Funded by the European Union

LILAS4SOILS
CARBON FARMING

Fostering Carbon Farming Practices through LIving LAbS in the Mediterranean and Southern EU for the healthy future of European SOILS

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www.lilas4soils.eu

LILAS4SOILS: the call

HORIZON-MISS-2023-SOIL-01-09: Carbon farming in living labs

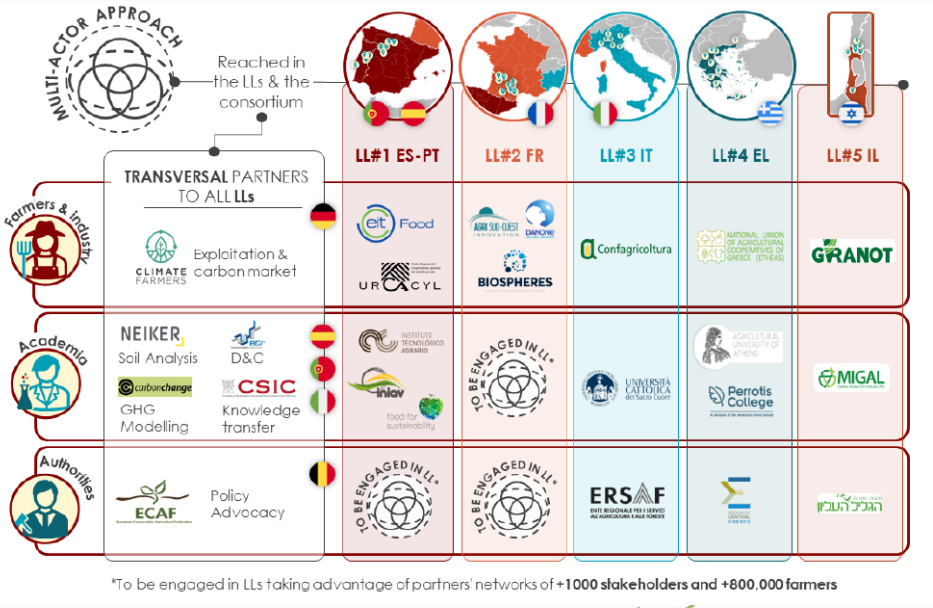
Expected Outcome: Activities under this topic respond directly to the goal of the Mission 'A Soil Deal for Europe' of **setting up 100 living labs by 2027** to lead the transition to healthy soils by 2030. In particular, it supports the Mission's specific objective 2, "**Conserve and increase soil organic carbon stocks**"

LILAS4SOILS: the consortium

LIST OF PARTICIPANTS #@APP-FORM-HERIAIA@#

N°	ORGANISATION NAME	SHORT NAME	Type*	Role	Country
1	**EIT FOOD South**	**EITFOOD**	SEC	COO + FSTP	ES
2	Agricultural Technological Institute of Castilla y Leon	ITACyL	RTO	Co-lead LL ES-PT	ES
3	Food4Sustainability CoLAB	F4S	SEC	Co-lead LL ES-PT	PT
4	Agri Sud-Ouest Innovation	ASOI	CSO	Lead LL FR	FR
5	Catholic University of the Sacred Heart	UNICATT	UNI	Lead LL IT	IT
6	Agricultural University of Athens	AUA	UNI	Lead LL GR	EL
7	Galilee Research Institute	MIGAL	RTO	Lead LL IL	IL
8	NEIKER	NEIKER	RTO	MRV+Soil Analysis	ES
9	Carbon Change	CCHANGE	SME	Modelling	IT
10	BGI - Building Global Innovators	BGI	SME	Diss&Comm	PT
11	Climate Farmers	CLIFARM	SME	Carbon credits	DE
12	Dantrade BV C/O Danone Inc.	DANONE	LC	Industry (LL FR)	NL
13	Spanish National Research Council	CSIC	RTO	Know. transf.	ES
14	National Institute of Agricultural & Veterinary Research	INIAV	RTO	Techn. (LL ES-PT)	PT
15	American Farm School Post-Secondary Educational and Training Association (Perrotis College)	PCAFS	UNI	Techn. (LL GR)	EL
16	Union of Agricultural Cooperatives of Castilla y León	URCACyL	SEC	Farm. (LL ES-PT)	ES
17	Biospheres	BIOSPH	SME	Farmers (LL FR)	FR
18	Confagricoltura Veneto	CONF	SEC	Farmers (LL IT)	IT
19	National Union of Agricultural Cooperatives of Greece	ETHEAS	SEC	Farmers (LL GR)	EL
20	Granot Central Cooperative	GRANOT	SEC	Farmers (LL IL)	IL
21	Regional body for Agricultural and Forestry services	ERSAF	PB	Authority (LL IT)	IT
22	Region of Central Greece	RoCG	PB	Authority (LL GR)	EL
23	Upper Galilee Regional Council	UGRC	PB	Authority (LL IL)	IL
24	European Conservation Agriculture Federation	ECAF	SEC	Policy advocacy	BE

