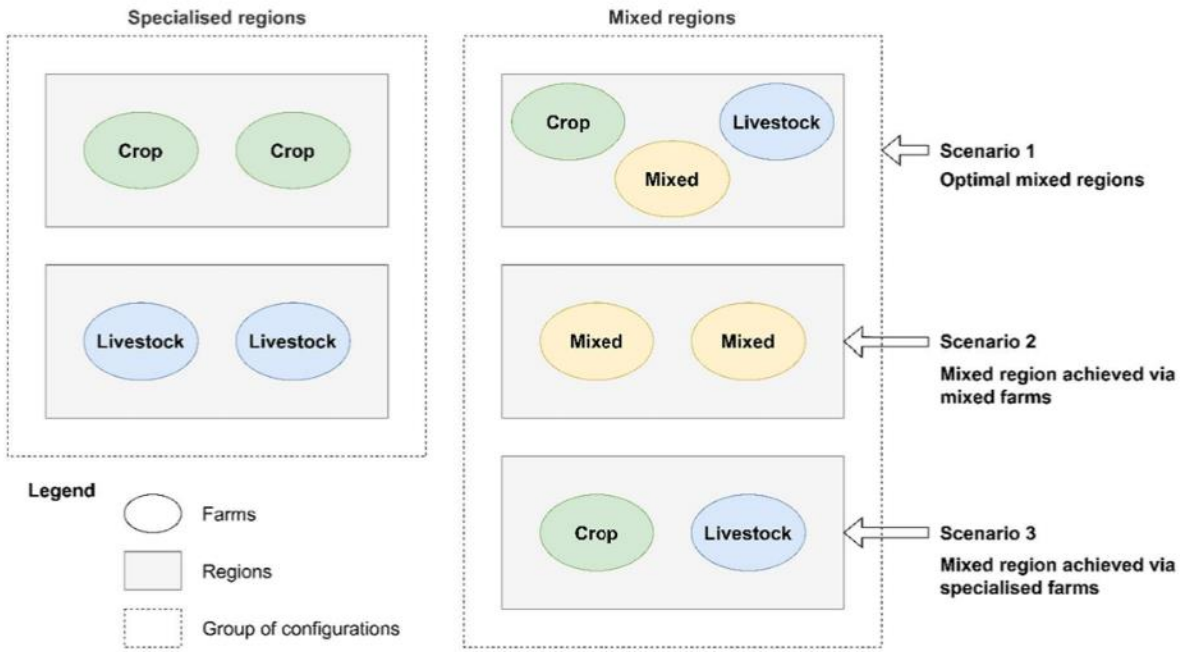

Figure 3.1: Three scenarios for achieving mixed regions.

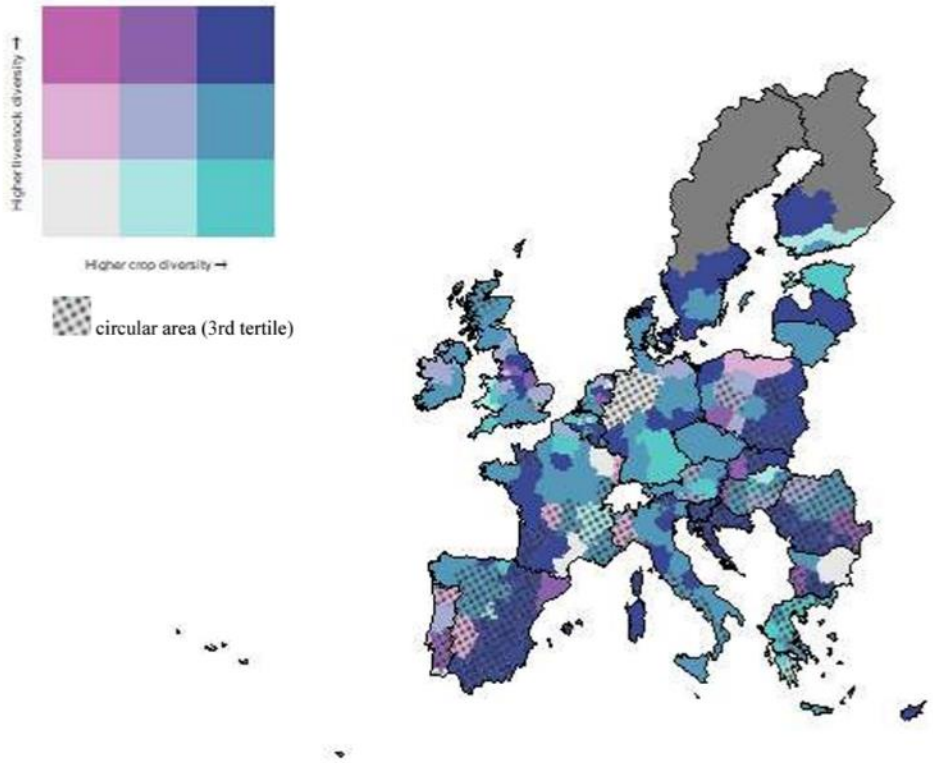

Figure 3.2: New classification of mixed landscapes, where dark blue zones with points are considered as high in crop diversity, livestock diversity and circularity.

(Results from D6.3)

MIXED FARMING & AGROFORESTRY SYSTEMS

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MIXED Newsletter – How can I subscribe?

Home
- About MIXED
- Networks & national teams
- MIXED research - step by step
- MIXED project publications
- Mixed farming and agroforestry systems (MiFAS)
- MIXED newsletters
- Highlights
- Events
- Contact

MIXED newsletters

MIXED newsletter, November 2023

MIXED newsletter, April 2023

MIXED newsletter, November 2022

MIXED newsletter, May 2022

MIXED newsletter, October 2021

MIXED newsletter, April 2021

MIXED
EFFICIENT AND RESILIENT
MIXED FARMING & AGROFORESTRY

Sign up for our newsletter

Learn more about Multi-actor and transdisciplinary development of efficient and resilient farming and agroforestry-systems

Read more about the MIXED project

See our newsletters and sign up

MIXED leaflet

- MIXED leaflet (Danish)
- MIXED leaflet (English)
- MIXED leaflet (French)
- MIXED leaflet (German)
- MIXED leaflet (Portuguese)
- MIXED leaflet (Romanian)
- MIXED leaflet (Polish)

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THANK YOU!

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Agroforestry for the Future of European Agriculture
Policy Summit, 17 April 2024

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The importance of transforming the EU food system towards sustainability and resilience

Elise Van Broeckhoven
Farmer at Plukboerderij GRONDIG

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

Mixed farming and Agro-forestry
at Plukboerderij GRONDIG

Elise Van Broeckhoven

elise@plukboerderijgrondig.be

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Why I became a farmer

Our farm:
Plukboerderij GRONDIG

A 10ha mixed farm since 2020

Vegetables

Fruit

Meat
Eggs

Core values of Plukboerderij GRONDIG

Local

Ecological

Fair

Mixed farming

Mixed farming

= mixed knowledge

= mixed skills

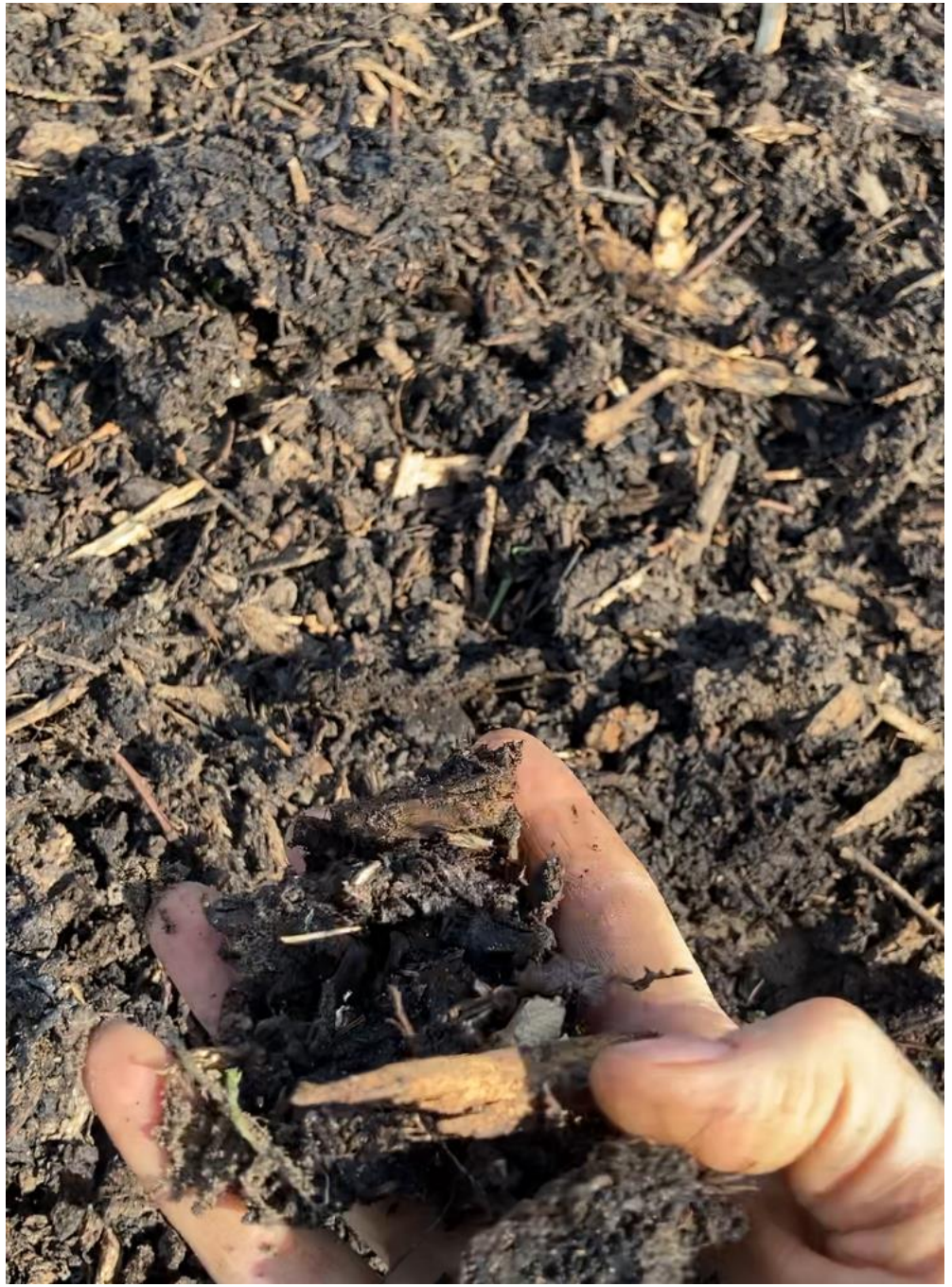
= **mixed regulations**

Agro-forestry on our farm

Why **do** we plant trees?
For their beauty

Why **do** we plant trees?
Increasing biodiversity

Why **do** we plant trees?
Woodchip production



Why **do** we plant trees?
Added value

Why **do** we plant trees?
Use as a fence

Why **do** we plant trees?
To create shadow

Why **don’t** we plan trees?
Short term rent

Why **don’t** we plant trees?
Long term rent

Why **don’t** we plant trees?
Long term rent

4

Some realities with implementing agro-forestry

Conditions for planting

Applying for a subsidy?

Maintenance
- weed management
- irrigation

Rabbits and voles

Thank you

Elise Van Broeckhoven

elise@plukboerderijgrondig.be

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Policy Summit, 17 April 2024

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Why the EU is supporting research projects on agroforestry and mixed farming

Susana Gaona Sáez
Research Policy Officer at the EU Commission (DG AGRI)

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Agroforestry for the Future of European Agriculture

Policy Summit, 17 April 2024

Agroforestry in the European Context

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Agroforestry for the Future of European Agriculture
Policy Summit, 17 April 2024

Potential of agroforestry and mixed farming for the transformation of the European food system: key results of the AGROMIX Project

Felix Herzog
Agronomist and landscape ecologist, Research group leader at Agroscope

Professor Dr Ulrich Schmutz
AGROMIX Project Coordinator

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Introduction: From Core sites to the Continent

AgroForestry/Mixed Farming (AF/MF) “Core sites”

- Long-term sites, 20+ years
- With replicates & controls
- Bio-physical scientific rigour

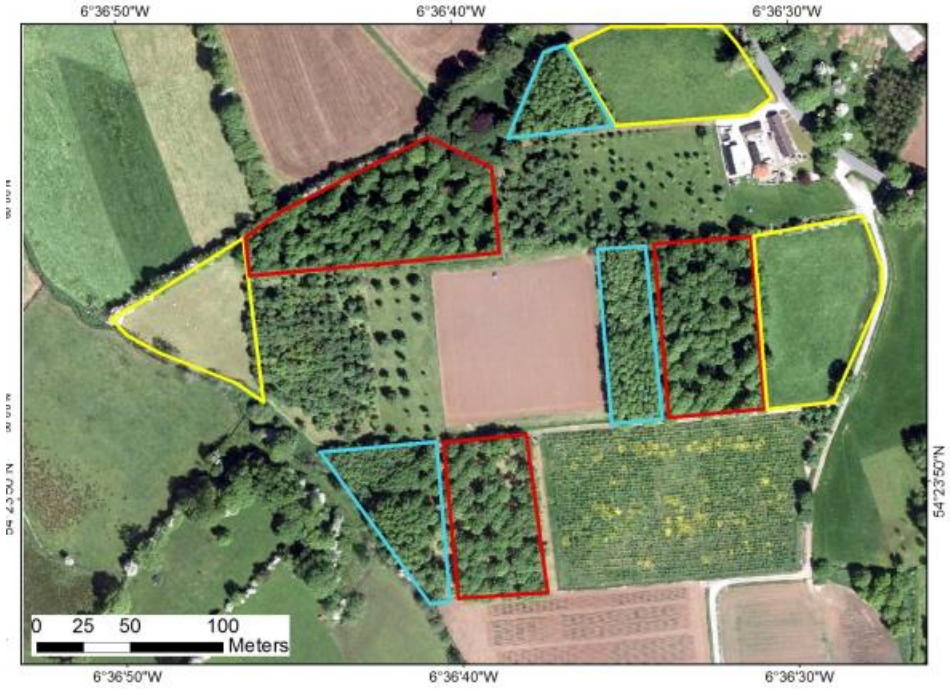
Approach:

Measure

1. Agroforestry
2. Forest
3. Grass/Arable

Model scenarios

Upscale to landscape level

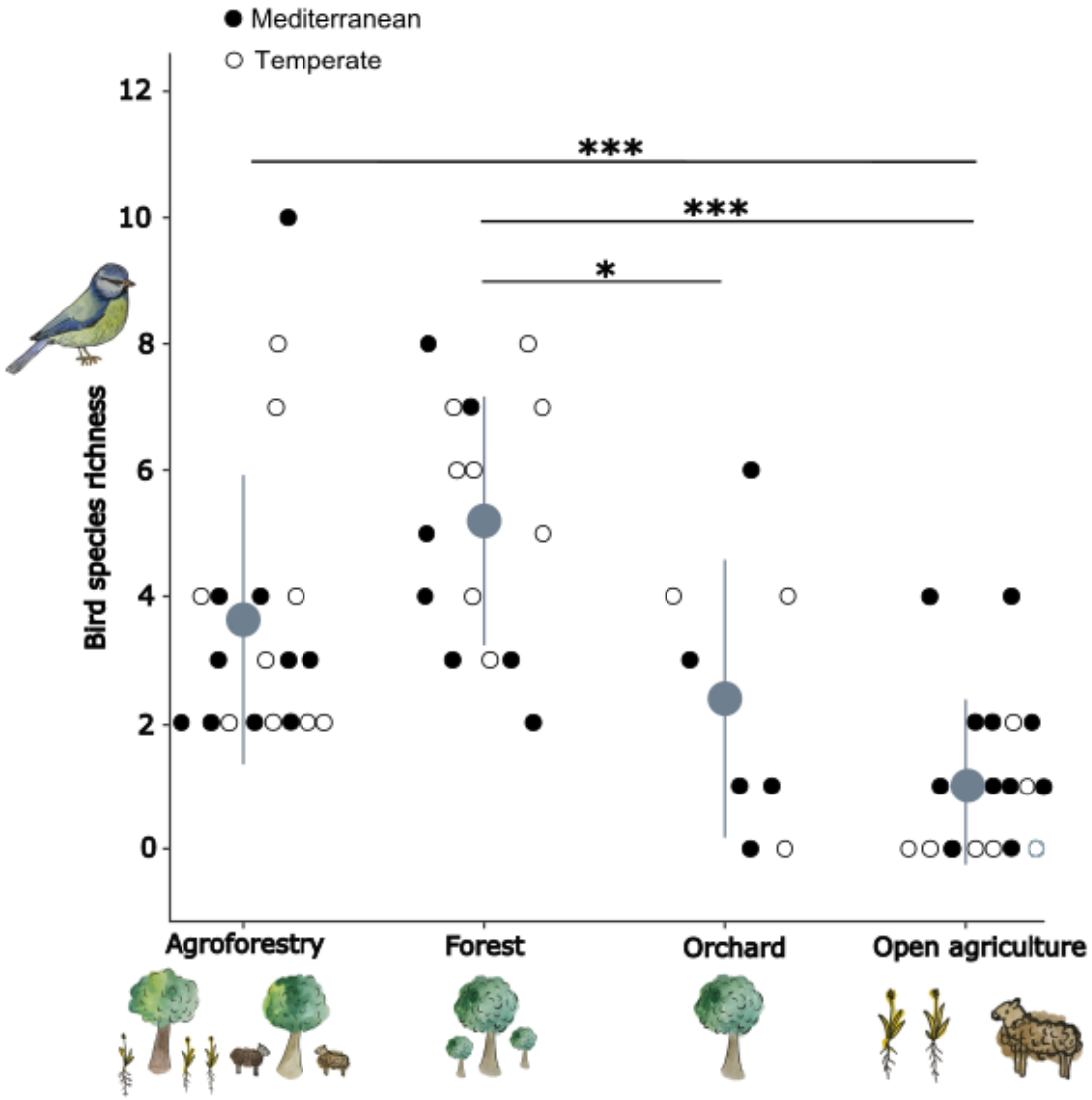


Measure

Biodiversity benefits of AF/MF

AF/MF = AgroForestry & Mixed Farming

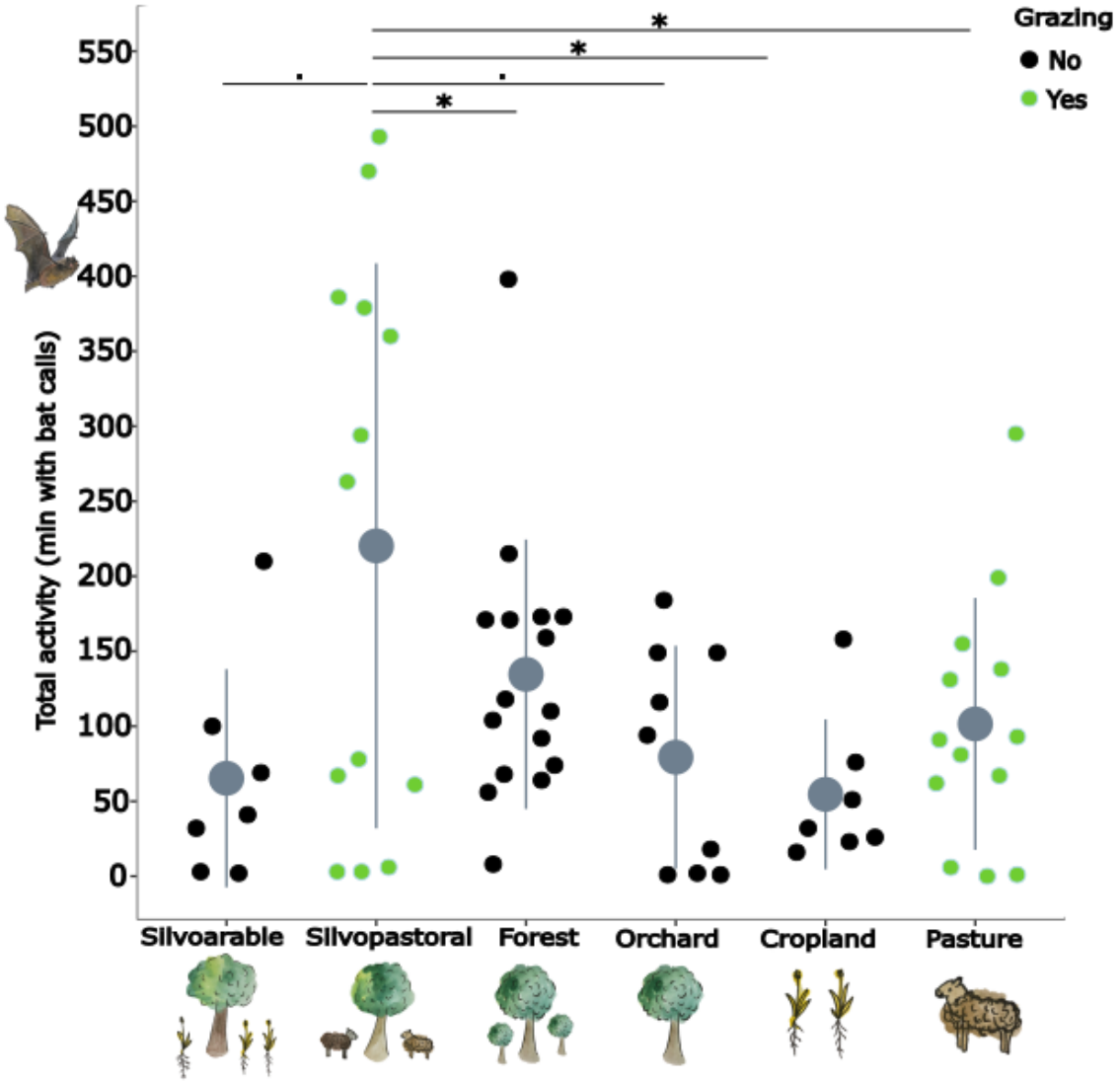
Bird species richness: Agroforestry > Open farmland



- Data analysis from 8 sites
- Number of species: 48
- Number of bird records: 305
- Agroforestry sites (n=19), forests (n=15), orchards (n=8) , open agriculture: cropland/pasture (n=18)
- Significant differences for bird species richness (indicator of diversity)

Edo, M., Entling, M.H. & Rösch, V. *Agron. Sustain. Dev.* 44, 1 (2024). https://doi.org/10.1007/s13593-023-00936-2

Bat activity: Highest in silvopastoral agroforestry



- Data analysis from 8 sites
- Number of species/species groups: 10
- Silvoarable (n=7), silvopastoral (n=13), forests (n=16), orchards (n=9), cropland (n=7), pasture (n=13) Echolocation activity (number of active minutes)
- Significant differences in activity silvopasture higher than forest

Edo et al. (subm.)