**RTO – Research Technology Organisation, SME – Small and Medium Enterprise, LC – Large Company; UNI – University Organisation, CSO - Civil Society Organisation/ Association; PB – Public Body; SEC – Sectorial organisation; OTH – Other*



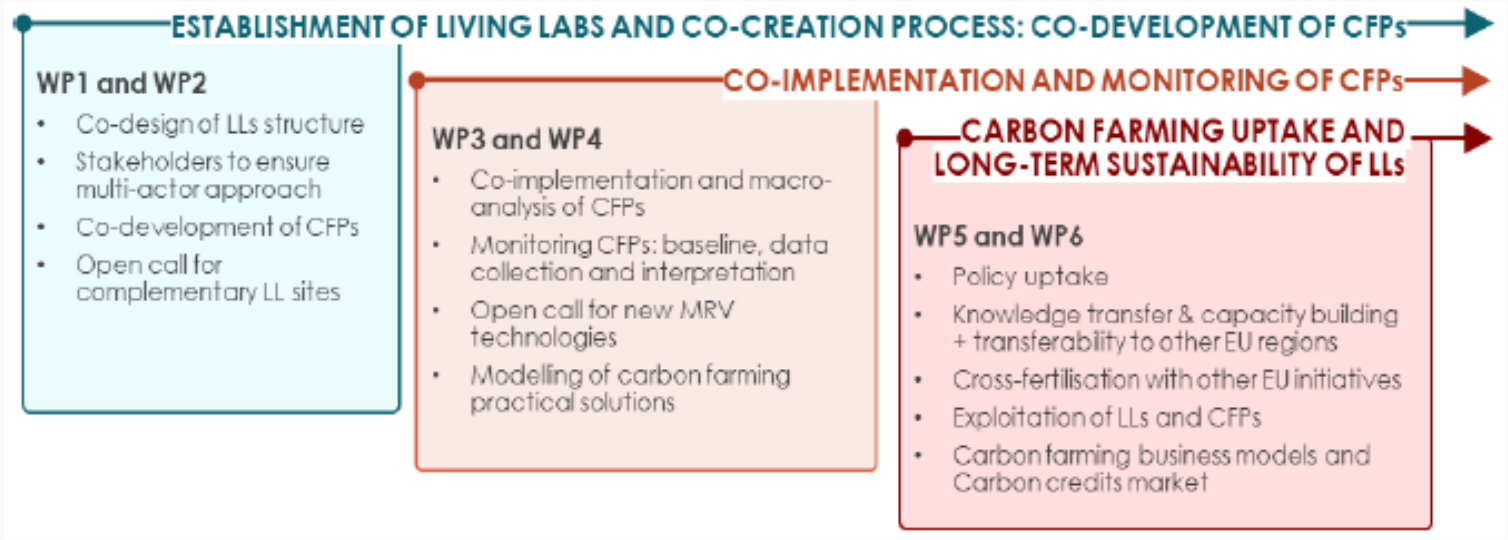
LILAS4SOILS: the goal

The main objective of LILAS4SOILS is **to boost C Farming potential in the Mediterranean and Southern EU**, driving the agricultural sector toward healthy soils and zero emissions through a **participatory R&I approach t**hat centers primary producers. LILAS4SOILS will involve agricultural stakeholders in co-creating and implementing C Farming Practices (CFPs).

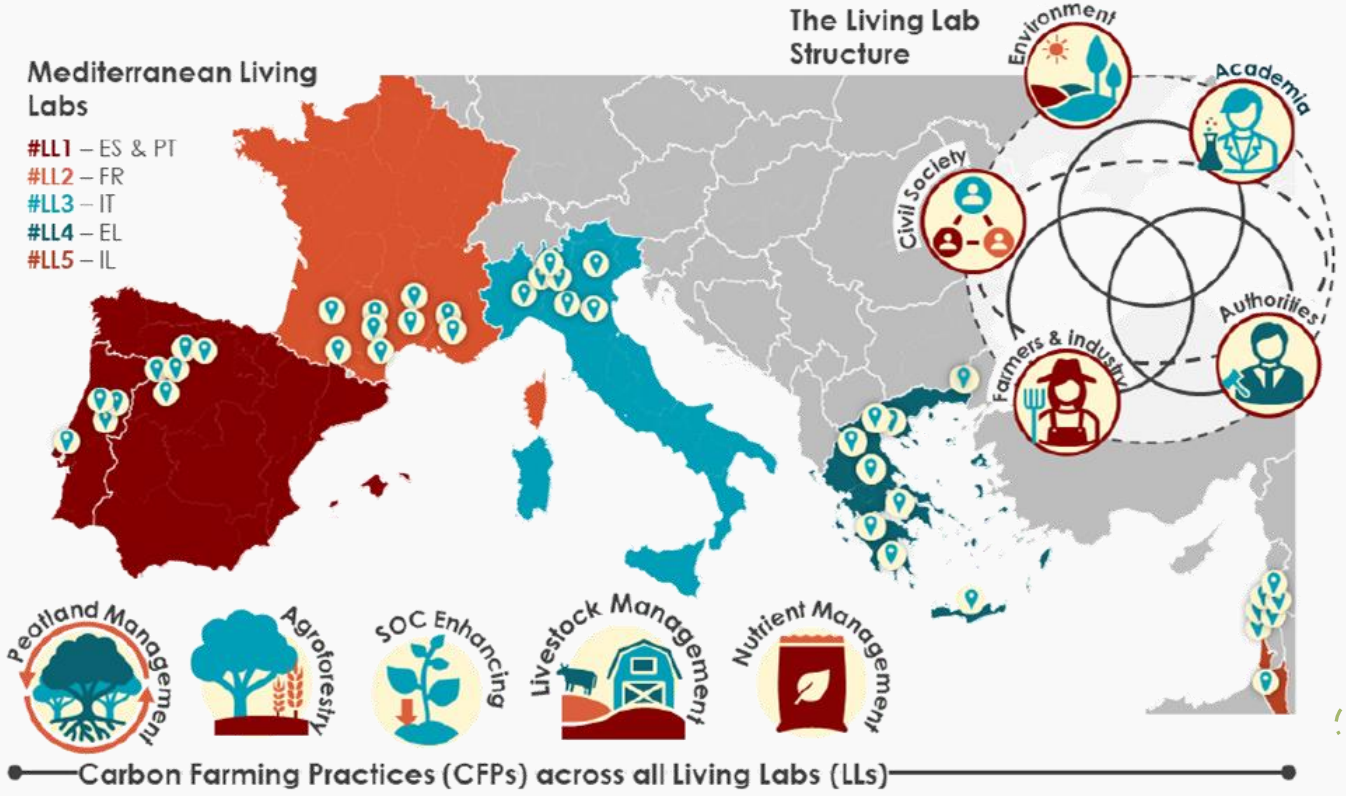
Timeline:

- Starting month: 01 September 2024
- End month: 31 August 2029.