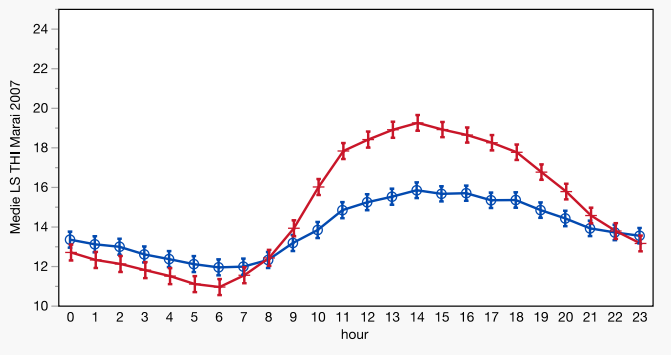
Can we **measure** climate resilience of AF/MF?

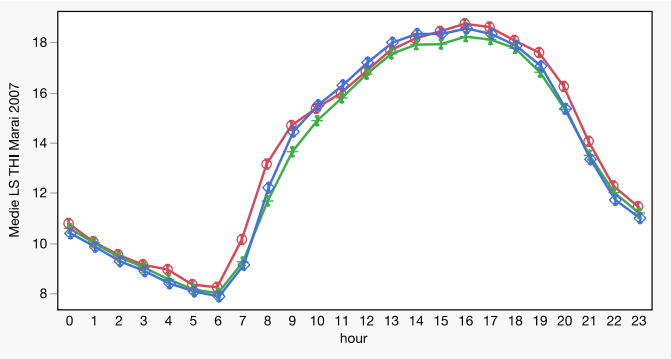
AF/MF = AgroForestry & Mixed Farming

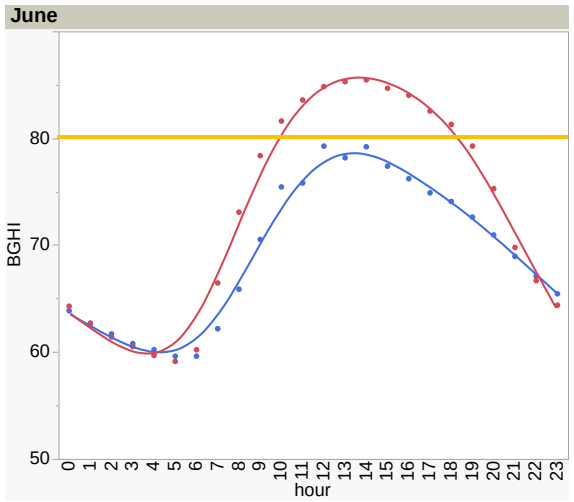
Agroforestry and microclimate conditions

- Loughgall (UK)
  - in summer higher temperature-humidity index (THI) in grassland system compared with AF; heat stress threshold exceeded in August only in pasture plots
- Lamartine (FR)
  - in summer: presence of trees increases amplitude of THI between day and night, decreases solar radiation and wind speed; heat stress threshold exceeded in July and August only in pasture plots
- Tenuta di Paganico (IT)
  - in silvopastoral system significantly lower black globe index compared to open pasture; heat stress threshold was exceeded from June to August (10-12 hours per day), in July also in AF, but for fewer hours

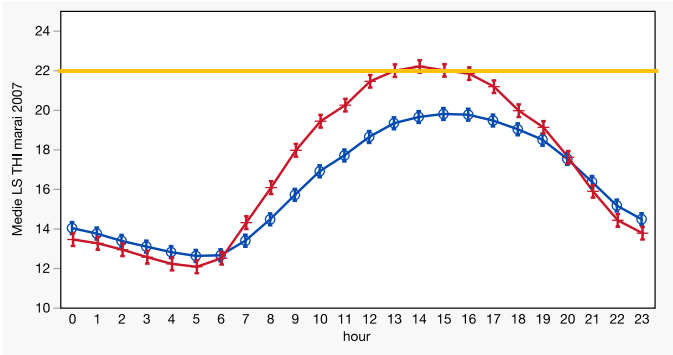
THI June 21-

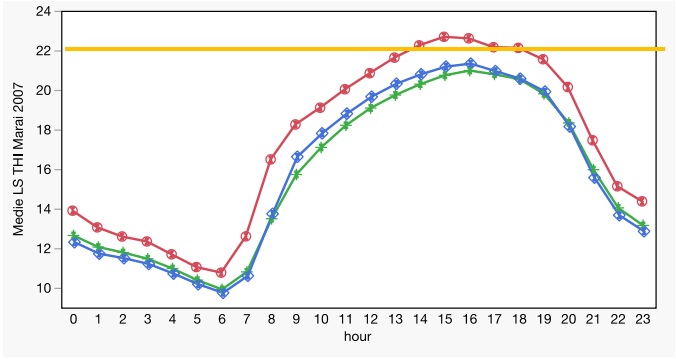


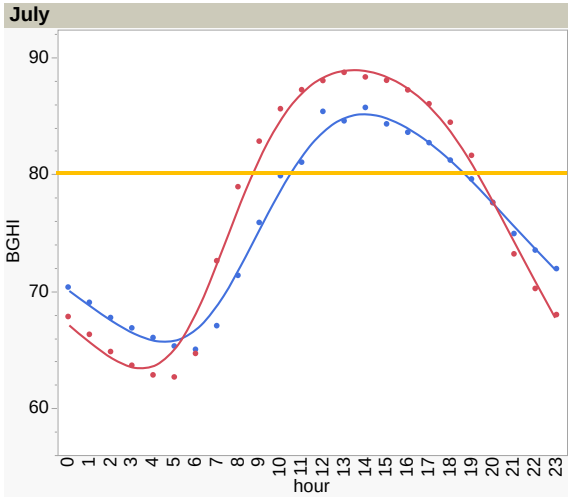




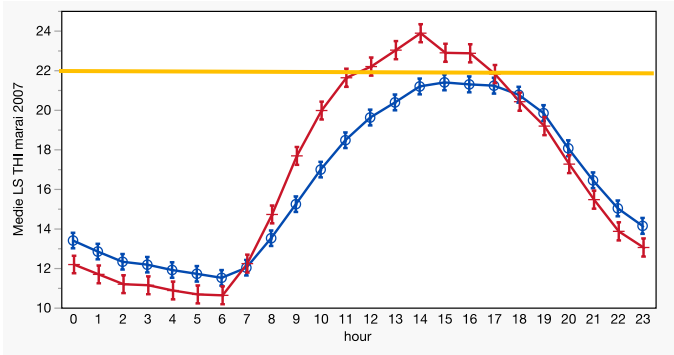
THI July 21-

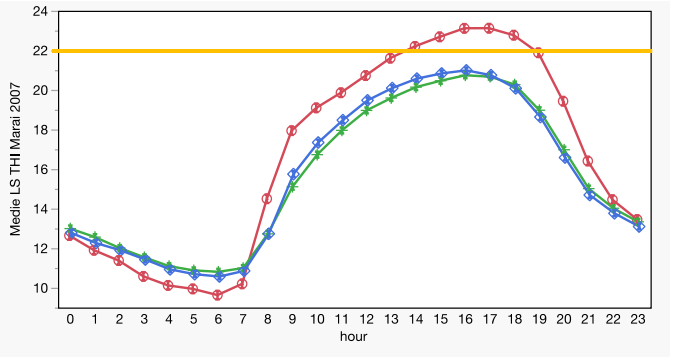


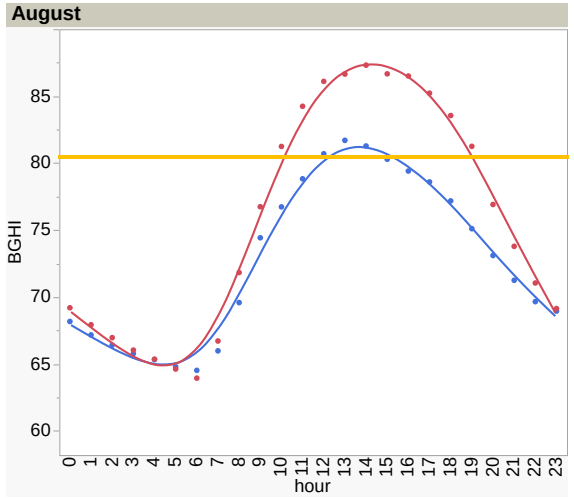




THI August 21-







Loughgall (UK)

- grassland
- agroforestry
- heat stress threshold

Lamartine (FR)

- grassland
- agroforestry (on the hedge)
- agroforestry (60 trees/ha)
- heat stress threshold

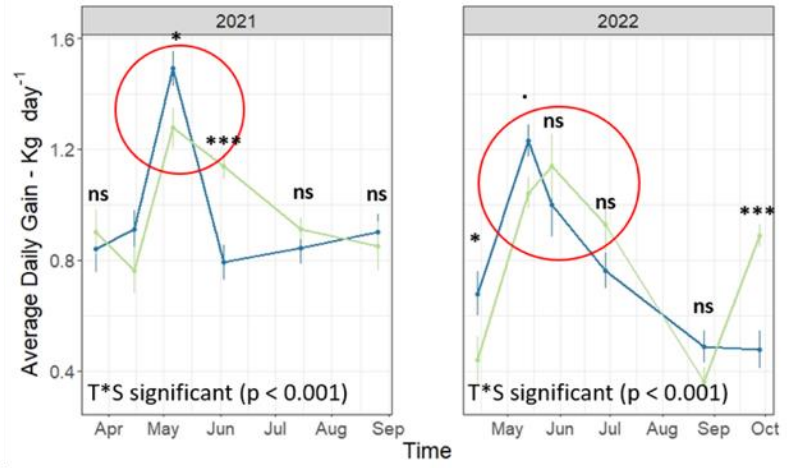
Tenuta di Paganico (IT)

- grassland
- silvopastoral
- heat stress threshold

Ripamonti et al. (2023)

Animal productivity and welfare:
Open pasture in spring, agroforestry in summer

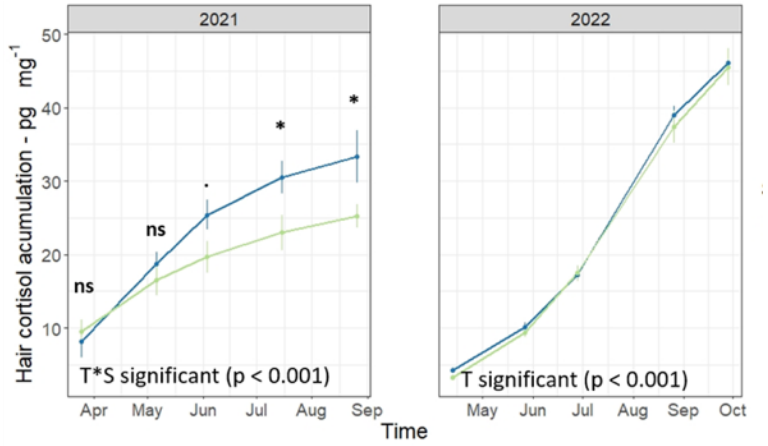
Daily weight gain



Tenuta di Paganico (Italy)
Beef steers and heifers

grassland
silvopastoral

Cortison stress levels



In Italy and France (Lamartine) core sites, the heat stress during the summer period resulted in significant differences in hair cortisol concentration (an index for heat stress monitoring).
The heat stress affected live weight gain and eating behaviour.

Ripamonti, A., Mantino, A., Annecchini, F. et al. (2023). *Agroforest Syst 97*, 1071–1086. https://doi.org/10.1007/s10457-023-00848-w

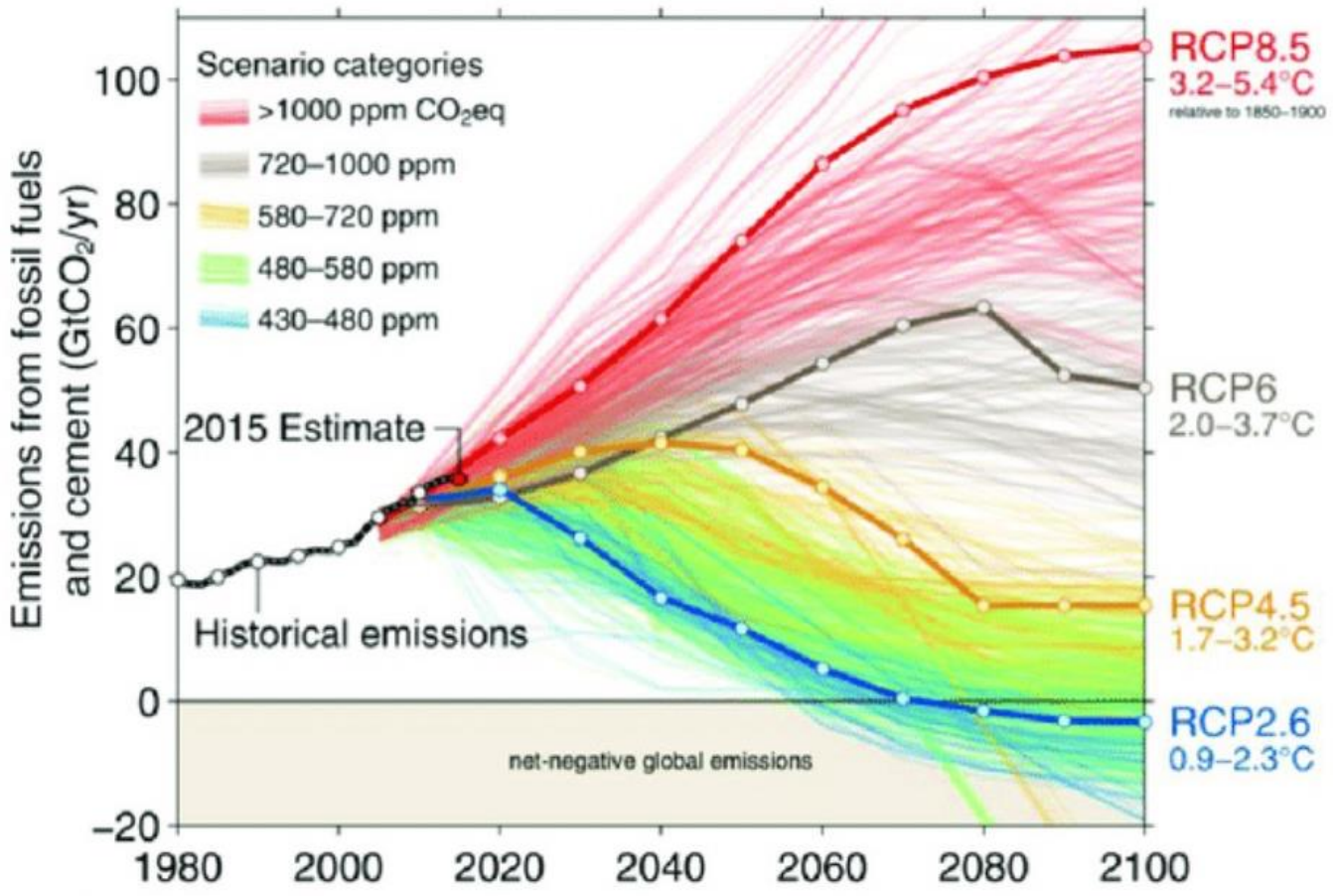
Model

Can we **model** climate resilience of AF/MF?

Different Scenarios

RCP Representative Concentration Pathways of CO_{2eq} (carbon and carbon-equivalent emissions)

RCPs are labelled the radiative forcing values in the year 2100 (2.6, **4.5**, 6, and **8.5** W m^{-2})

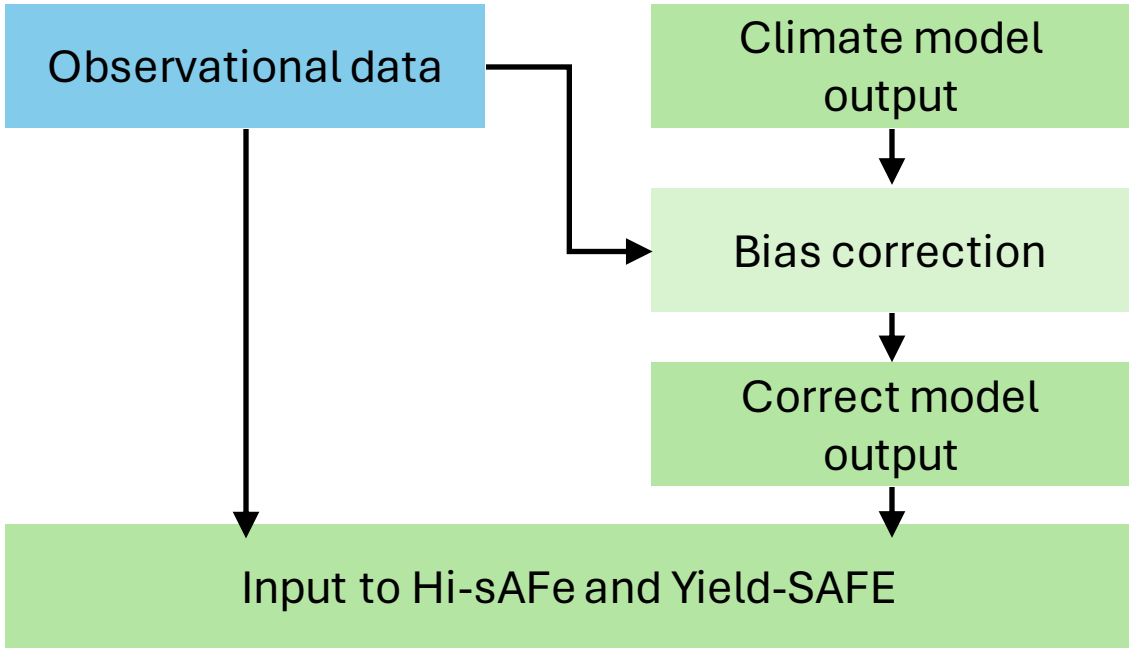


We are on the pathway of RCP 8.5

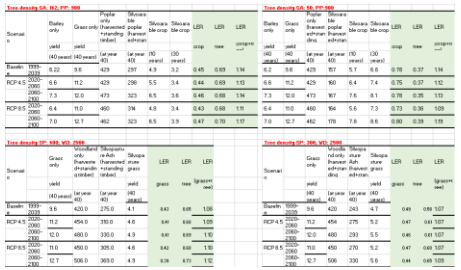
Source https://climatenexus.org/climate-change-news/rcp-8-5-business-as-usual-or-a-worst-case-scenario

Calibrate climate data and models against measured data >> Simulate virtual experiments

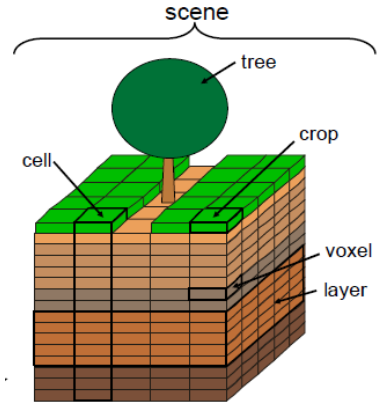
Weather data for 7 sites: Bias correction measured <> modeled
Two climate scenarios: **RCP4.5** and **RCP8.5**.



Two process-based models:
Measured <> modeled → Parametrise
→ **Scenarios and virtual experiments**

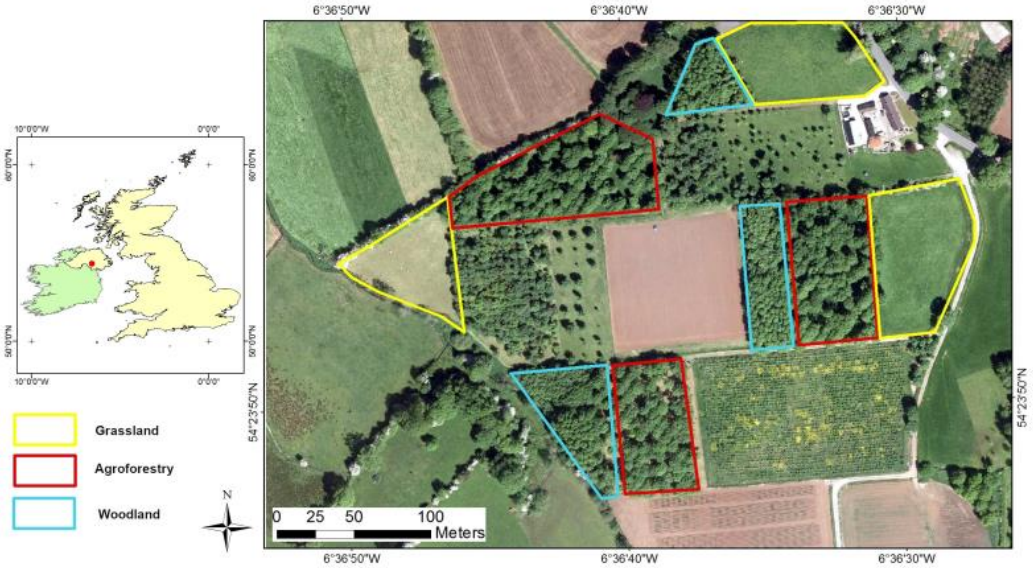


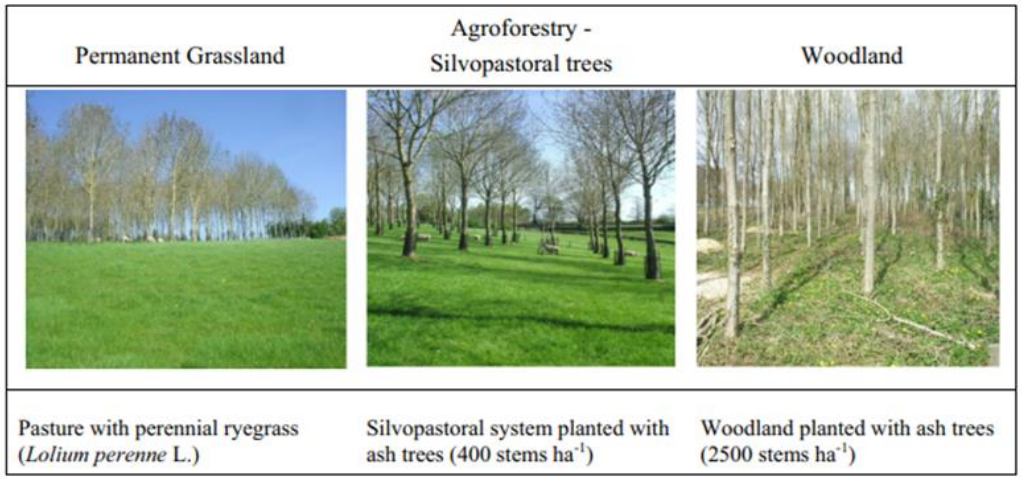
Yield-SAFE (van der Werf et al., 2007)



Hi-sAFe (Dupraz et al., 2021)

Loughghall (Northern Ireland, UK): Two long-term experiments





Location of the study site and details of the three land use types (i.e. permanent grassland, silvopastoral system and planted woodland) established at Loughgall, Northern Ireland, UK in 1989 (adopted from Fornara et al., 2018)

Silvopastoral (est. 1989)

Ash (400 trees/ha), grass

Silvoarable (est. 1999)

Poplar (142 trees/ha), barley

Yield-SAFE RCP 8.5: General yield increase, optimum tree density

- Silvopastoral (ash, grass)

High ← Tree density → **Lo**

		tree density (ha^{-1})												
		400							300					
Scenario		Grass only	Woodland only (harvested+ standing timber)	Silvopasture grass	Silvopasture Ash (harvested+ standing timber)	LER (grass)	LER (tree)	LER (grass+ tree)	Grass only	Woodland only (harvested+ standing timber)	Silvopasture grass	Silvopasture Ash (harvested+ standing timber)	LER (grass)	LER (tree)	LER (grass+ tree)
		t ha^{-1}							t ha^{-1}						
Baseline	1989-2029	9.6	420	4.1	275	0.43	0.65	1.08	9.6	420	4.7	243	0.49	0.58	1.07
RCP 8.5	2020-2060	11.0	450	4.6	305	0.42	0.68	1.10	11.0	450	5.2	270	0.47	0.60	1.07
	2060-2100	12.7	506	4.9	369	0.39	0.73	1.12	12.7	506	5.6	330	0.44	0.65	1.09

- Silvoarable (poplar, barley)

		tree density (ha^{-1})												
		142							50					
Scenario		Barley only	Poplar only (harvested +standing timber)	Silvoarable barley	Silvoarable poplar (harvested+standing timber)	LER (crop)	LER (tree)	LER (crop+ tree)	Barley only	Poplar only (harvested +standing timber)	Silvoarable barley	Silvoarable poplar (harvested+standing timber)	LER (crop)	LER (tree)	LER (crop+ tree)
		t ha^{-1}							t ha^{-1}						
Baseline	1999-2039	6.2	429	2.4	297	0.39	0.69	1.08	6.2	429	4.5	157	0.72	0.37	1.09
RCP 8.5	2020-2060	6.4	460	2.4	314	0.38	0.68	1.06	6.4	460	4.6	164	0.72	0.36	1.08
	2060-2100	7.0	462	3.3	323	0.47	0.70	1.17	7.0	462	6.2	178	0.89	0.39	1.27

Giannitsopoulos, M.L., Burgess, P.J., Graves, A.R., Olave, R., Eden, J.M. (in prep.)