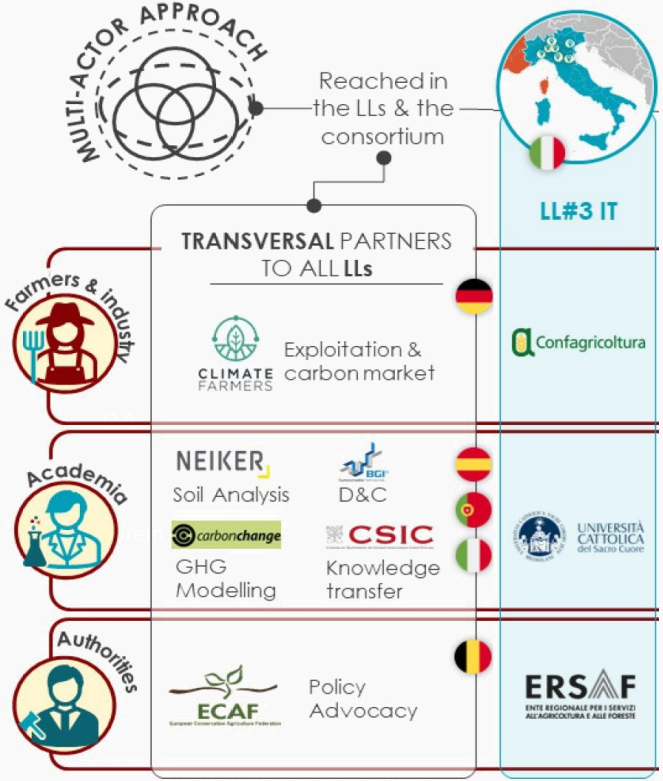
LILAS4SOILS: Methodology



LILAS4SOILS: the Living Labs



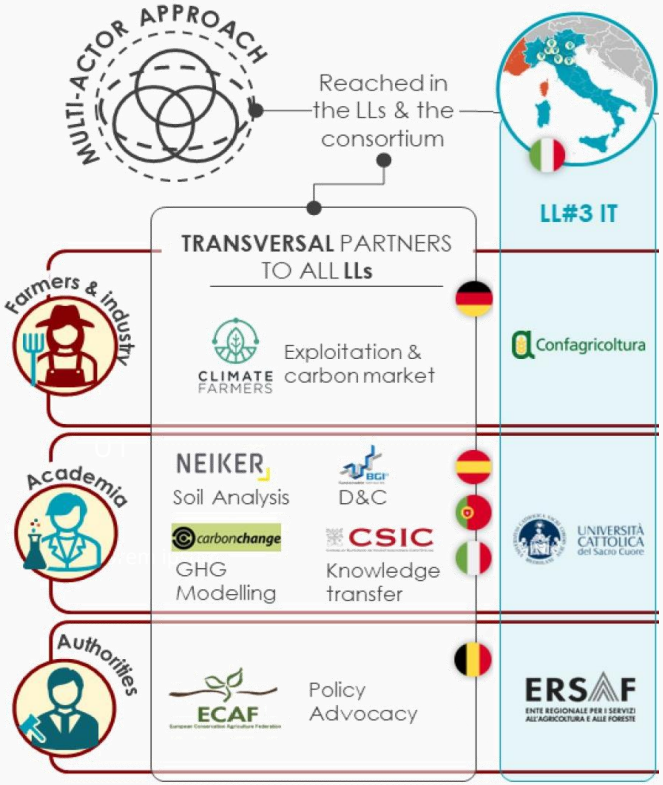
LL#3 – SHARE



Name:
Soil Health & Regenerative Agriculture (SHARE) Innovation Lab

Scope:
The SHARE Innovation Lab addresses the challenge of soil degradation in intensively farmed lands by (i) introducing sustainable agro-ecosystem management practices and (ii) monitoring and verifying their impacts on soil health and carbon sequestration, in alignment with the EU Soil Mission.
The lab engages farmers, researchers, and stakeholders committed to Regenerative Agriculture and carbon farming. Innovations include practices to restore soil fertility, enhance biodiversity, and improve carbon storage.
Key components: (i) Long Term Experiments (LTE), providing scientific data for innovative techniques; (ii) Lighthouse Farms (LHF), demonstration farms for testing and promoting new technologies.