Wakelyns

England, UK

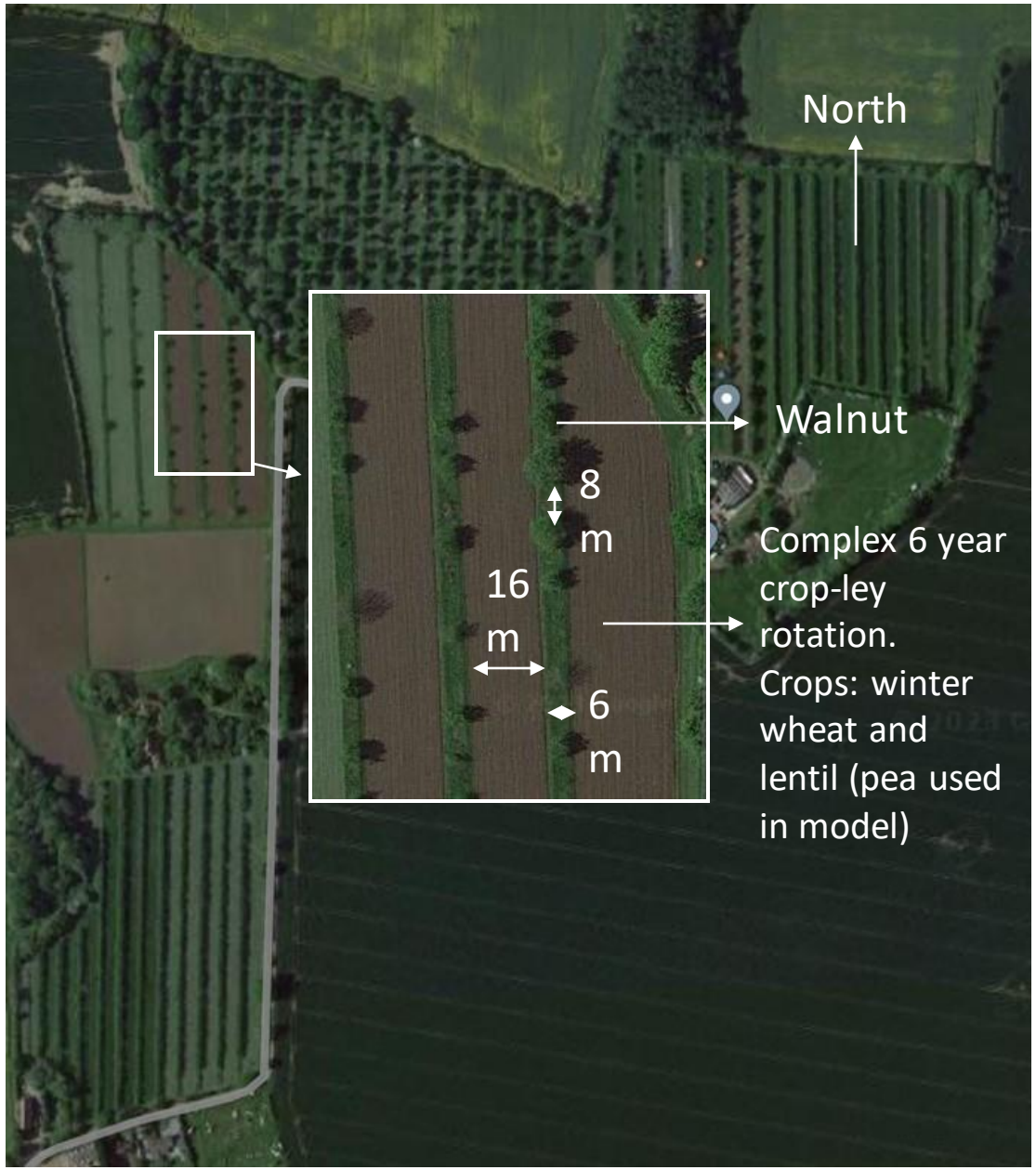
organic

23 hectares, established in 2001

silvoarable

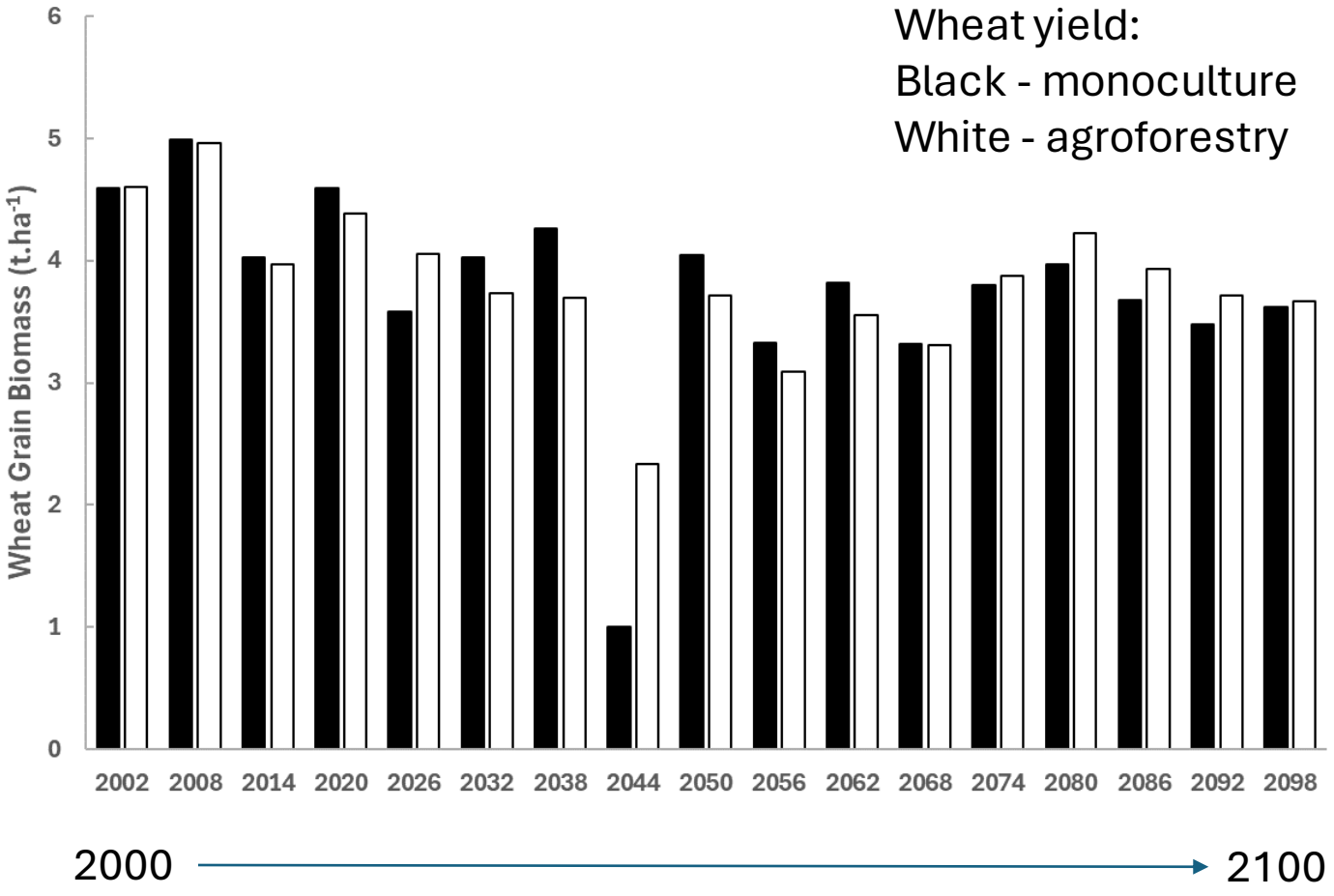
44 walnut trees/ha

crop rotation: 6 year crop-ley-lentil rotation



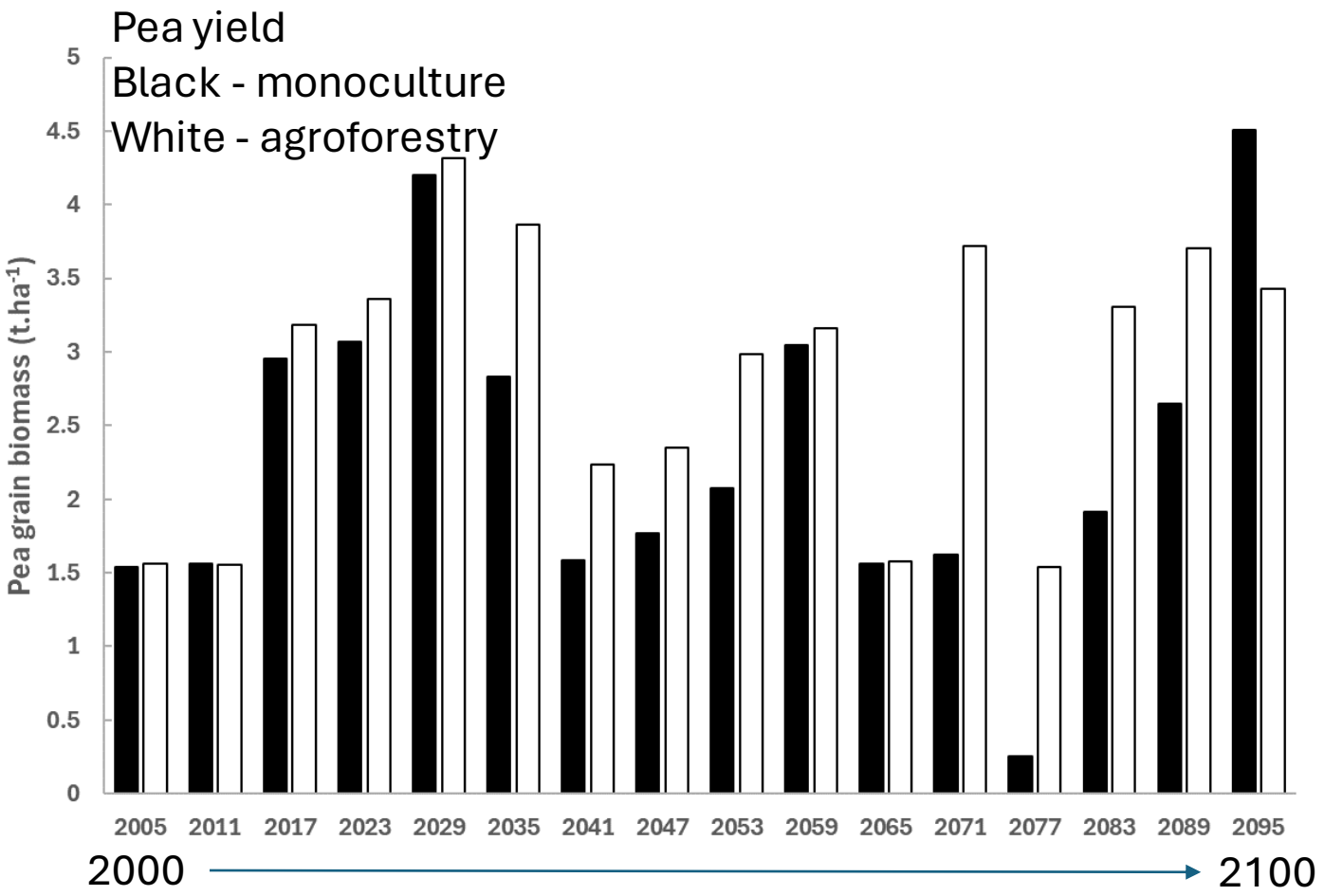
Tosh, C., Gosme, M., Lecompte, I., Dupraz, C., Eden, J., Gossell, C., Simonson, W. (in prep.)

Hi-sAFe RCP8.5: Walnut & wheat complementary phenology, trees protect wheat yield when climate change increases



- Wheat yield is higher in monoculture in the first half of the century when trees are smaller and climate changes is less pronounced
- Beyond 2068 agroforestry consistently boosts yield relative to monoculture. This is when trees are larger and climate change is more pronounced
- Agroforestry also appears to protect against "complete disaster" in years of exceptionally low yield (2044)
- There is no significant difference in year-to-year variability of yield between monoculture and agroforestry
- Walnut has a **late budburst** (May). Crops undergo most of their growth in high light intensity and shading is experienced only in the late stages of growth when heat/drought are most intense

Hi-sAFe RCP8.5: Agroforestry increases pea yield already now and increasingly so



- Pea yield is predicted to be improved by agroforestry already now and even more by 2100
- This benefit of AF, with a few exceptions, increases as trees grow larger and climate change becomes more pronounced

Majadas de Tiétar site Spain. Dehesa system

Open-oak woodland “dehesa” ecosystem, tree density 40 tree ha^{-1}, extensive livestock rearing at low intensity (0.3 LU)

AF tree densities and open pastures simulated

- High Density (100 trees ha^{-1})
- Mid Density (50 trees ha^{-1})
- Low Density (25 trees ha^{-1})

Pasture

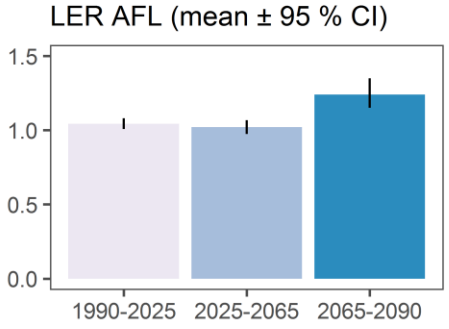
Two climate change scenario RCP4.5 and RCP8.5 effects on:

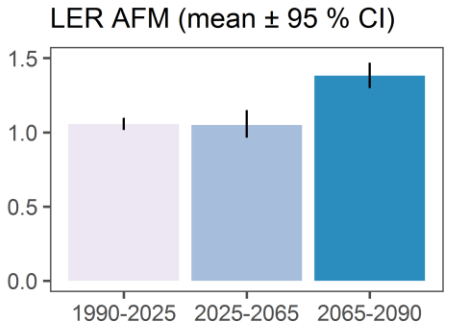
Pasture	Tree
• Production • Stability / Resilience	• Growth

Hi-sAFe RCP8.5: Medium tree density optimizes pasture prod. & stability

LER: land equivalent ratio

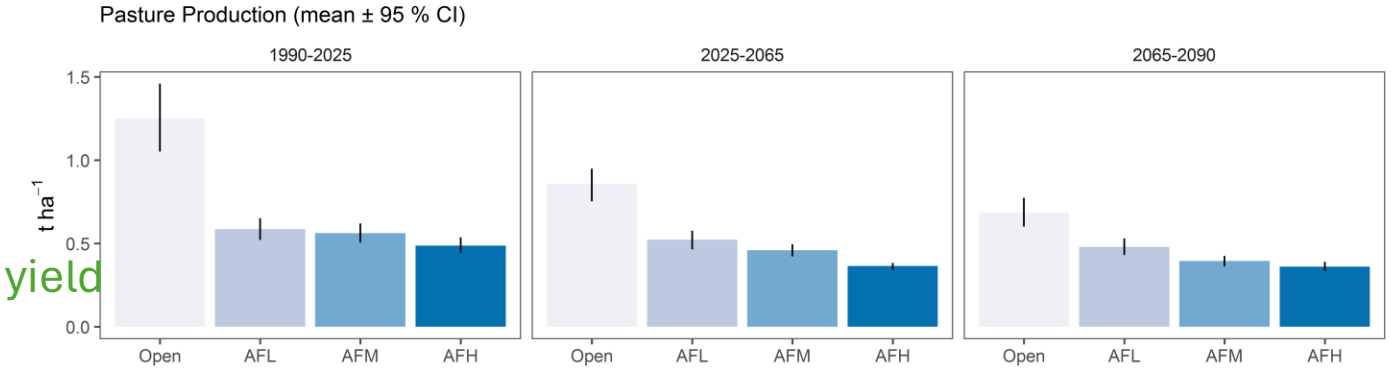
- open pasture
- AFL: 25 trees ha^{-1}
- AFM: 50 trees ha^{-1}
- AFH: 100 trees ha^{-1}



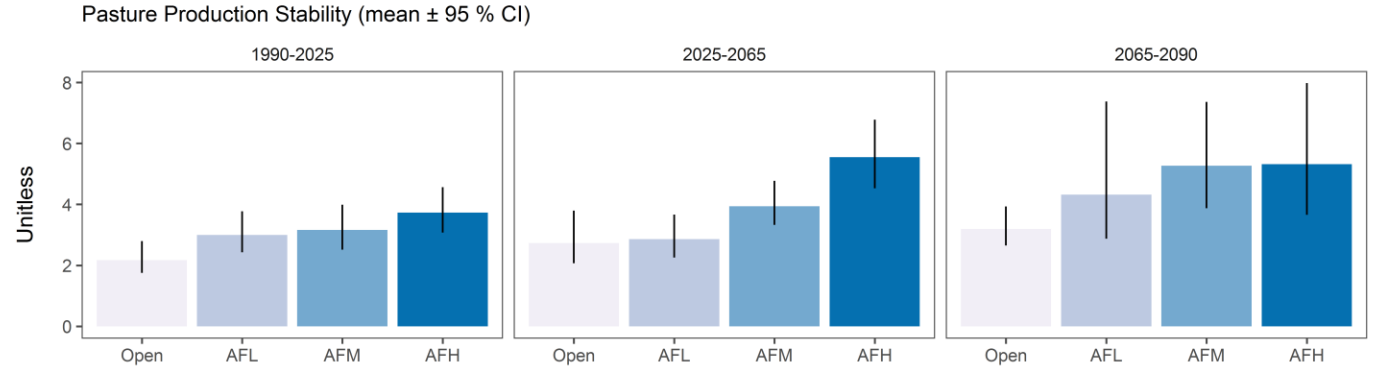


1990 → 2090

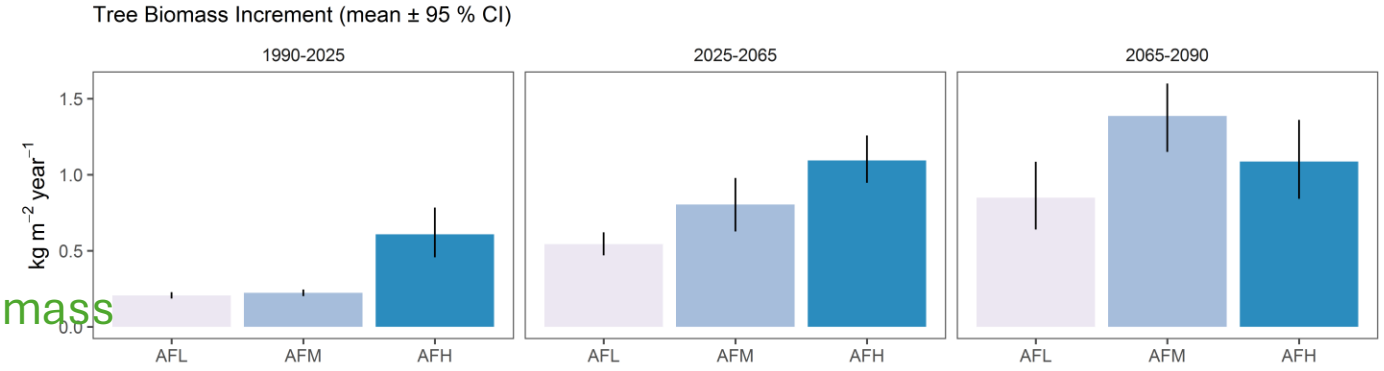
Pasture yield



Pasture yield stability



Tree biomass



Rolo, V., Gosme, M., Eden, J., Carrara, A., Martín, P.M., Lecomte, I., Dupraz, C., Moreno,

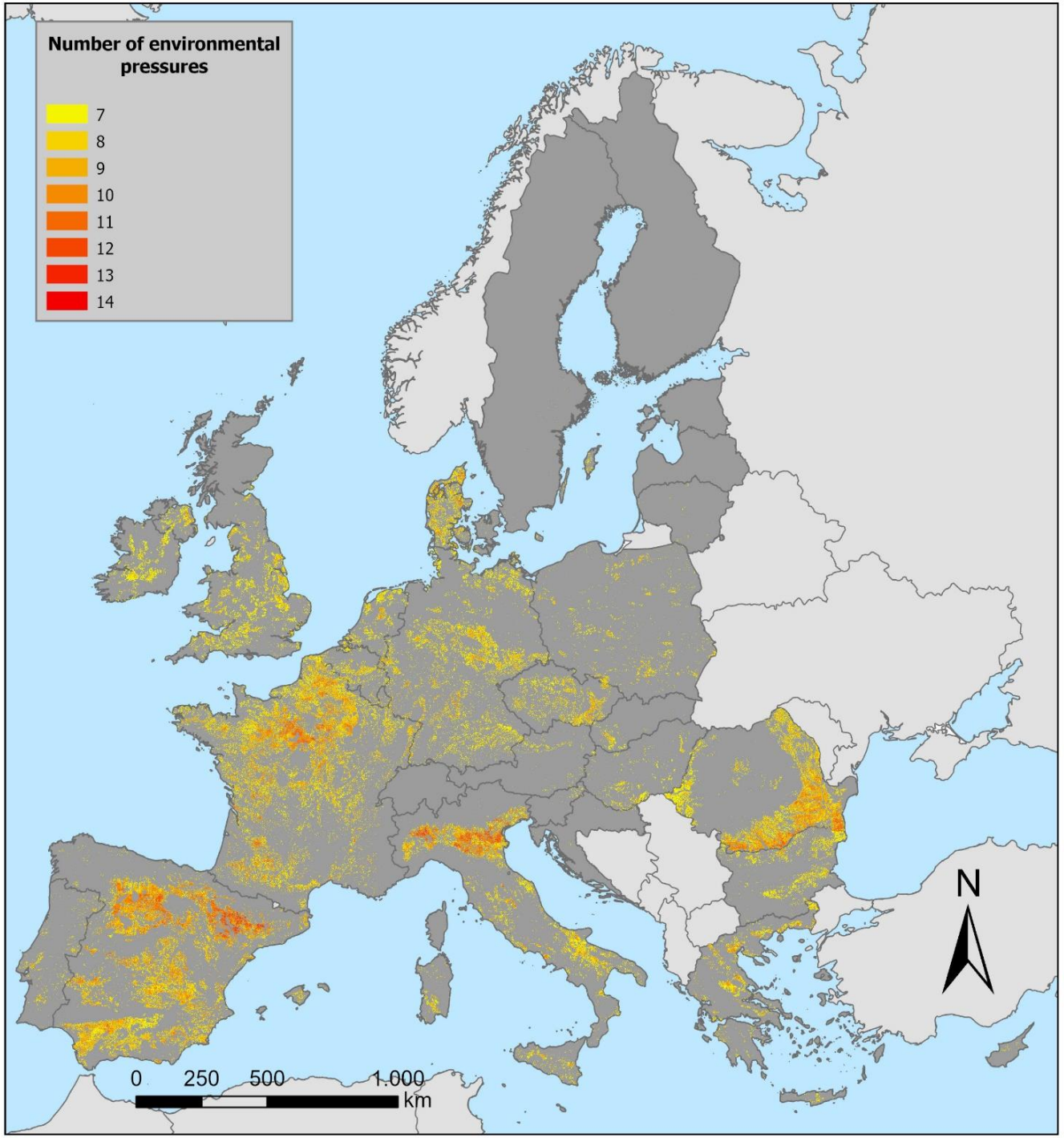
Upscale

Can we **upscale** climate resilience effects of AF/MF?

Where to promote AF/MF?

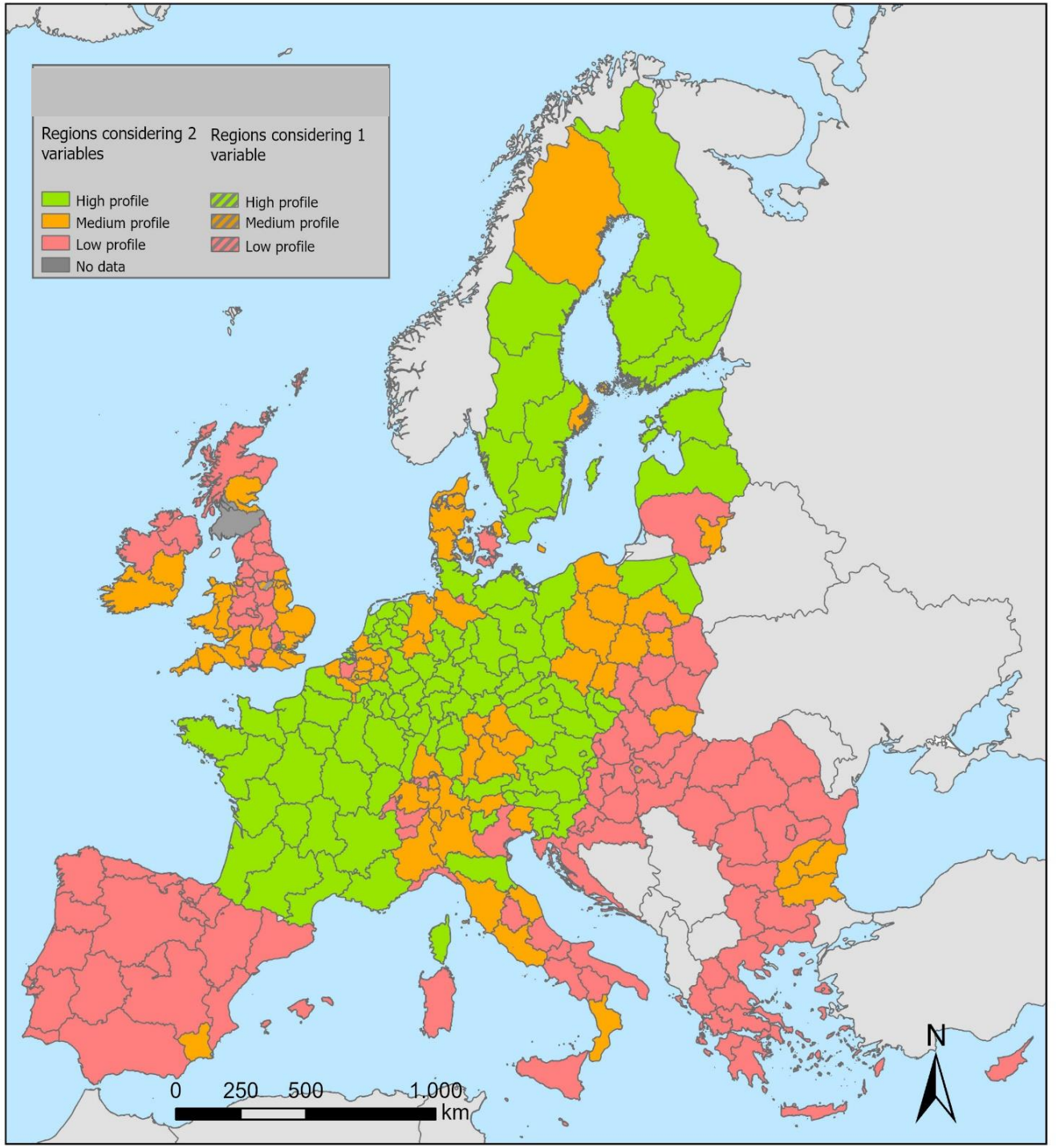
- Regions with accumulated Environmental Pressures (e.g. soil degradation, pollination deficit, high CC impact, etc.)
- If AF were introduced on 10% of «Pressure areas», up to 43% of European agricultural GHG emissions could be compensated

Schnabel et al *in prep*
Kay et al. 2019 *Land Use Policy*



Where to promote AF/MF?

- «High profile» regions: Well trained farmers and high share of organic farming
- Farmers may be more receptive and capable for adopting AF/MF innovations



https://agromixproject.eu/tools/land-use-change-interactive-map

agromix

Land-Use Change Interactive Map

Select Language

Powered by Google Translate

LUCIM - Land Use Change Interactive Map

Driving the transition towards more resilient and efficient land use in Europe

Introduction | Who is this tool for? | European target areas for agroforestry and integrated crop/livestock systems | Land use change models for increased resilience to climate change | The AGROMIX project

Go straight to the maps

Go straight to the tool

In the face of future climate challenges, it is of the utmost importance to drive the transition towards more resilient and efficient land use in Europe. **Agroecological approaches such as agroforestry and integrated crop and livestock systems (also called mixed farming) have been recognized as "highly effective adaptation options that enhance resilience to climate change"** (IPCC, 2022). But can we target the areas where such systems should be established? What kind of systems should be established according to the farm's environment, and what are the particular characteristics or mechanisms of these agroecological systems that enhance their resilience, compared with conventional systems?

The **LUCIM - Land Use Change Interactive Map** - tries to bring these components together. The first part explores a spatial approach to identify target areas in Europe where resilient and climate-smart agroforestry and mixed farming systems should be a priority for introduction, considering existing environmental pressures and socio-economic contexts. The second part establishes a guided cascade of context settings and suggests future scenarios of land use change strategies where different models of land use change can be evaluated as pathways towards increased resilience

Under construction

Spatially explicit, includes expert evaluations for climate resilience

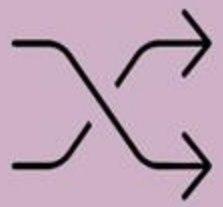
European target regions for Agroforestry and Mixed systems

Interactive maps that explore environmental and climate change pressures across Europe to identify target areas for agroforestry and mixed systems, while also considering the socio-economic context in which the transition of land use needs to occur.

What are the target regions for agroforestry and integrated crop/livestock systems?

Land use change models for increased resilience to climate change

Step by step guide through a land use change journey to increase resilience to climate change, by transitioning from a baseline agricultural or forestry system towards more agroecological land use models.



Which pathway of land-use change to take?

agromix Land-Use Change Interactive Map

Select Language

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Back to homepage

European **target areas** for Agroforestry and Mixed systems

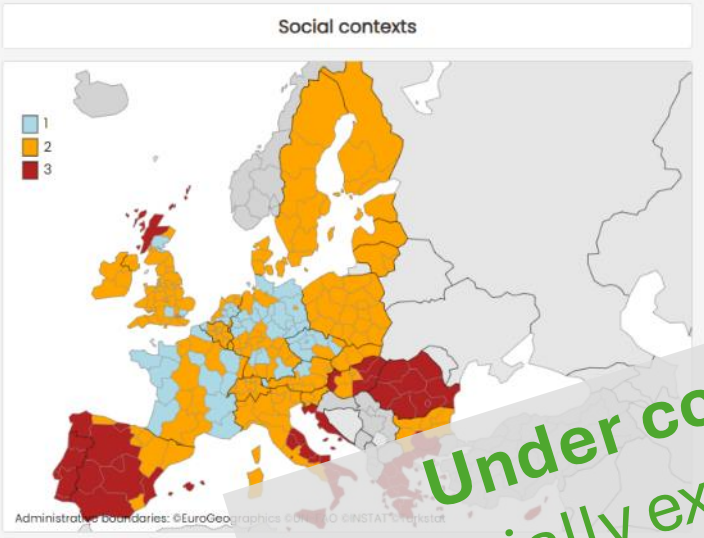
Target areas

- Target areas

Environmental pressures

- All environmental pressures
  - Soil-related pressures
  - Biodiversity-related pressures
  - Water-related pressures
  - Climate change-related pressures

Socio-economic contexts 1, 2 and 3 in the EU27, UK and CH.



Socio-economic factors

- Social contexts

Economic variables

- Mean economic size of farms (euros)
- Unemployment rates (%)

Demographic variables

- Ratio of young farm managers (< 40 y.o) to elderly farm managers (> 65 y.o.)
- Degree of urbanisation

Share of organic farming variables

- Share of organic farming holdings in proportion to total farms (%)

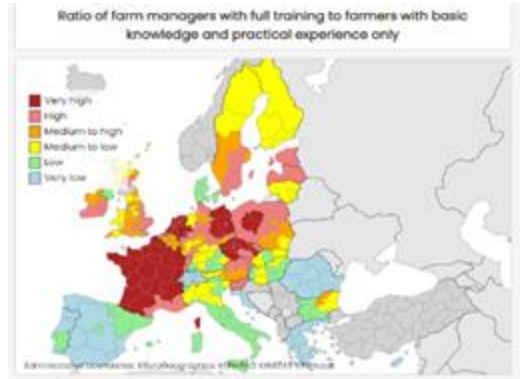
Ratio of farm managers with full training to farmers with basic knowledge and practical experience only

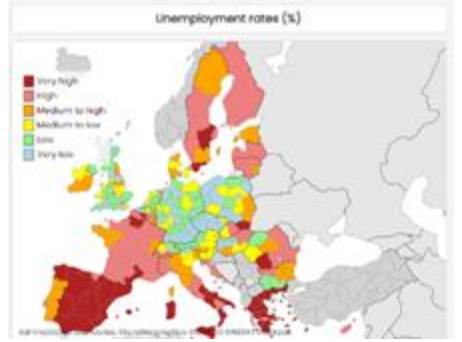
- Ratio of farm managers with full training to farmers with basic knowledge and practical experience only

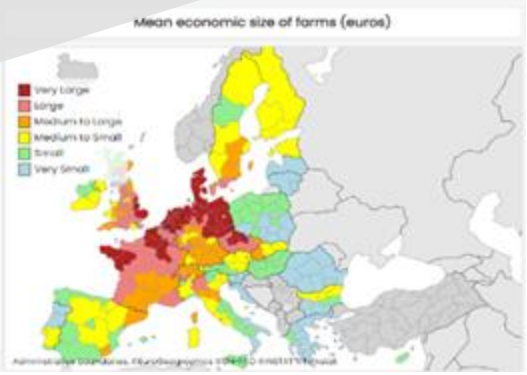
Context number 1 captures regions with a confluence of positive characteristics, therefore they are categorized as a "high value" context. These regions are characterized by a higher prevalence of organic farming, a well-educated and younger farm management population, larger farms in terms of economic size, lower unemployment rates, and a predominantly urban character. These combined factors suggest a strong economic base, a more modern and potentially more productive agricultural sector, and a favorable demographic profile.

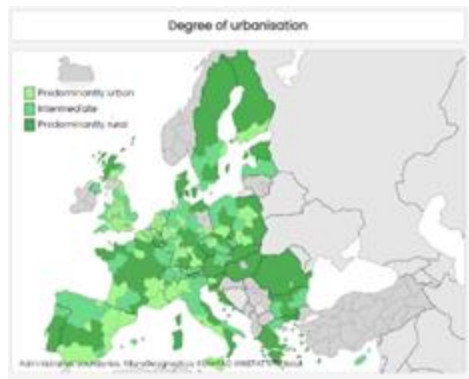
Context number 3 encompasses regions facing several challenges, so it was categorized as "low profile". These regions tend to have lower adoption of organic farming practices, a less educated and likely older farmer population, smaller farms in terms of economic size, higher unemployment rates, and a predominantly rural character. This combination suggests a potentially weaker economic base, a less modern agricultural sector, and a demographic profile that might face challenges in attracting young talent.

Context number 2 encompasses all regions not accounted for in contexts 1 and 3. While it serves as an intermediary between the two, it also encompasses unique combinations of attributes not present in either extreme. Notably, regions are classified into context 1 or 3 based on meeting a minimum of four (up to six) specified socioeconomic factors outlined in Table 23. Regions failing to meet this criterion for either context are categorized as context 2 regions.









Under construction

Spatially explicit, includes expert evaluations for climate resilience

European target regions for Agroforestry and Mixed systems

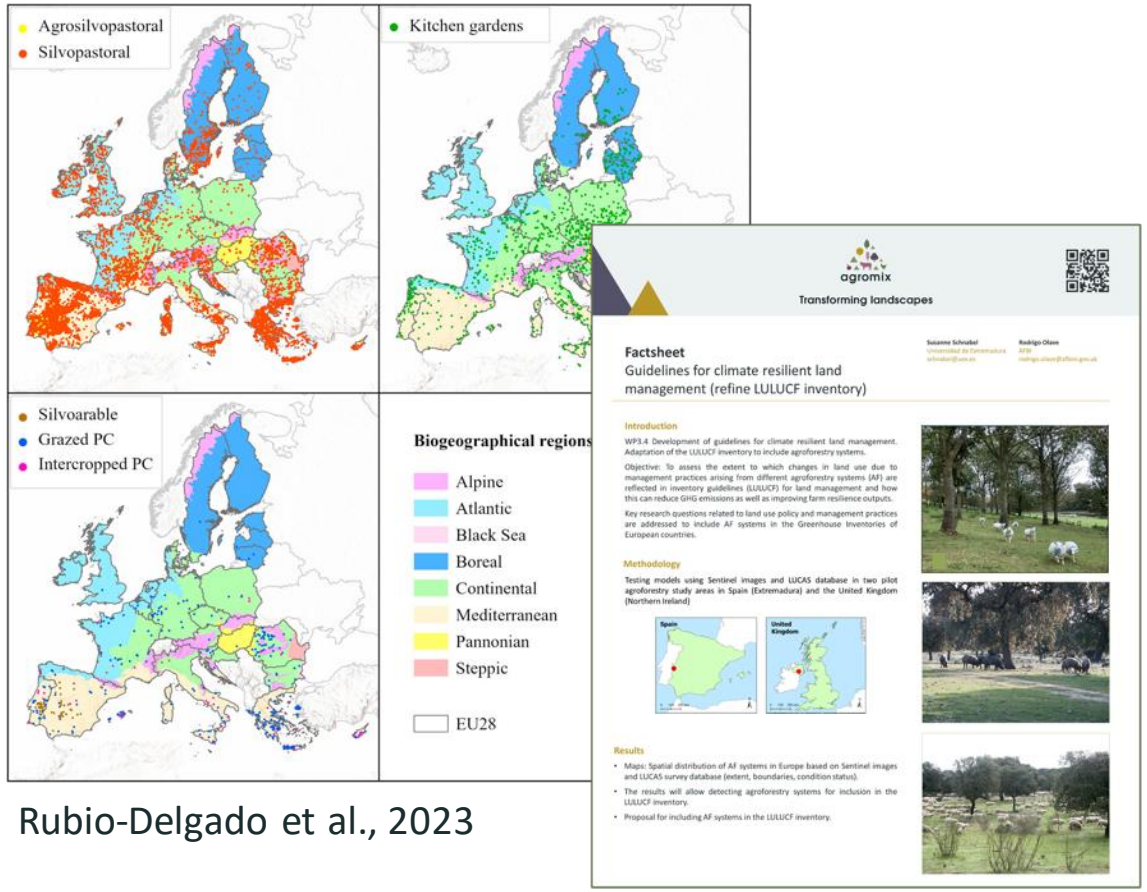
Development of guidelines for land management to promote AF/MF systems

Agroforestry systems in the LULUCF inventory and guidelines for land management

Agroforestry is not included in the LULUCF inventory; little information regarding emissions and removals
→ AGROMIX is creating a model and maps using long-term experimental sites:

- Mapping spatially agroforestry patterns using remote sensing (Sentinel images, LUCAS database), machine learning, data mining
- Final results allow defining and detecting agroforestry systems for inclusion in the LULUCF inventory (research ongoing).
- include agroforestry systems in the Greenhouse Inventories of European countries.

LULUCF: Land Use, Land Use Change and Forestry



Rubio-Delgado et al., 2023

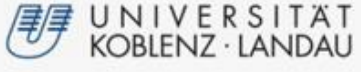
Conclusions bio-physical evidence of 'agromixed' systems

1) Agroforestry significantly increases biodiversity (birds, bats as proxies for above ground diversity).
   It can be as good as forest and outperforms monoculture.
2) Agroforestry (silvo-pasture) significantly improve micro-climate and animal welfare (heat stress) and subsequently animal production.
3) Agroforestry systems (silvo-arable) and mixed farming can stabilise crop yields under climate change.
4) Wheat yield is predicted higher in monoculture in the first half of the century when climate changes is less pronounced, beyond 2068 agroforestry is predicted higher yields relative to monoculture
5) Agroforestry systems are **not** an extensification measure; they maintain productivity, increase animal welfare and diversity significantly, while adding further environmental services, not all fully understood or comprehensively addressed in this research (soil fauna, long term flooding)
6) Tree density: even 50 trees/ha can be "enough" to get effects in LER (e.g. LER 1.27 for barley in Ireland)

Socio-Economic and Policy relevance of ‘agromixed’ systems

1) Significant biodiversity benefits (above and below ground) are an ecosystem service and public good
2) Significant animal welfare benefits are a public good, could be mandatory as heat stress could be illegal animal cruelty
3) Carbon sequestration contribution is an ecosystem service (LULUCF)
4) Climate Extinction: agroforestry as modelled could provide some protection from RCP4.5 and RCP8.5 (worse case, but increasingly likely climate scenarios)
5) Productivity: LER Land Equivalent Ratio is higher, at least 1.2, also from 2050 onwards under RCP8.5. This increases overall productivity but also requires innovation management for agroforestry supply chain products in a bio-economy.
6) Importance of long-term (100 years) ROI (return on investment) including social and ecosystem benefits. As modelled, trees initially cost money with little benefit, but over 100 years their higher ROI makes a case for public funding during the establishment phase (like free school, free advice and trees).

Partnership



Agroforestry for the Future of European Agriculture
Policy Summit, 17 April 2024

The challenges and barriers for the implementation of Agroforestry in Europe

Gerry Lawson
Policy Analyst at European Agroforestry Federation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

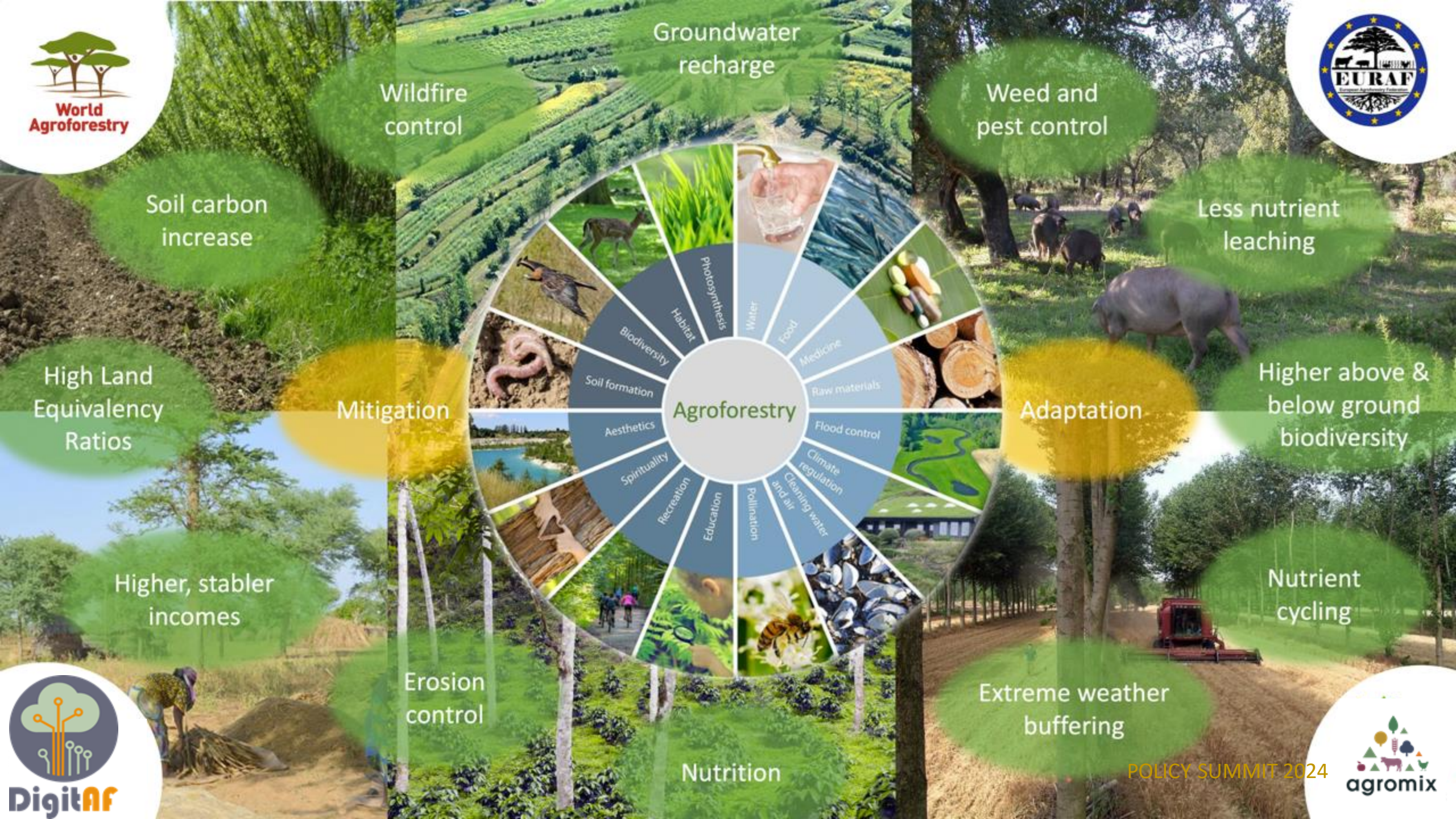
Challenges and Barriers to the Implementation of Agroforestry in Europe

Gerry Lawson, European Agroforestry Federation

EU DigitAF Project; policy@euraf.net

Sheep used to graze pine forest understories in Catalunya to reduce the risk and intensity of fires.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.