SHARE – Location and structure



Country:
(Northern) Italy

Region(s):
Lombardia, Emilia-Romagna, Veneto

Climate:
Csa (Hot-summer Mediterranean climate) as Koppen classification

Leader:
Università Cattolica del Sacro Cuore (UNICATT)

Partners:
- Regional body for Agricultural and Forestry services (ERSAF)
- Confagricoltura Veneto (CONF)

SHARE – General features

	LL#3 – ITALY	
		
	Region	**Transregional:** Lombardia, Emilia-Romagna, Veneto, Piemonte
	Climate *	Csa
	Soil type	Loam, Clay-loam, Silty-loam, Silty-clay, Silty-clay-loam
	Real /experimental ratio	10/0
	Crop/livestock type	Cereals, legumes, forage, fruit trees, rainfed crops (sugar beet) grassland / bovine…
	Total area covered (ha)	50
CFP to be applied (see text caption in Table 3)	**Peatland Management**	-
	Agroforestry	-
	Maintain and enhance SOC on mineral soils	5, 6, 7, 8, 9
	Livestock and manure management	12, 13, 14
	Nutrient management	16, 17, 18, 19

Level of development:
Advanced Stage: Most experimental sites are established, potential lighthouse(s) already identified, with active engagement from identified actors. The scope is well-defined, and specific soil health challenges are being actively addressed.

(Predominant) land use:
Arable lands

Farm types:
1. Grain (plant-product) farms
2. Dairy farms

Carbon Farming Practices are related to:
1. Maintain and enhance SOC on mineral soils
2. Livestock and manure management
3. Nutrient management

SHARE – Partners

UNIVERSITÀ CATTOLICA del Sacro Cuore

Leader of LL3 IT. University with >20 years of experience in EU projects, coordination of arobust platform of farmers, researchers, and other stakeholders committed to carbon farming (that will result into the IT Living Lab), and soil physico-chemical and biological analyses.

ERSAF
ENTE REGIONALE PER I SERVIZI ALL'AGRICOLTURA E ALLE FORESTE

Regional authority for LL3 IT. Agricultural institution responsible for the regional soil information system and participant in EU, national, regional projects. Experience in soil monitoring and managing a multi-stakeholder LL in the Po Valley together with UNICATT.

Confagricoltura Veneto

Farmers representative for LL3 IT. Agricultural organization gathering and representing farming companies, protecting farmers and businesses at a national and regional level, offering consultations between social partners and the Government.

SHARE – (1) Lighthouse [LH] and (9) Demo Sites [DS]

SHARE – (1) Lighthouse [LH] and (9) Demo Sites [DS]

Site n°	*Name*	Town and subregion	Region	Land size (ha)	Crop types or livestock	Soil type	Carbon farming practices to be tested
1 [DS]	*Az. Agricola Grandi*	Barbianello, Pavia	Lombardia	200	Plant-product farm. Maize (silage), soybean, winter wheat, alfalfa, rice, buckweat	Clay-loam	6; 8; 13
2 [DS]	*Az. Agricola Rossi*	Malagnino, Cremona	Lombardia	40	Plant-product farm. Maize (grain), soybean, winter wheat	Silty-loam	7; 8; 17; 18
3 [DS]	*Az. Agricola Fiorini*	Ostiano, Cremona	Lombardia	80	Plant-product farm. Maize (grain), pea, soybean, winter wheat, processing tomato, sunflower, alfalfa	Loam	6; 7; 10
4 [DS]	*Az. Agricola Dellabona*	Gambara, Brescia	Lombardia	350	Dairy cattle farm. Maize (silage), winter wheat (silage), alfalfa	Sandy-Loam	8; 13; 14; 15; 17; 18; 20
5 [LH]	*CERZOO*	San Bonico, Piacenza	Emilia-Romagna	50	Dairy cattle farm. Maize (silage), barley (silage), grassland leys	Silty-clay	6; 7; 8; 9; 13; 17; 18; 19; 20
6 [DS]	*Genagricola*	Portonovo, Bologna	Emilia-Romagna	950	Plant-product farm. Maize (grain), soybean, winter wheat, sugar beet	Silty-clay	6; 7; 8; 9; 20
7 [DS]	*Az. Agricola Ruozzi*	San Martino in Rio, Reggio Emilia	Emilia-Romagna	20	Dairy cattle farm. Maize (grain), winter wheat, grassland leys	Clay-loam	6; 8; 9
8 [DS]	*Az. Agricola Spagnolo*		Piemonte				
9 [DS]	*Az. Agricola Trettenero*	Schiavon, Vicenza	Veneto	100	Plant-product farm. Maize (grain), soybean, winter wheat, barley, pea, alfalfa, canola	Silty-loam	6; 7; 8; 13; 20
10 [DS]	*Az. Agricola Fasolo*		Veneto				