World Agroforestry
EURAF
Groundwater recharge
Wildfire control
Weed and pest control
Soil carbon increase
Less nutrient leaching
High Land Equivalency Ratios
Mitigation
Adaptation
Higher above & below ground biodiversity
Higher, stabler incomes
Nutrient cycling
Erosion control
Extreme weather buffering
Nutrition
Agroforestry
Photosynthesis
Habitat
Biodiversity
Soil formation
Aesthetics
Spirituality
Recreation
Education
Pollination
Cleaning water and air
Climate regulation
Flood control
Raw materials
Medicine
Food
Water
DigitAF
POLICY SUMMIT 2024
agromix

Definitions of Agroforestry and Forestry

1

Tree Location	AF System	Land Use Classification (e.g. LPIS)	
		Forest Land	**Agricultural Land**
Trees within parcels	Silvopastoral	Forest Grazing	Wood pasture Orchard grazing
	Silvoarable	Forest Farming	Alley Cropping Alley Coppice Orchard Intercropping
	Agrosilvopastoral	Sequential mixtures of silvoarable and silvopastoral systems	
Trees between parcels	Linear Agroforestry	Forest Strips	Shelterbelt Networks Wooded Hedges Riparian Tree Strips

The EU had a simple agroforestry definition in CAP 2017/22

“Land use systems in which trees are grown in combination with agriculture on the same land (Reg 1305/2013)”.

Agroforestry trees can be inside parcels or on boundaries (e.g. hedges).

Agroforestry can be on forest parcels (e.g. “forest grazing”) or agricultural parcels (e.g. “wood pasture”)

Definitions of AF in CAP Strategic Plans

- All Member States define "agroforestry" in their **CAP Strategic Plans**.
- Most give the **maximum numbers of trees per hectare** (e.g. 400/ha), but few give the minimum number or the definition of "tree".
- Few of the definitions can be used easily in **remote sensing.**
- **All Member States have defined woody-landscape-features (individual trees, hedges and trees in groups and lines) in their Strategic Plans IACS/LPIS systems**
- Member States have to report the area of **new agroforestry** (Result Indicator 17.3) and woody landscape-features (Result Indicator 17.4) but this data is not available yet.
- **Landscape-feature** areas are recorded as **Impact Indicator 21**, but this is only available at a very high level based on LUCAS sampling. MS are encouraged in the NRR to develop their own metrics.
- **The target of 10% High Diversity Landscape Features in the Nature Restoration Regulation was removed by the EU Parliament, leaving only a commitment to an "increasing trend in HDLF"**
- Several countries (e.g. Ireland, Denmark, Austria) are moving towards better identification and accounting of **LULUCF-GHG emissions from trees** on grassland and cropland.
- **Several Member states have defined "permanent grassland" to include areas which are predominantly covered by shrubs which can be grazed or cut for fodder - and these can be considered as agroforestry**

Art 6 of the LULUCF Regulation v the FMR

Article 4(3) of the CAP Strategic Plan Regulation (2021/2115): ***Agricultural area*** *shall be determined in such a way as to comprise arable land, permanent crops and permanent grassland, including when they form* ***agroforestry systems*** *on that area.* The terms 'arable land', 'permanent crops' and 'permanent grassland' shall be further specified by Member States within their CAP Strategic Plans. (Policy Briefing #22)

Article 6 (3) of the LULUCF Regulation (2018/841) defined **Forest Land** according to the Thresholds in Annex II (opposite). These are also used in national forest laws, UNFCCC Marrakesh Accords, REDD+, Kyoto Clean Development Mechanism etc. (Policy Briefing #8)

Therefore, the EU **Forest Monitoring Regulation** should **use the UNFCCC and LULUCF forest thresholds and not emulate Procrustes.** (Policy Briefing #15)

One Size Fits ALL ??

Procrustes was a Greek robber who either stretched his victims or cut off their legs to fit his one-size-fits all bed

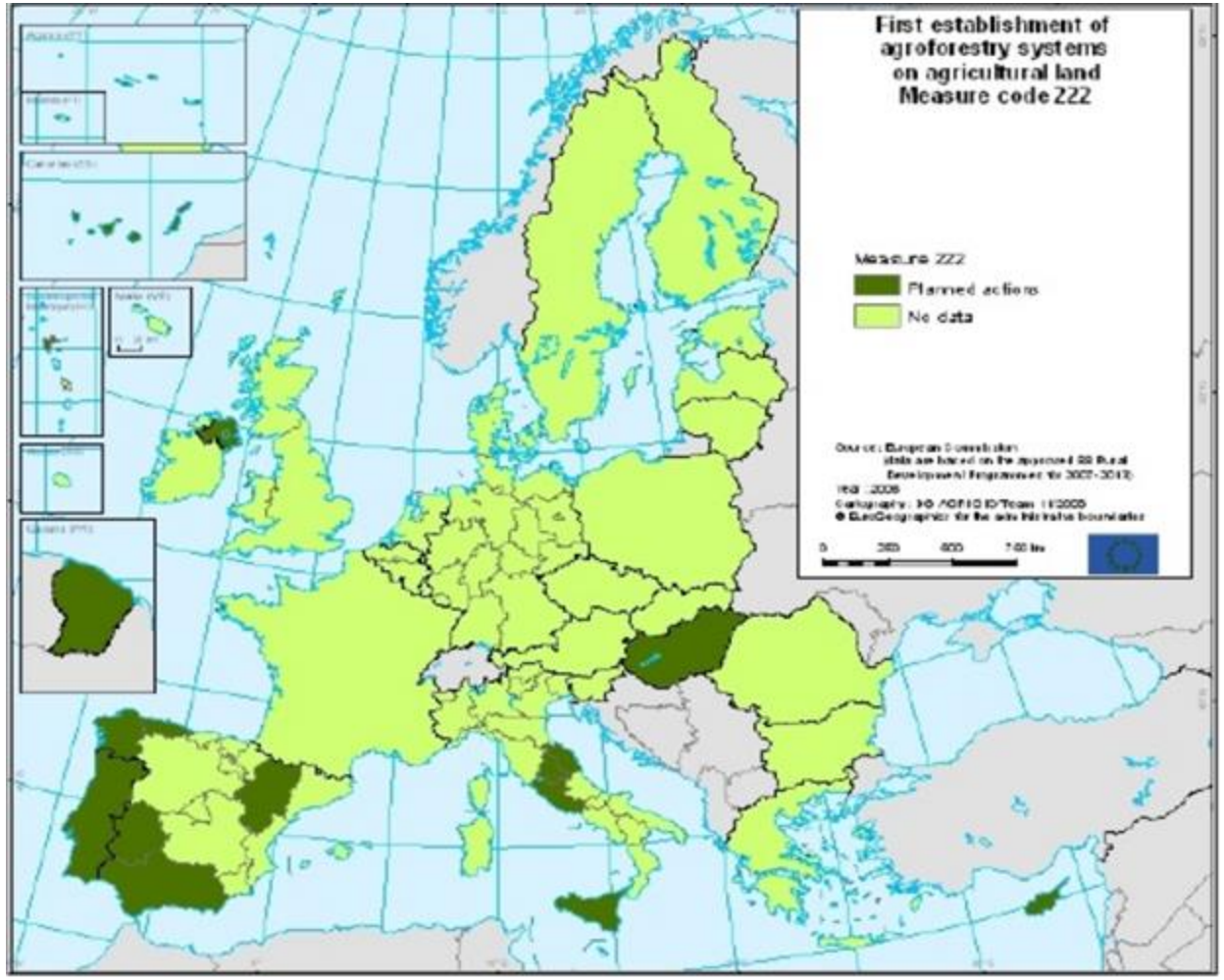
Member State	Area (ha)	Tree crown cover (%)	Tree height (m)	Minimum width (m)
Malta	1,0	30	5	
Spain	1,0	20	3	25
Portugal	1,0	10	5	20
Hungary	0,5	30	5	10
Estonia	0,5	30	2	
Belgium	0,5	20	5	
Netherlands	0,5	20	5	30
Denmark	***0,5***	***10***	***5***	20
Finland	***0,5***	***10***	***5***	20
France	***0,5***	***10***	***5***	
Italy	***0,5***	***10***	***5***	
Luxembourg	***0,5***	***10***	***5***	
Sweden	***0,5***	***10***	***5***	10
Greece	0,3	25	2	
Slovakia	0,3	20	5	
Cyprus	0,3	10	5	
Slovenia	0,25	30	2	
Romania	0,25	10	5	20
Lithuania	0,1	30	5	10
Ireland	0,1	20	5	20
Latvia	0,1	20	5	20
United Kingdom	0,1	20	2	20
Bulgaria	0,1	10	5	
Germany	0,1	10	5	
Croatia	0,1	10	2	
Poland	0,1	10	2	10
Austria	0,05	30	2	10
Czech Republic	0,05	30	2	20

Support for Agroforestry in previous CAP Periods

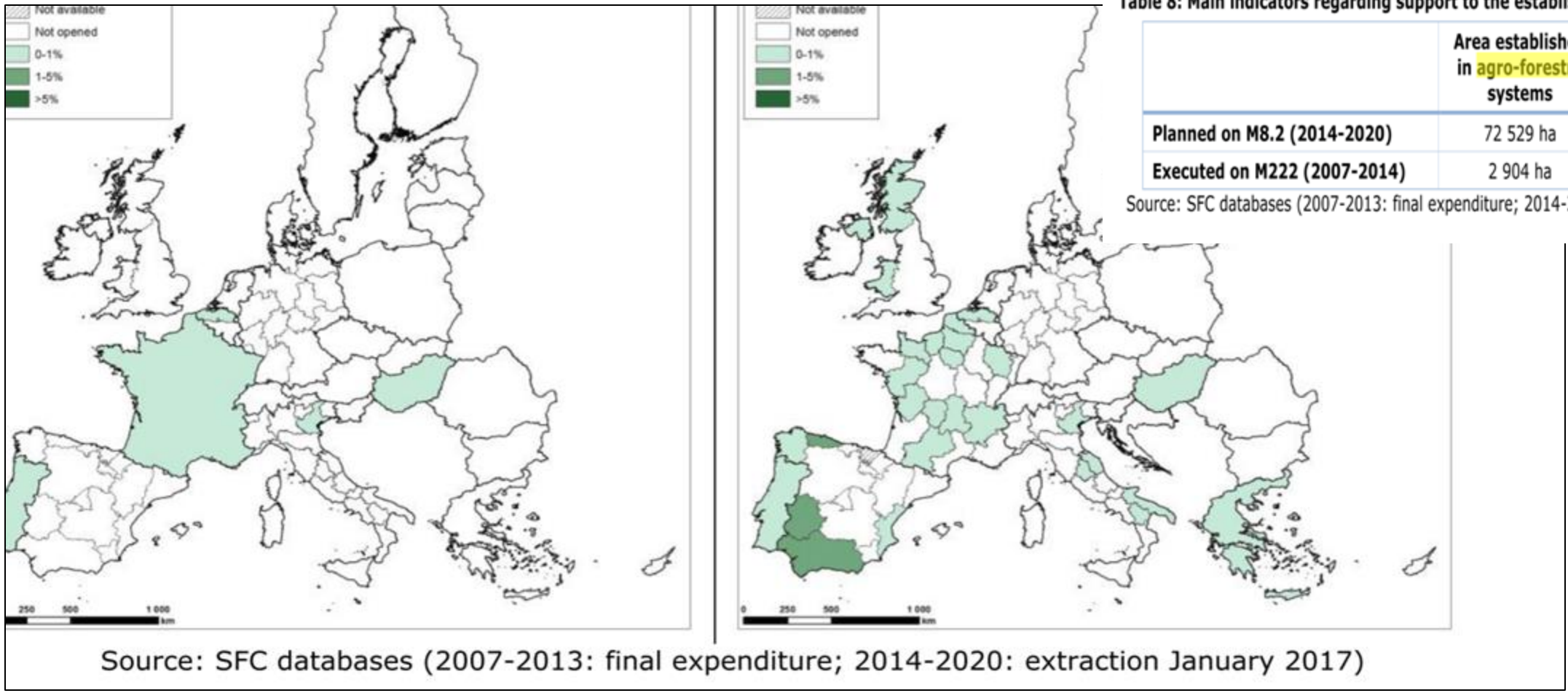
EU Agroforestry Policy: CAP 2007-2013

- Agroforestry was mentioned 6 times in the first EU Forest Strategy (1999)
- Regulation 1698/2005 included support for **afforestation** of agricultural land and was adopted in **66 regions** (from 88)
- However support for **new areas of agroforestry** were adopted only in **18 regions** (CY, ES(6), FR(2), HU, IT(5), PT(2), UK(1)),
- More than 3000 beneficiaries were planned on 60 000 ha
- France (Hexagone) and Flanders - implemented agroforestry in 2010.
- A wide range of other measures were used in a modest way to support small-scale tree planting on farms (see Mosquera et al 2016)

In the end, the agroforestry measure was made available to farmers in only 5 regions



Agroforestry in the CAP 2015-2022 (Measure 8.2)



Source: SFC databases (2007-2013: final expenditure; 2014-2020: extraction January 2017)

Table 8: Main indicators regarding support to the establishment agroforestry systems

	Area established in agro-forestry systems	Public expenditure
Planned on M8.2 (2014-2020)	72 529 ha	123,3 M€
Executed on M222 (2007-2014)	2 904 ha	2,1 M€

Source: SFC databases (2007-2013: final expenditure; 2014-2020: extraction January 2017)

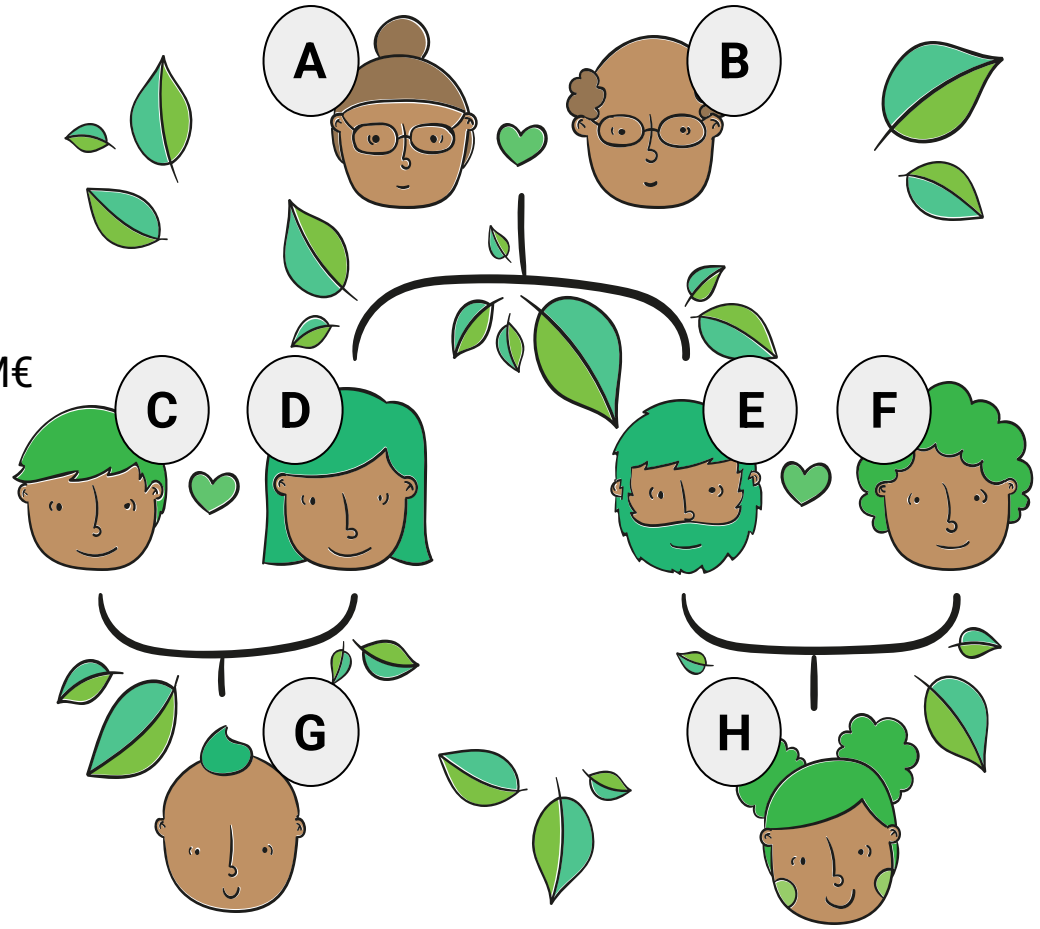
Missed opportunity - agroforestry in the CAP

A **2007-14 CAP.**

C AF Planned in 19 RDPs with expenditure of 14.6M€ and 28 k ha

D Abandoned in 8 RDPs, Only 275 beneficiaries and 2,904 ha

G Expenditure was 6% of planned



2014-2021 +2 CAP **B**

AF Planned in 35 RDPs, expenditure of 139M€ and 84 k hectares **E**

By 2019 abandoned in 1MS and 5RDPs and 2,136ha planted **F**

Planned expenditure by 2019 down to 64M€ and only 3.3 M€ (2.5% of planned) spent **H**

MS tend to underspend forestry and agroforestry budgets. 600 kha of afforestation was planned in 2015 for the current CAP, but MS reduced this 250 kha at the end of 2019, and planted only 70 kha. Targets and achievement are shrinking.

Pillar I - Conditionality

In order to receive EU income support, farmers must respect a set of basic rules. **The interplay between this respect for rules and the support provided to farmers is called conditionality.**

Rules farmers are expected to comply with include:

- **statutory management requirements (SMRs)**, these apply to all farmers whether or not they receive support under the common agricultural policy (CAP);
- **good agricultural and environmental conditions (GAECs)**, these apply only to farmers receiving support under the CAP.

Good Agricultural and Environmental Conditions

Climate change

- GAEC 1: Maintenance of **permanent grassland** based on a ration PG/agricultural area (at national, regional, sub-regional, holding level) ("greening")
- GAEC 2: Protection of **wetland and peatland** (new)
- GAEC 3: **Ban on burning** arable stubble, except for plant health reasons (cross-compliance)

Water

- GAEC 4: Establishment of **buffer strips** along water courses stubble [minimum width of 3 meters] (cross-compliance)

Soil

- GAEC 5: **Tillage management** reducing soil erosion risk with slope consideration (cross-compliance)
- GAEC 6: **Minimum soil cover** to avoid bare soil in **periods that are most sensitive** (cross-compliance)
- GAEC 7: Crop **rotation** in arable land, except for crops growing under water ("greening")

Biodiversity and landscapes

- GAEC 8: Minimum **share of agricultural area [arable land] devoted to non-productive areas or features**, retention LF, ban cutting hedges/trees during bird rearing season
- GAEC 9: **Ban on converting or ploughing permanent grassland designated as environmentally-sensitive** in Natura 2000 sites ("greening")

"Simplification"

For GAEC-8 "[farmers] … may choose to keep a share of their arable land non-productive - **or establish new landscape features (such as hedges or trees) - and thereby receive additional financial support via an eco-scheme that all Member States will have to offer in their CAP Strategic Plans**. All EU farmers will be incentivised to maintain non-productive areas beneficial for biodiversity without fearing loss of income".

Tree-Landscape-Features are vital for climate and biodiversity …

Consistency in tracking Landscape Features in MS is needed .. but some MS don't include

Woody features: hedgerow or woody strips, trees in groups isolated trees, trees in line, forest edges

Other features: buffer strips, cairns, cultural features, ditches, field margins, small ponds, small wetlands, stone walls, terraces, others … countries make their own choices …

Landscape Features - Biodiversity Strategy (>10%)

GAEC-8

Country	AT	BEF	BEW	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU	HR	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SK	SI	Sum
01 Buffer Strips	1	1	1	1				1								1	1			1	1	1			1		1	1	13
02 Cairns	1						1			1	1							1	1	1					1				8
03 Cultural Features	1		5					1	1	1	1			1		1							1						13
04 Ditches			1			1			1	1			1		1	1	1	1		1		3	1	1	1				16
05 Field Margins (# types)		1	3	1	2	7	1	1	1		1		1	2		7	1	1	4	1		4		1	1	2	1		44
06.1 Hedges or woody strips	1	1	1	1			1		1	1	1		1	1	1	1	1	1	1			1		1	1		1	1	20
06.2 Trees in Line		1	1	1		1	1		1	1	1		1		1	1	1		1	1		1	2	1	1		1	1	21
06.3 Trees in Groups/ Copses	1	1	1	1		1	1	1	1	1	1		1	1	1		1	1	1	1		1	2	1	1		1	1	24
06.4 Isolated Trees			1	1	1	1	1			1	1		1	1	1		1	1	1	1		1		1	1		1	1	19
06.5 Forest Edge Strips - non prod		1	1	1					1		1				1	1													7
07 Fallow Land	1	1	2	1	1	1	1	1	2	1	1	1	1	2	1	1	1			2		2	1	2		3			30
07.1 Cover or catch crops (7% option)		-	-			1		-	-	-	-		1	1				-				-		-					3
07.2 N-Fixing Crops (7% option)		-	-			1			1	-	-		1	1				-				-		-			-		4
08 Others			1			2	1	1			2						1	1				4	1	1			-		15
09 Small Ponds	1	1	1							1	1		1	1		1	1	1	1		1	1		1				1	15
10 Small Wetlands						1	1			1									1	1	1	1	1						8
11 Traditional Stone Walls	1						1		1	1	1		1		1	1	1			1	1		1					1	13
12 Streams										1											1	1							3
13 Terraces						1	1			1	1			1			1				1							y	7
Total elements / sub-elements active	**8**	**8**	**19**	**8**	**4**	**18**	**11**	**6**	**11**	**13**	**14**	**1**	**11**	**12**	**8**	**16**	**12**	**8**	**11**	**11**	**6**	**21**	**10**	**10**	**8**	**5**	**6**	**7**	**283**
4% Option	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	28
3% Option	y		y	y				y	y	y	y		y		y			y	y			y		y					13
7% Option		y	y	y		y			y	y	y		y	y				y				y	y	y	y		y		15
LULUCF Regulation - threshold of "forest land" (ha)	0.05	0.5	0.5	0.1	0.3	0.05	0.1	0.5	0.5	0.3	1	0.5	0.5	0.5	0.1	0.1	0.5	0.1	0.5	0.1	1	0.5	0.1	1	0.25	0.5	0.3	0.25	
Strategic Plan - max LF copse/grove size (ha)	0.1	0.3	0.3	0.3	-	?	0.2	?	?	?	0.3	-	0.5	0.5	?	-	0.3		0.3	0.5	-	1.5	0.5	0.5	0.9	-	?	0.5	
Details of hedge width and permitted gaps?	y	y	y	y			y		y		y		y	y	y		y	y	y			y			y				15
Details of permitted crown size of trees in line?		y	y	y			y		y				y		y		y		y			y	y	y	y			y	14
Details of crown size of isolated trees?			y	y										y	y		y					y	y					y	8

RED shows where the definition of "copse/grove" on agricultural land differs from the national definition the minimum size thrshold for a forest block. In many countries the size threshold is not given or copses/groves are not recognised as Landscape Features

In many countries no information is given on the types of n-fixing crop or catch/cover crop, even when the 7% option is selected (shown with a dash)

See EURAF Policy Briefing #21

Landscape features should be linked to farmers fields using IACS/LPIS systems - not LUCAS

Four overlapping layers:

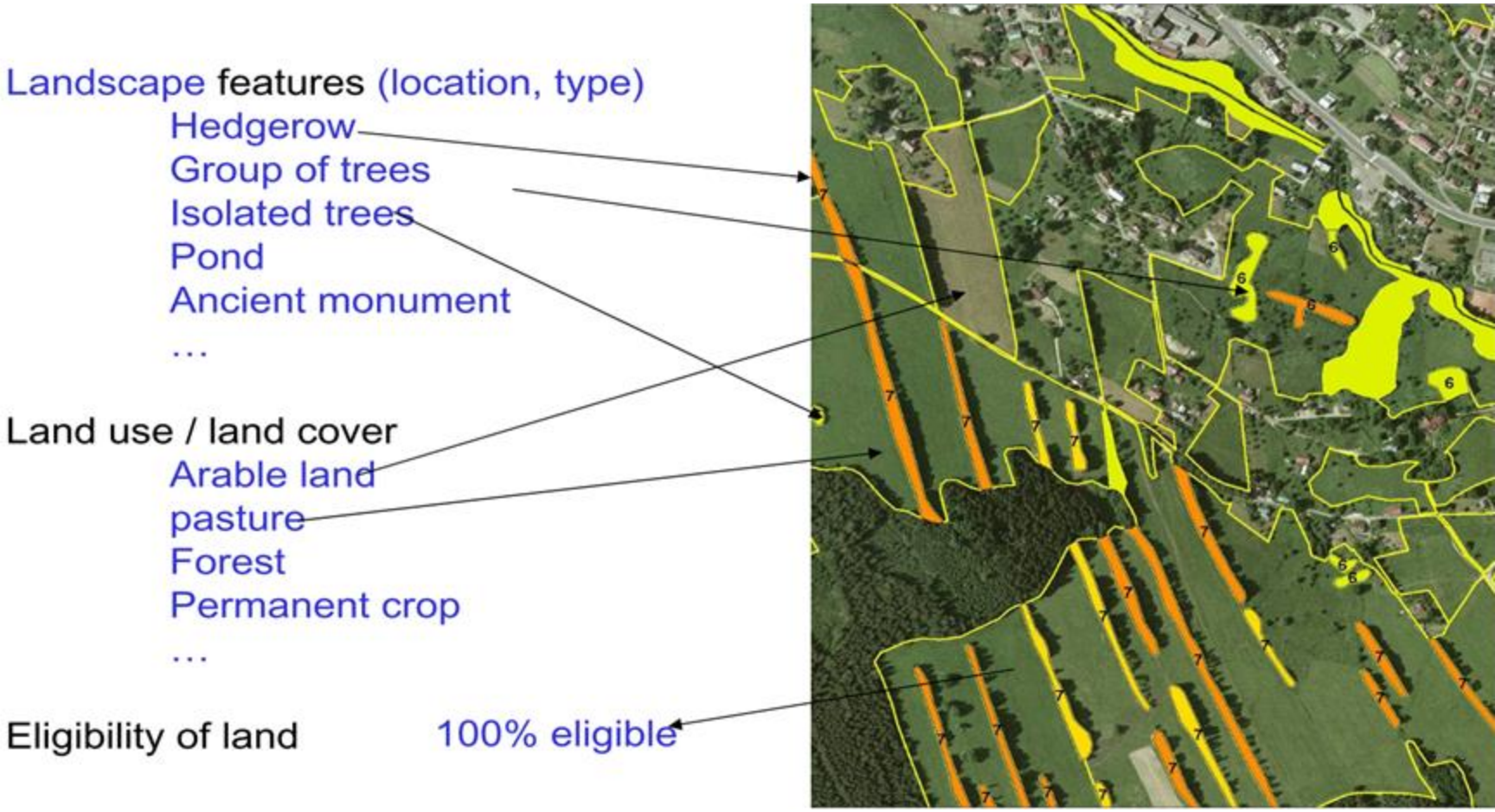
1. Reference Parcels

2. Agricultural Parcels

3. Ecological Focus Areas

4. Landscape Features

Use LPsi for statutory designations like Nitrate Sensitive Zones Pillar II Grants & LULUCF Reporting



Pillar I - Ecoschemes (Article 31)

Agricultural practices that could be supported by eco-schemes have to meet the following conditions:

- **they should cover activities related to climate, environment, animal welfare and antimicrobial resistance;**
- **they shall be defined on the basis of the needs and priorities identified at national/regional levels;**
- **their level of ambition has to go beyond the requirements and obligations established under the baseline (including conditionality);**
- **they shall contribute to reaching the EU Green Deal targets.**

Huge number of potential Ecoschemes (1)

Agro-ecology

- Crop rotation with leguminous crops
- Mixed cropping - multi cropping
- Cover crop between tree rows on permanent crops - orchards, vineyards, olive trees - above conditionality
- Winter soil cover and catch crops above conditionality
- Low intensity grass-based livestock system
- Use of crops/plant varieties more resilient to climate change
- Mixed species/diverse sward of permanent grassland for biodiversity purpose (pollination, birds, game feedstocks)
- Improved rice cultivation to decrease methane emissions (e.g. alternate wet and dry techniques)

Husbandry and animal welfare plans

- Feeding plans: suitability of and access to feed and water, feed and water quality analyses (e.g. micotoxines), optimised feed strategies
- Friendly housing conditions: increased space allowances per animal, improved flooring (e.g., straw bedding provided on a daily basis), free farrowing, provision of enriched environment (e.g. rooting for pigs, perching, nest-building materials, etc.), shading/sprinklers/ventilation to cope with heat stress
- Practices increasing animal robustness, fertility, longevity and adaptability, e.g. lifespan of dairy cows; breeding lower emission animals, promoting genetic diversity and resilience
- Animal health prevention and control plans: overall plan for reducing the risk of infections that require antimicrobials and covering all relevant husbandry practices, e.g. crawl space between two rearing belts, vaccination and treatments, enhanced biosecurity, use of feed additives, etc.
- Providing access to pastures and increasing grazing period for grazing animals
- Provide and manage regular access to open air areas

Agro-forestry

- **Establishment and maintenance of landscape features above conditionality**
- **Management and cutting plan of landscape features**
- **Establishment and maintenance of high-biodiversity silvo-pastoral systems**

Note that Landscape features are clearly judged as agroforestry

And more potential ecoschemes (2)

High nature value (HNV) farming

- Land lying fallow with species composition for biodiversity purpose (pollination, birds, game feedstocks, etc).
- Shepherding on open spaces and between permanent crops, transhumance and common grazing
- Semi-natural habitat creation and enhancement
- Reduction of fertiliser use, low intensity management in arable crops

Carbon farming

- Conservation agriculture
- Rewetting wetlands/peatlands, paludiculture
- Minimum water table level during winter
- Appropriate management of residues, i.e. burying of agricultural residues, seeding on residues
- Establishment and maintenance of permanent grassland
- Extensive use of permanent grassland

Precision farming

- Nutrients management plan, use of innovative approaches to minimise nutrient release, optimal pH for nutrient uptake, circular agriculture
- Precision crop farming to reduce inputs (fertilisers, water, plant protection products)
- Improving irrigation efficiency

Improve nutrient management

- Implementation of nitrates-related measures that go beyond the conditionality obligations
- Measures to reduce and prevent water, air and soil pollution from excess nutrients such as soil sampling if not already obligatory, creation of nutrient traps

Protecting water resources

- Managing crop water demand (switching to less water intensive crops, changing planting dates, optimised irrigation schedules)

Other practices beneficial for soil

- Erosion prevention strips and wind breaks
- Establishment or maintenance of terraces and strip cropping

Other practices related to GHG emissions

- Feed additives to decrease emissions from enteric fermentation
- Improved manure management and storage

Pillar II - Investment Measures (Article 73)

Paragraph 4… maximum rate may be increased to … (c) 100% for the following investments (1) afforestation, **establishment and regeneration of agro-forestry systems**, land consolidation in forestry and nonproductive investments linked to one or more of the specific objectives set out in Article 6(1), points (d), (e) and (f), including non-productive investments aimed at protecting livestock and crops against damage caused by wild animals;

Pillar II - Agri-Environment - Climate (AECM) (Article 70)

- Actions go beyond SMR and GAEC standards
- Commitments for 5-7 years (but may be longer or shorter - if a case is made in the CSP)
- Annual payment per hectare or a lump sum
- Payments “basis of the additional costs incurred and income foregone resulting from the commitments made, taking into account the targets set”.
- Can take into account “transaction costs”

CAP Agroforestry Support Measures (2023-2028)

MS	Article	Code	O.16 (total)	R.17 (total)	Measure
BE-FL	Art 70	3.7	€281,384		Management of agroforestry systems (boslandbouwsystemen)
CZ	Art 70	26.7	€1,357,200		Caring for an established agroforestry system
CZ	Art 73-74	42.73		€3,917,700	Establishment of an agroforestry system
DE	Art 31	DZ-0403 –			Maintaining agroforestry management on arable land and permanent grassland
EL	Art 31	P1-31.05 –		€66,564,568	Improvement of agroforestry ecosystems, rich in landscape elements
ES	Art 70	6502.2	€27,069,248		Maintenance of Forests and Agroforests
ES	Art 73-74	6881.1		€68,809,809	Non productive investments in aforestation and agroforestry systems
IT	Art 70	SRA28	€66,080,718	€66,080,718	Support for maintenance of forestation/afforestation and agroforestry systems
IT	Art 73/74	SRD05		€47,387,981	Forestation/afforestation and agroforestry systems on agricultural land
PL	Art 70	I.8.8			Afforestation and afforestation premiums and agroforestry schemes
PL	Art 73-74	I 10.13.		€5,998,785	Establishment of agroforestry systems
PT	Art 70	C.1.1.3			Agroforestry Mosaic (Attributed to O.14 and R.14, R31, R.33)
PT	Art 70	D.2.2			Management of the montado (agroforestry) by Results
PT	Art 73-74	C.3.2.2		€3,360,000	Setting up agroforestry systems
PT	Art 73-74	F.2.2		€300,000	Investment in the creation and regeneration of agroforestry systems
SK	Art 70	70.01	€2,932,150	€2,932,150	Protection and maintenance of trees within the established Agroforestry system
SK	Art 73-74	73.01		€2,932,150	Establishing an agroforestry system

ONLY 17 AF measures from a total of 948 in Articles 31 (ECO), 70 (AECM) and 73-74 (INVEST)

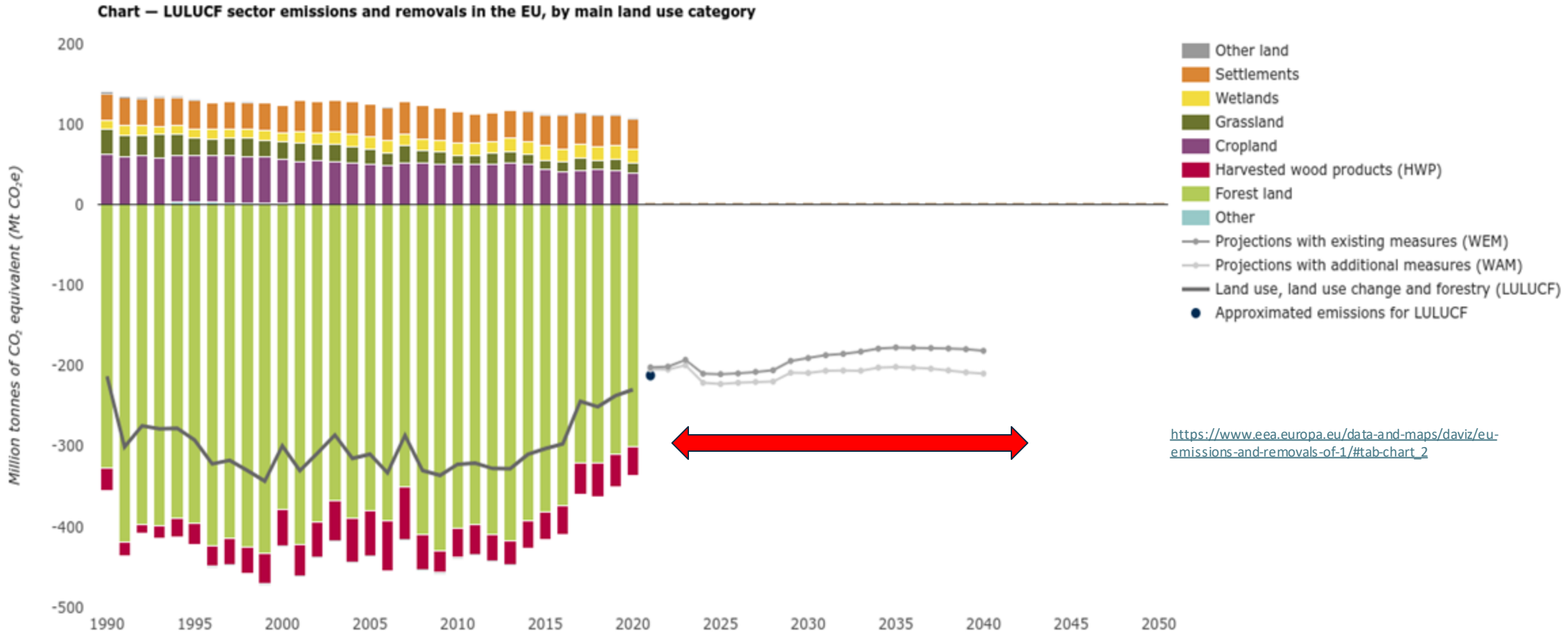
Other CAP Measures

Article 71 - natural or other area specific constraints
Article 72 - Area specific disadvantages from mandatory requirements
Article 76 - Risk management tools
Article 77 - Cooperation (e.g. EIP, Leader)
Article 78 - Knowledge exchange and dissemination

8

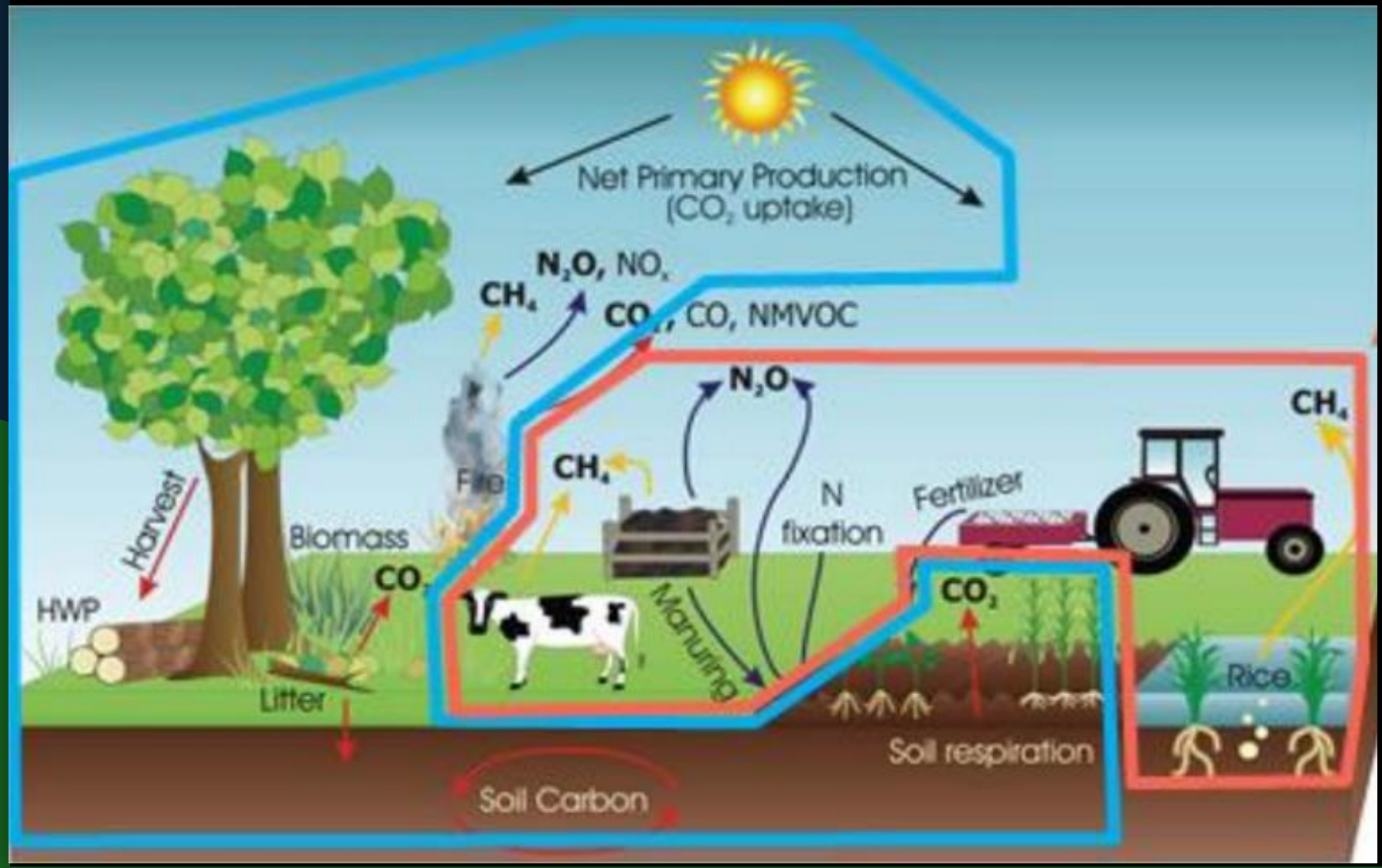
Sustaining support - CRCF, SFI, Agri-ETS, GreenData4All, LULUCF

The -310 MtCO2e EU target is very unlikely to be reached by 2030… or beyond



https://www.eea.europa.eu/data-and-maps/daviz/eu-emissions-and-removals-of-1/#tab-chart_2

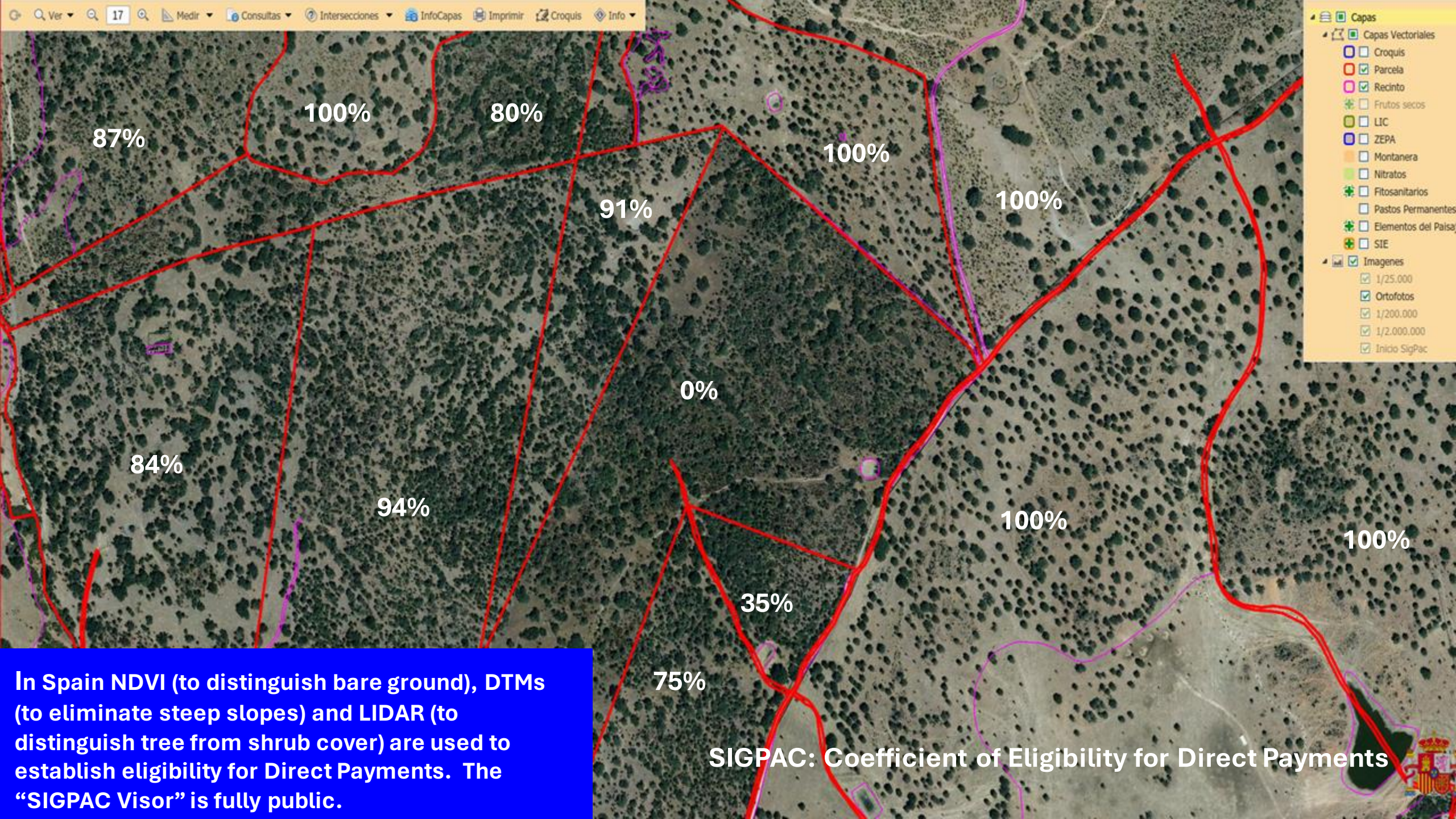
AFOLU



IPCC recommend a single integrated Agriculture, Forestry and Other Land Use (AFOLU) pillar to replace LULUCF as far back as 2006 to…….