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List of CFPs

1	Keeping existing peatlands wet to avoid emissions (either for nature conservation or through paludiculture)
2	Rewetting and restoring previously drained peatlands (to avoid emissions from degrading peatlands)
3	Adapting the management of drained peatlands in productive use that cannot be rewetted.
4	Increasing silvoarable and silvopastoral systems
5	Hedgerow or field boundary tree cover
6	Cover cropping
7	Improved crop rotations
8	Maintaining grassland without ploughing up (no till)
9	Conversion from arable land to grassland
10	Organic farming
11	Management of grazing land and grassland
12	Directly reducing enteric methane (including feed additives and improved feed digestibility/efficiency)
13	Reducing NO emissions through manure management (including manure storage and processing, anaerobic digestion and bio methane, and cover cropping)
14	Efficiency improvements including animal management to improve productivity (through herd management and feed management)
15	Animal fertility improvements
16	Grazing and grassland management
17	Improving nutrient planning
18	Improving timing and application
19	Use of nitrification inhibitors
20	Combination with agronomic practices (legume crops, residue management/incorporation, or inclusion of temporary leys/grasslands in the crop rotation)

CERZOO

Latest scientific outcomes:

Field Crops Research 289 (2022) 108732

Contents lists available at ScienceDirect

Field Crops Research

journal homepage: www.elsevier.com/locate/fcr

Matching crop row and dripline distance in subsurface drip irrigation increases yield and mitigates N_2O emissions

Federico Ardenti [a,*], Diego Abalos [b,c], Federico Capra [a], Michela Lommi [a], Stefania Codruta Maris [d], Alessia Perego [e], Chiara Bertora [f], Vincenzo Tabaglio [a], Andrea Fiorini [a]

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Soil & Tillage Research 228 (2023) 105630

Contents lists available at ScienceDirect

Soil & Tillage Research

journal homepage: www.elsevier.com/locate/still

Long-term C and N sequestration under no-till is governed by biomass production of cover crops rather than differences in grass vs. legume biomass quality

Federico Ardenti, Federico Capra, Michela Lommi, Andrea Fiorini *, Vincenzo Tabaglio

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Soil & Tillage Research 244 (2024) 106213

Contents lists available at ScienceDirect

Soil & Tillage Research

journal homepage: www.elsevier.com/locate/still

Potential of conservation tillage, cover crops, and digestate application as integrated C farming practices for processing tomato

Federico Ardenti [a,*], Federico Capra [a], Stefano Santelli [a], Luigi Lucini [b], Vincenzo Tabaglio [a], Andrea Fiorini [a]

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Environmental Management (2024) 73:532–545
https://doi.org/10.1007/s00267-023-01874-1

Conservation Agriculture Impacts on Economic Profitability and Environmental Performance of Agroecosystems

Lorenza Alexandra Lorenzetti [1] · Andrea Fiorini [2]

Received: 23 November 2022 | Accepted: 9 January 2023
DOI: 10.1111/gcbb.13036

RESEARCH ARTICLE

GCB-BIOENERGY BIOENERGY & SUSTAINABLE BIOECONOMY — WILEY

Towards efficient N cycling in intensive maize: role of cover crops and application methods of digestate liquid fraction

Federico Capra [1] | Diego Abalos [2,3] | Stefania Codruta Maris [4] | Federico Ardenti [1] | Michela Lommi [1] | Vincenzo Tabaglio [1] | Andrea Fiorini [1]

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Thank you

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