"resolve inconsistencies and avoid double counting … removing the arbitrary distinction between the agriculture and LULUCF categories, and promoting consistent use of data and more reliable treatment of land conversions".

AFOLU is Better!!



In Spain NDVI (to distinguish bare ground), DTMs (to eliminate steep slopes) and LIDAR (to distinguish tree from shrub cover) are used to establish eligibility for Direct Payments. The "SIGPAC Visor" is fully public.

SIGPAC: Coefficient of Eligibility for Direct Payments

Sharing information between projects …

Staff from 8 projects cooperated on the Spanish Policy Briefing

Summary

- We present an analysis of the inclusion of agroforestry systems (agroforestry) in the Spanish CAP Strategic Plan 2023-27 (CSP), and other related national and regional plans and regulations. The CSP establishes a **maximum of 100 trees/ha for agroforestry to remain classified as "arable land" or "permanent crops"**, although autonomous regions have the option to reduce this threshold. In "permanent pasture" agroforestry is defined in a more flexible way, based on remotely-sensed information, including LIDAR, and the calculation of a "coefficient of eligibility" for basic payments.
- **Pillar I of the CAP** (Direct Payments) describes nine **Good Agricultural and Environmental Conditions (GAEC/GAEC)** which should be maintained by farmers and administrations. Three of these are particularly relevant to agroforestry: GAEC-8 (maintaining landscape features), GAEC-1 (preserving ratios of permanent pasture) and GAEC-9 (ban on converting permanent pasture in Natura 2000 sites). Also in Pillar I is the new concept of eco-schemes. From the nine eco-schemes implemented by Spain, there are six that may be relevant to agroforestry - in particular those related to extensive grazing and the maintenance of vegetative cover in permanent crops.
- **Pillar II of the CAP includes various measures favourable to agroforestry.** There are 28 investment-measures or agri-environment-climate measures in Spain, and at least 13 *could* be used for the establishment and maintenance of agroforestry - however only two of these explicitly include agroforestry in their titles. Agroforestry-related measures have been activated in 10 - 11 autonomous regions. All regions have activated at least 4 of the 13 measures, with an average activation per region greater than 7.
- In the **CAP Performance Monitoring and Evaluation Framework,** three indicators are particularly important: R.17, which indicates the are of forestry and agroforestry established by Member States; O.16 which indicates the amount of forestry and agroforestry receiving annual support from Member States and I.21, which indicates the area of landscape-feature supported by member states.
- The **Spanish Land Parcel Identification System (SIGPAC)** is almost unique in Europe, since it comprehensively includes both agricultural and forest parcels, and has two specific land use categories for silvopasture (pastures-with-trees and pastures-with-shrubs), although there is no specific "agroforestry" or "silvoarable" category.
- **Tree-cover-density on Spanish grassland/cropland was calculated** using Copernicus and Coring datasets for 2018 The Zero-Tree-Index (canopy cover <0.05%) was around 70% (11.39 Mha), which is around the average for EU Member States, although there were large regional differences.
- **A SWOT analysis** on agroforestry in Spain is presented, resulting from workshops in which more than 25 actors participated, including farmers and ranchers, civil society representatives, academics and researchers. The overall conclusion was that the Spanish CAP Strategic Plan is a favourable framework for the maintenance and promotion of agroforestry systems, with financing options in both Pillars I and II. It contains the most favourable set of policies towards agroforestry since the establishment of the CAP, although there are great regional differences and uncertainties in the implementation of these.

Agroforestry systems in the Spanish CAP Strategic Plan: analysis and reflection

This document is the product of a Working Group on Spanish Agroforestry Policy, with the support of the European Agroforestry Federation (EURAF) and the DigitAF Project of the Horizon Europe program. It is a living text and will be updated as policies change. We encourage you to leave comments on the Google Doc versions below and to request to join the Working Group here.

Policy Briefing #44: leave comments in the draft Spanish or English versions

Published Version 1 (1.4.24) https://zenodo.org/records/10903406

EURAF Policy Briefing #44. Authors: Manuel Bertomeu (UEX), Jaime Coello (CTFC), Gerry Lawson (EURAF), Laura Armengot (UB), Teresa Baiges (CPF), Gabriel Borràs (DACC - DG Climate Change and Environmental Quality), Andrea Casadesús (CT BETA , UVic-UCC), Diana Pascual (CREAF), Ferran Pauné (UVic-UCC), Joana Rull (DACC - DG Climate Change and Environmental Quality), Laia Sánchez (DACC - SDG Rural Planning), Beatriz de Torre (AGRESTA).

https://zenodo.org/records/10903406

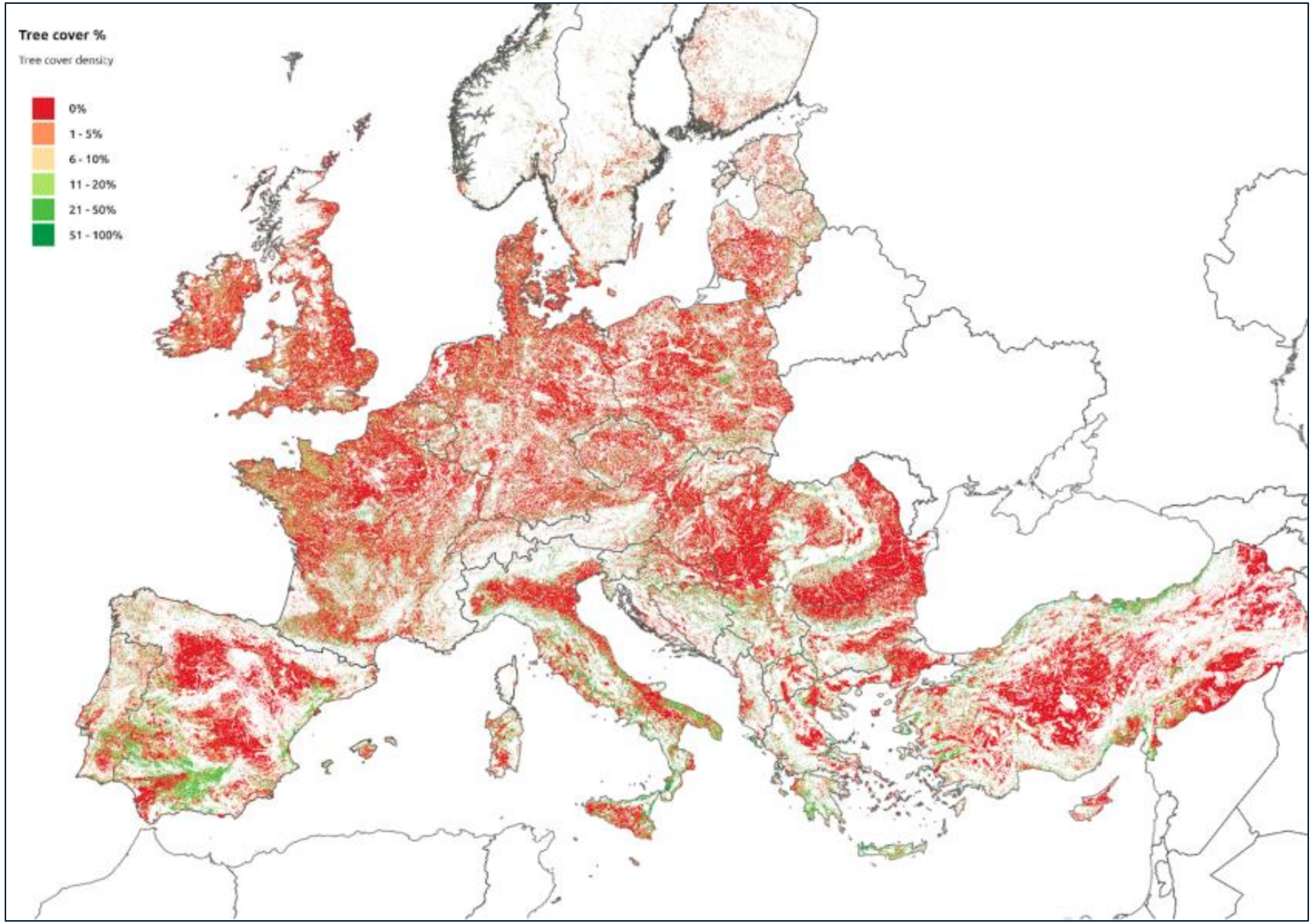
The Policy Jungle !! … Cooperation needed

Legislation	Ref	Relevance for the Carbon Removals Certification Framework (CRCF)
REGULATIONS		
Governance of the Energy Union and Climate Action	2018/1999	Sets common rules for planning, reporting and monitoring of climate and energy targets - through NECP
- Effort Sharing Regulation	2018/842	Updated in 2023 for higher targets. Includes non-Co2 gas targets for agrociculture. No split is given but the 2023 targets are 10% to 50% of 2005 levels
- LULUCF Regulation (2018)	2018/841	Updated in 2023. Rules for monitoring emissions and removals on agricultural land (only non CO2) and forests and land use change (all gases)
- European Climate Regulation	2021/1119	Overall framework for climate-neutrality by 2050 and intermediate targets for 2030 (55%) and 2040 (90%)
CAP Strategic Plan Regulation	2021/2115	Encouragement subsidies in Pillar (ECO), Pillar II (AECM, INVESTt, COOP, AKIS). Conditionality (e.g. GAEC) rules, WTO rule constraints
Agricultural Block Exemption Regulation	2022/2472	Specific mention of carbon-farming schemes and option for carbon farming "result-based schemes". Often better terms than CAP
Deforestation Regulation	2023/1115	Uses the FAO definition of forest and expects the rest of the world to use this for cattle, cocoa, coffee, oil palm, rubber, soya and wood;
Forest Monitoring Regulation	COM/2023/728	Uses the FAO definition of forest rather than that in the UNFCCC Marrakesh Accords 2021 or the LULUCF Reg or National Laws
Framework to Facilitat Sustainabale Investment	2020/852	Aims to inform investors on whether an economic activity is environmentally sustainable by setting common EU-wide criteria. The Delegated Acts for Climate (2021/2139) and Environment (2021/2178) are important - as is the EU Taxonomy Navigator
Nature Restoration Regulation	COM/2022/304	Restore at least 20% of the EU's land and sea areas by 2030, and all ecosystems in need of restoration by 2050. Targets for carbon & HDLF.
DIRECTIVES		
Nitrates Directive	91/676/EEC	Longstanding monitoring of nitrate levels in water bodies, designating NVZs (>50mg/nitrates), codes of good agric practice to reduce water pollution
Habitats Directive	92/43/EEC	Protecting 1000+ species and 230 habitat types. MS must take action to prevent deliberate disturbance or damage etc.
Birds Directive	2009/147/EC	First adopted in 1979. Obligation on MS to protect wild birds and protect their habitats.
Renewable Energy Directive III	2023/2413	Sets sustainability criteria for bioenergy - for either national authorities or private certification to assess - links flagged with carbon removal certification
Soil Monitoring Directive	2023/416	Harmonised definition of soil health and monitoring methods. LUCAS soil sampling to be extended.
Emissions Trading System Directive	2023/959	Started in 1.1.2005. Forests oroginally considered but rejected in 2006, Focus on permanent removal - fire/disease/ wind risks. CDM and JI options post Kyoto
COMMUNICATIONS		
Biodiversity Strategy 2030	COM/2020/380	Sets a range of targets . some of which were included in the NRR. Accompanied by actions tracker and targets dashboard
State Aid Rules for agric and forestry	COM/2022/9120	Many mentions of carbon farming or carbon sequestration (not sure how this relates to the ABER Regulation?)
Forest Strategy 2030	COM/2021/572	Vision and actions to improve the quantity and quality of EU forests and strengthen their protection, restoration and resilience - e.g. 3 billion trees and biodiversity sensitive planting
Soil Strategy for 2030	COM/2021/699	Sets framework and measures for soil health.
Zero Pollution Action plan 2050	COM/2021/400	Sets key 2030 targets for reducing pollution at source - with action tracker and targets dashboard
Climate Adaptation Strategy	COM/2020/82	How the European Union can adapt to the unavoidable impacts of climate change and become climate resilient by 2050.

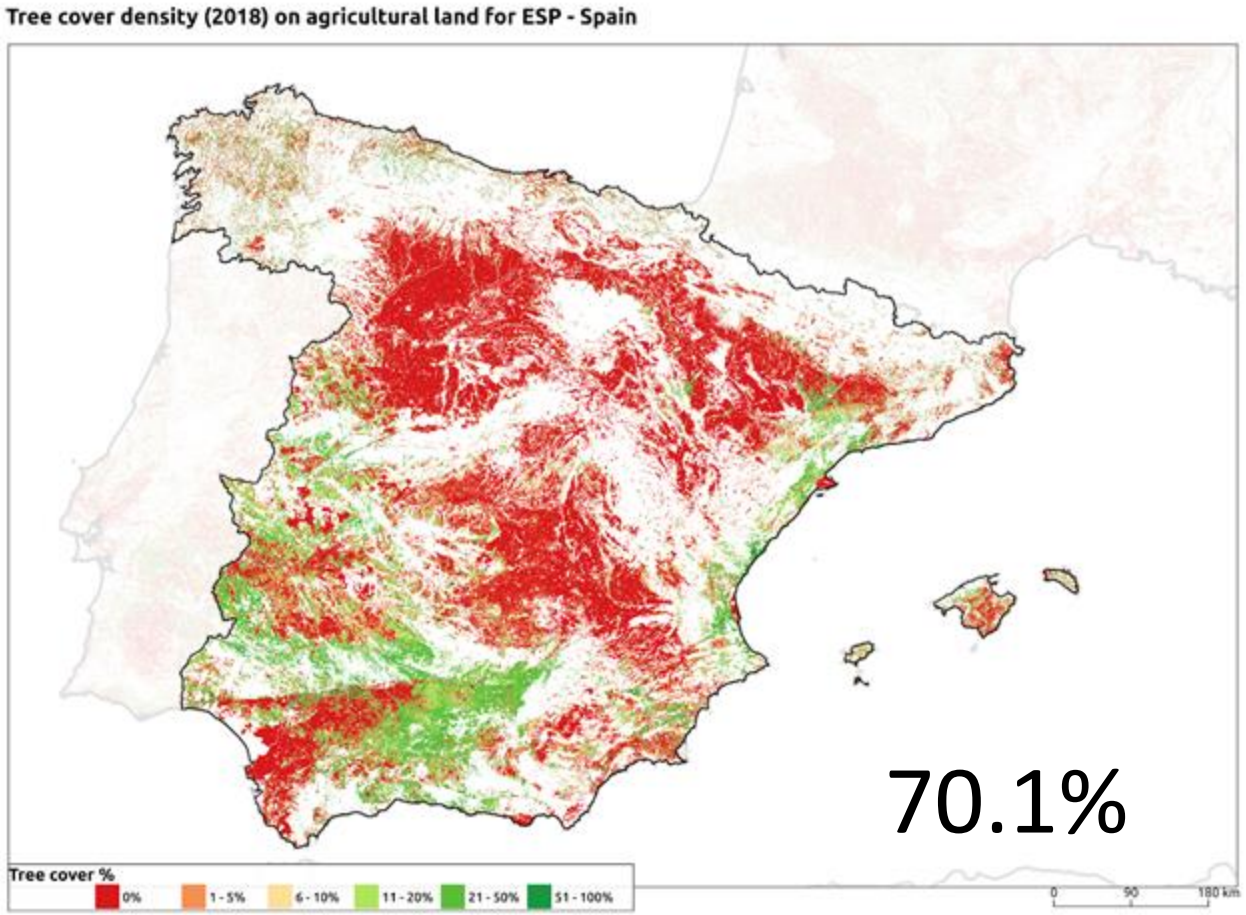
The Green Deal is being “simplified” …. Do we need a new EU “Landscape Strategy” (covering woody, wet and herbaceous woody landscape features)

Tree Desert Landscapes in Europe

Tree-Cover-Density (TCD) on agricultural land in the 39 EEA countries. Areas of white are non-agricultural areas. Red areas are priority planting zones where TCD is particularly low. Source: Copernicus TCD-2018 superimposed on Corine agricultural land for 2018. Each pixel covers 1 ha (100 m x 100 m). The map was produced for the EU DigitAF project by Planet Inc and the European Forest Institute.



h) Spain - on the EU average "Zero-Tree-Index"



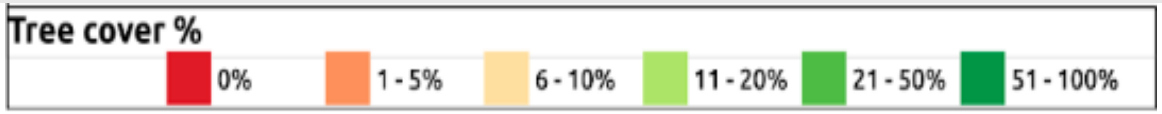


Table 6. Hectares in each of the Copernicus tree crown cover classes and Corine agricultural land categories, including Natura 2000

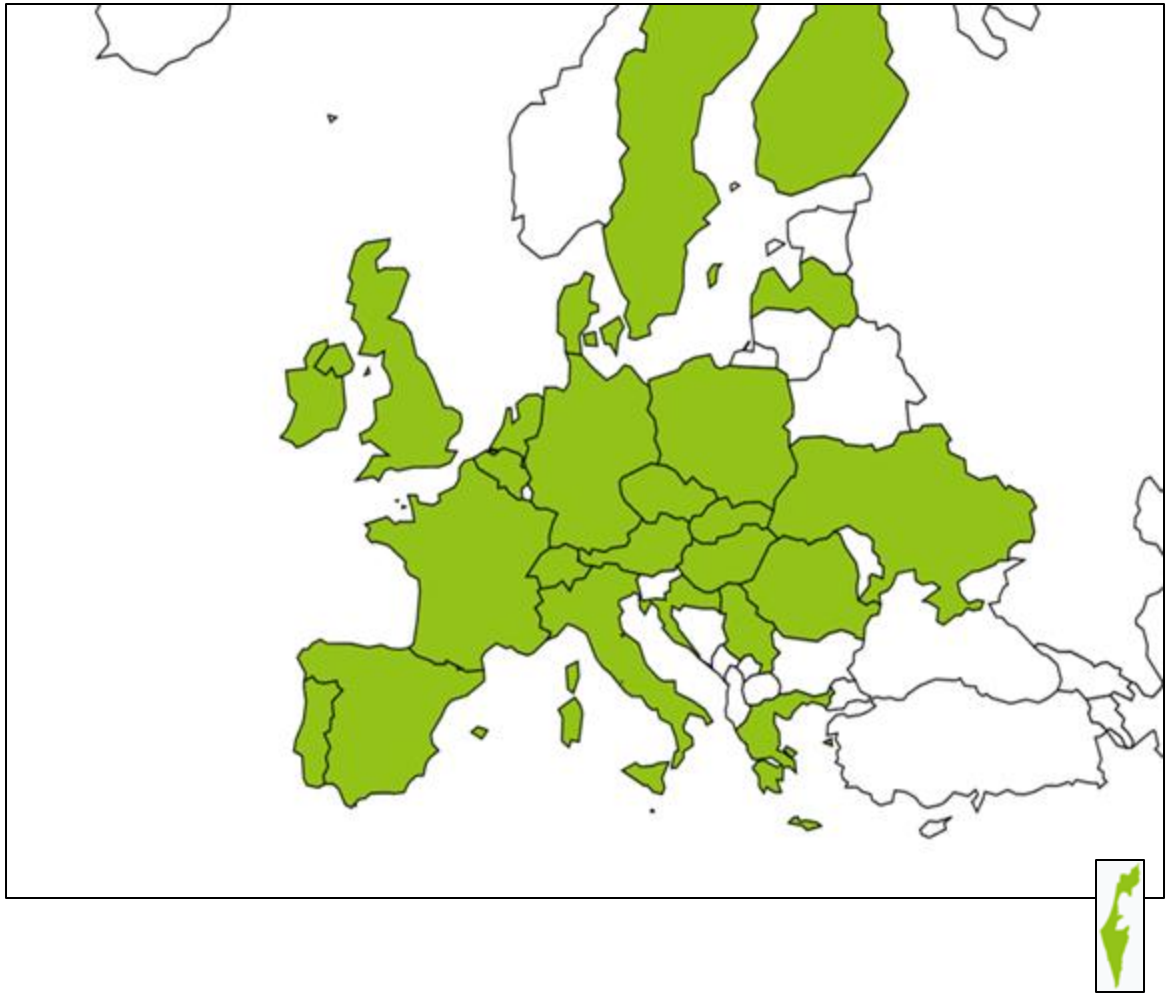
Corine land cover code	0%	<= 1%	<= 2%	<= 5%	<= 10%	<= 100%
211 non-irrigated arable	8,239,675	8,538,543	8,717,395	9,033,807	9,319,170	9,813,929
212 perm irrigated	2,171,933	2,254,105	2,306,989	2,403,225	2,495,548	2,726,115
213 rice	129,752	131,098	131,974	133,518	135,053	138,268
231 pasture	681,132	745,261	785,329	862,350	939,415	1,192,608
244 agroforestry	164,921	238,669	298,171	452,523	705,159	2,367,314
Sum	*11,387,413*	*11,907,676*	*12,239,858*	*12,885,423*	*13,594,345*	*16,238,234*
%	***70.1%***	*73.3%*	*75.4%*	*79.4%*	*83.7%*	*100.0%*

Table 6: Zero-tree-index ranking of EU Member States (i.e. percent of agricultural hectares with zero trees)

	PT	SE	SI	IE	FI	LV	AT	FR	DE	LU	EE	BE	IT	DK	ES	PL	CZ	HR	SK	NL	EL	HU	BG	LT	RO	CY	MT
TDI	48.0	49.4	53.5	59.1	59.5	61.7	61.9	62.4	64.0	64.9	65.1	65.3	67.3	70.1	70.1	70.2	71.2	71.4	71.4	75.2	76.1	77.7	79.3	81.8	82.2	87.9	95.2
#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

EURAF Conference in Brno in May - see you there?

EURAF Members 2024



More information on Agroforestry and Policies?

#8 **Agroforestry for carbon-farming** (v1 Sep 20, v2 Dec 21, v3 15.4.22, **v4 1.4.24**)

#15 Monitoring **Trees outside Forests** in the EU (v1-2.5.22, v2-1.6.22, v3-23.1.23)
#16 Agroforestry and the **Green Deal** - paper abstracts from Nuoro (v1 Jul 22, V2 20.9.22)
#17 Agroforestry in the **Revised LULUCF Regulation** (v1 Jun 22, V2 Jul 22, v3 30.11.22)
#18 Agroforestry and the EU **Nature Restoration Regulation** (v1 Jul 22, v2 31.12.23)
#19 Agroforestry and the EU **ABER Regulation** (IE, FI, NL, SE, LU, DE etc) (v1 31.12.22)
#20 Agroforestry and the **Framework Regulation for Carbon Removals** (v1 31.12.22)

#21 **Landscape Features** in the new CAP (v1 30.1.23)
#22 **Agroforestry definitions** in the new CAP (v1 14.2.23)
#23 Research and innovation priorities - **Horizon Europe** 2025-2027 (v1 28.2.23)
#24 Agroforestry and Parliament's report on Sustainable Carbon Cycles (v1 5.3.23)
#25 Options for FAO reporting on **Trees outside Forests** (v1 30.5.23)

#26 Agroforestry and the 2040 AFOLU net-zero target (v1 23.6.23)
#27 Agroforestry and adaptation to climate change (v1 31.7.23)
#28 Agroforestry and the Sustainable Finance Initiative (v1 15.12.23)
#29 Agroforestry and **Permanent Grassland Definitions** in EU Member States (v1 31/12/23)
#30 Agroforestry & "**Forest Reproductive Material**", "New Genomic Techniques" Regs(v2 22.12.23)

Agroforestry for the Future of European Agriculture
Policy Summit, 17 April 2024

The current policy environment of agroforestry in Europe

Paola Migliorini
Associate Professor at the University of Gastronomic Science (UNISG) and co-founder Agroecology Europe,

Rosemary Venn
Researcher at the Centre for Agroecology, Water and Resilience, University of Coventry

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

POLICY Co-DEVELOPMENT FOR EUROPEAN MIXED FARMING & AGROFORESTRY

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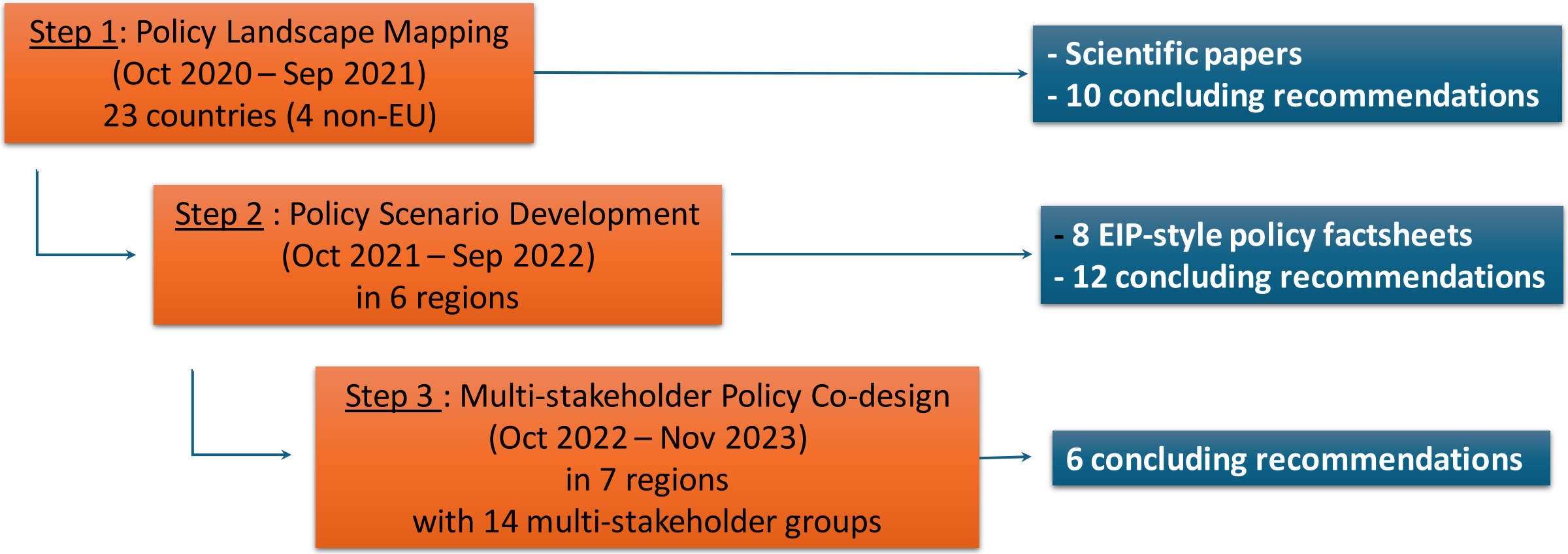
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

JA24
PARIS
LAISSEZ PASSER
NOS AGRIS !!!
GK-605-DA
087-KY

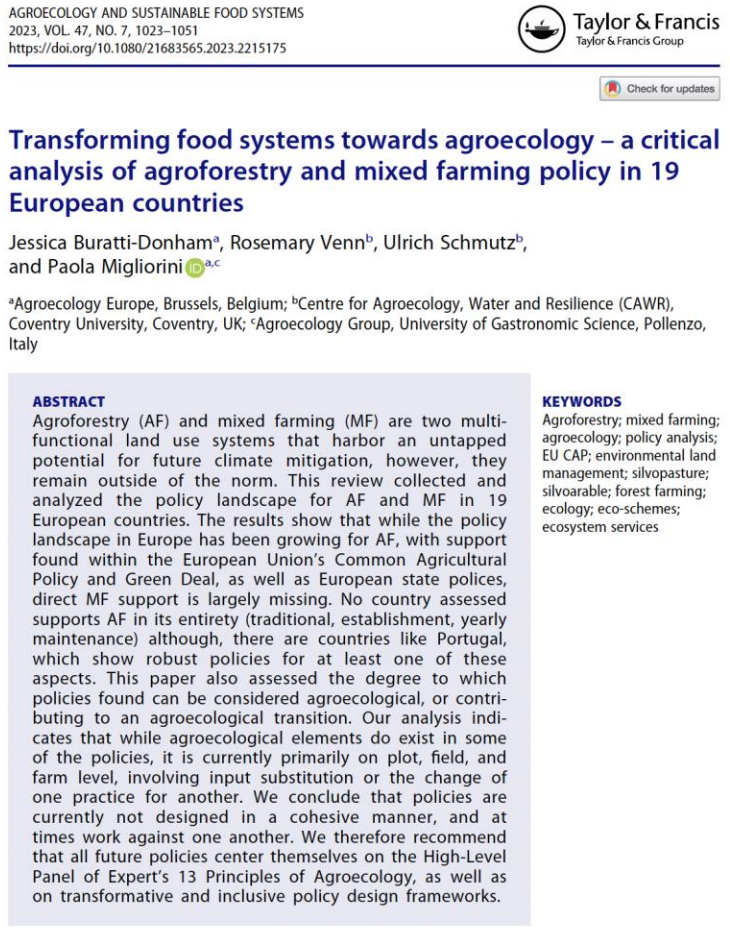
POLICY Co-DEVELOPMENT: METHODOLOGY



1. Policy Landscape Mapping: results

- Both national and EU level policies for AF have been **growing incrementally** over recent years
- The Common Agricultural Policy (**CAP**) provides direct support during the 2007-2013 and 2014-2020 periods but still disincentive
- Agroecological elements within CAP policies exist at plot, field and farm level which focus on input substitution rather then systems redesign

We conclude that policies are currently not designed in a cohesive manner and at times work against one another



AGROECOLOGY AND SUSTAINABLE FOOD SYSTEMS
2023, VOL. 47, NO. 7, 1023–1051
https://doi.org/10.1080/21683565.2023.2215175

Taylor & Francis
Taylor & Francis Group

Check for updates

Transforming food systems towards agroecology – a critical analysis of agroforestry and mixed farming policy in 19 European countries

Jessica Buratti-Donham[a], Rosemary Venn[b], Ulrich Schmutz[b], and Paola Migliorini[a,c]

[a]Agroecology Europe, Brussels, Belgium; [b]Centre for Agroecology, Water and Resilience (CAWR), Coventry University, Coventry, UK; [c]Agroecology Group, University of Gastronomic Science, Pollenzo, Italy

ABSTRACT

Agroforestry (AF) and mixed farming (MF) are two multi-functional land use systems that harbor an untapped potential for future climate mitigation, however, they remain outside of the norm. This review collected and analyzed the policy landscape for AF and MF in 19 European countries. The results show that while the policy landscape in Europe has been growing for AF, with support found within the European Union's Common Agricultural Policy and Green Deal, as well as European state polices, direct MF support is largely missing. No country assessed supports AF in its entirety (traditional, establishment, yearly maintenance) although, there are countries like Portugal, which show robust policies for at least one of these aspects. This paper also assessed the degree to which policies found can be considered agroecological, or contributing to an agroecological transition. Our analysis indicates that while agroecological elements do exist in some of the policies, it is currently primarily on plot, field, and farm level, involving input substitution or the change of one practice for another. We conclude that policies are currently not designed in a cohesive manner, and at times work against one another. We therefore recommend that all future policies center themselves on the High-Level Panel of Expert's 13 Principles of Agroecology, as well as on transformative and inclusive policy design frameworks.

KEYWORDS

Agroforestry; mixed farming; agroecology; policy analysis; EU CAP; environmental land management; silvopasture; silvoarable; forest farming; ecology; eco-schemes; ecosystem services

1. Policy Landscape Mapping: results

Country	CAP 2014-2020 Direct AF Support through RDP (Measure 8.2)	CAP 2014-2020 Farmer Uptake of AF Measure 8.2	National Policies for Agroforestry (2007-2022)	CAP 2023-2027: Includes an agroforestry related Eco-scheme	CAP 2023-2027: Includes a landscape features related Eco-scheme
Belgium (Flanders)					
Belgium (Wallonia)					
Bulgaria					
Croatia					
Czech Republic					
Estonia					
Finland					
France					
Germany					
Greece					
Hungary					
Ireland					
Italy					
Lithuania					
Netherlands					
Poland					
Portugal					
Romania					
Serbia					
Spain					
Sweden					
Switzerland					
UK					

1. Policy Landscape Mapping: 10 recommendations

Think and act systematically towards a common food systems approach	Strengthen regional supply chains	Promote an enabling Environment	Increase agroecological practices	Create incentives to extensively manage livestock
Increase regional research	Integrate long-term thinking	Build agroecological capacity in system	Empower local governments	Promote diversity in knowledge generation

2. Policy scenario development: results

England

Download

France

Downl

Germany

Rhineland

Download

Switzerland

Central – Eastern Europe

Download

EU – Agroecology

Download

EU – Carbonfarming

Download

Unifying results across regions: more targeted support is needed: policy, financing & knowledge

https://agromixproject.eu/policy-c

3. Multi-stakeholder Policy Co-design

1ST Round

Agroecology Europe –
European Agroforestry Co-creating policies for transforming food systems

ACTA –
Policies and support measures for agroforestry

Coventry University –
Agroforestry in England, policies, land ownership and just transitions

Ifas –
Policy Workshop on Agroforestry in Rhineland-Palatinate and Saarland (in German)

ZALF –
Agroforestry as a sustainable land use system to future-proof

ZHAW –
First Policy Workshop

CEEweb –
Agromix policy workshop, Solutions for the CEE region

2ND Round

Agroecology Europe –
Carbon Farming
The opportunities and risks for European agroforestry and agroecology

ACTA –
Agroforestry in France Policies and support measures for agroforestry

Conventry University –
Agroforestry in England, policies, land ownership and just transition

Ifas –
Legal & administrative framework conditions for agroforestry in Rhineland Palatinate & Saarland (Germany)

ZALF –
Creating practice oriented and future-proof Agroforestry Policy

Agroscope –
Second Swiss Agroforestry Panel

CEEweb –
Agromix policy workshop, Solutions for the CEE region

3. Multi-stakeholder Policy Co-design: results

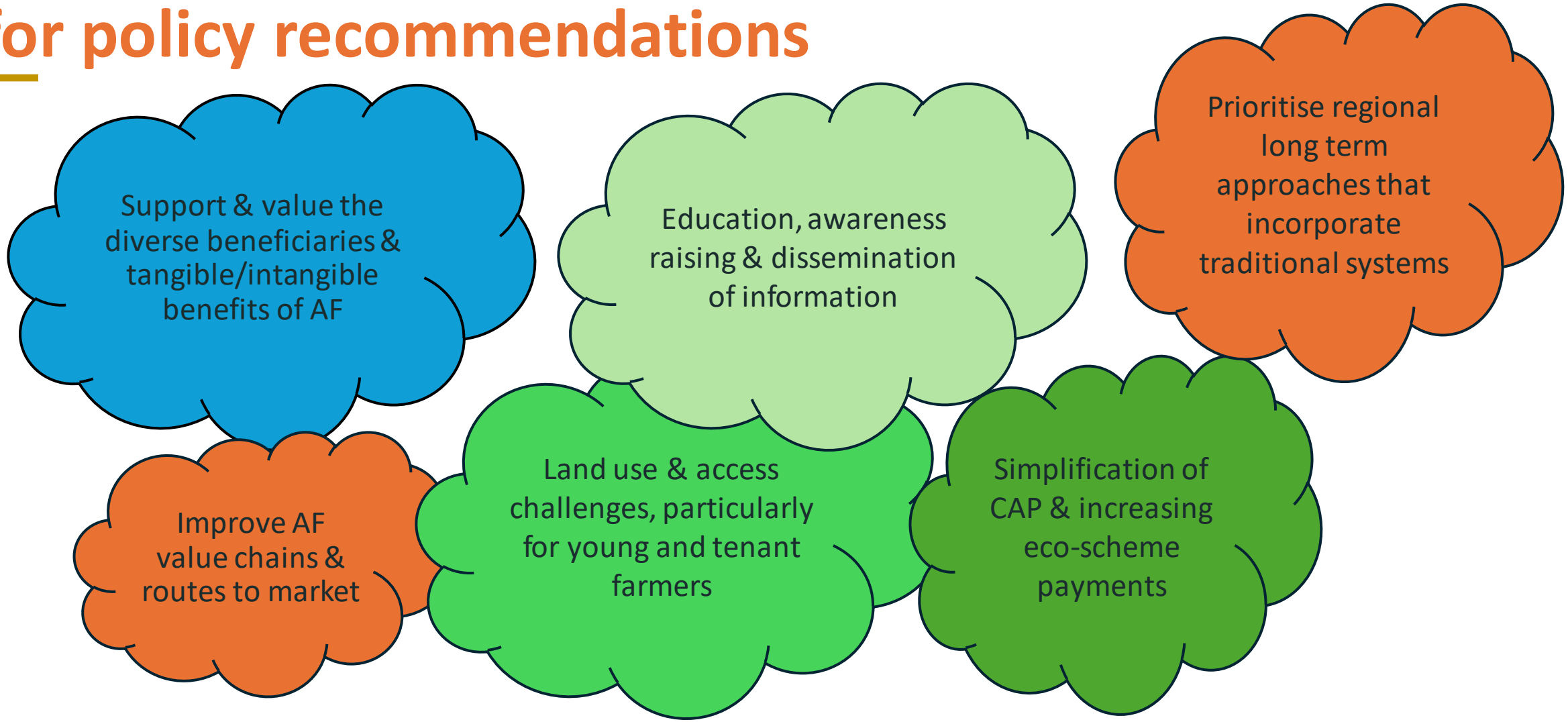
KEY OBSERVATIONS

- Different definitions of agroforestry exist and contradict
- Important to include traditional systems and existing farm woodland
- Tenant farming is an issue across EU for agroforestry uptake

KEY NEEDS

- Education, awareness raising, knowledge & upskilling requirements
- Routes to market
- More evidence & research on economic benefits, long term trials and impact on biodiversity

3. Multi-stakeholder Policy Co-design: categories for policy recommendations



Agroforestry for the Future of European Agriculture

Policy Summit, 17 April 2024

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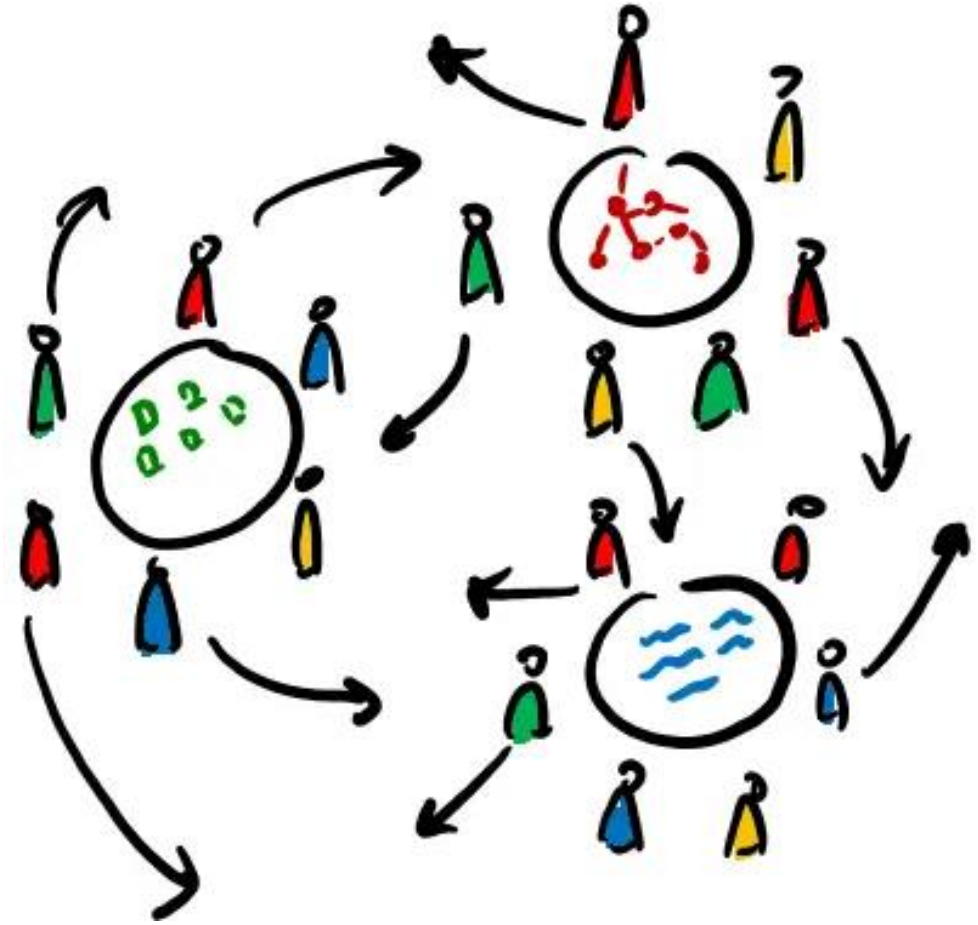
Wrap up and introduction to World Cafe

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

Introduction to the WORLD CAFE



Objective of the World Cafe

To express your point of view for support for the implementation of agroforestry & mixed farming in EU food systems

How it works

1. *Choose a room*: any 1 of the 4 rooms - they are all the same (max 30p in each)
2. *Choose a table:* there are 5 tables in each room, each representing one of the 5 topics to be discussed
3. *Participate in the Small-Group Round at your table*: Your table-facilitator will provide instruction. 1 round lasts 20 minutes.
4. *Harvest and summarise*: The table-facilitator will gather insights and briefly summarise them to everyone at your table.
5. *Move to the next table*: choose your next table (in the same room) and repeat for 2 more rounds.
6. *Final plenary presentation and sharing*: the facilitators will share some of the results

Table topics

What policies and other measures are required to:

- Improve and condense the many definitions, statistics & tools used within AF/MF
- Develop training resources, improve education & access to research results to foster best practices in AF/MF
- Increase and streamline funding and economic incentives, both within and outside of the CAP
- Improve policy coherence across interconnected policy objectives and strategies at EU level
- Develop diverse value chains for AF/MF products & increase their visibility

Remember....

World Café Guidelines
HAVE FUN!!
PLAY... DRAW DOODLE
Facilitate yourself & others
CONTRIBUTE YOUR THINKING
Listen together for patterns, insights, & deeper connections
LISTEN TO UNDERSTAND
FOCUS on what matters
LINK and connect IDEAS
Speak with your MIND... and HEART
SLOW DOWN.... so you have TIME to think & reflect
AVRIL ORLOFF MAR.07

Agroforestry for the Future of European Agriculture
Policy Summit, 17 April 2024

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Artistic interpretation of the summit

Fanny Didou
Graphic Facilitator

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

Agroforestry for the Future of European Agriculture

Policy Summit, 17 April 2024

Coffee Break

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

Agroforestry for the Future of European Agriculture

Policy Summit, 17 April 2024

Livestreaming back at 2pm

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Agroforestry for the Future of European Agriculture

Policy Summit, 17 April 2024

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The importance of peasant farming and agroecology in the transformation of the EU Food System

Tijs Boelens

Farmer at De Groentelaar

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

Agroforestry for the Future of European Agriculture

Policy Summit, 17 April 2024

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Presentation of the main results of the morning session and introduction to the afternoon session

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Agroforestry for the Future of European Agriculture

Policy Summit, 17 April 2024

Debate with Q&A

Moderated by journalist **Natasha Foote**

Anja Gassner EU Director of CIFOR-ICRAF

Humberto Delgado Rosa Director ENVI.D - Biodiversity (DG ENVI)

Morgan Ody General Coordinator La Via Campesina

Patrick Worms Senior Science Policy Advisor at CIFOR-ICRAF & President of the IUAF

Tamas Szedlak Forestry Expert at the EU Commission (DG AGRI)

Alberto Mantino Assistant Professor, Department of Agriculture, Food & Environment, University of Pisa

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Agroforestry for the Future of European Agriculture
Policy Summit, 17 April 2024

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Artistic interpretation of the summit

Fanny Didou
Graphic Facilitator

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Agroforestry for the Future of European Agriculture

Policy Summit, 17 April 2024

Conclusion and next steps

Paola Migliorini
Agroecology Europe

Vincent Dauby
Researcher in agroecology at Agroecology Europe

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 862993.

Agroforestry for the Future of European Agriculture
Policy Summit, 17 April 2024

Coffee Break and Networking

Thanks for joining the AGROMIX Policy Summit

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