



Soil Health Living Labs for Combating Desertification and Soil Degradation

Nemesis Soil Health Living Labs for Combating Desertification across the Mediterranean

Ioannis Varvaris

ERATOSTHENES Centre of Excellence, Limassol, Cyprus

Open Call 1 Webinar | Date 30/06/2026





What is soil health?

Healthy soil is a living system, not just a growing medium

Function

Supports plant growth, nutrient cycling, and biological activity.

Structure

Maintains stable aggregates, pore space, and root penetration.

Water

Infiltrates rainfall, stores moisture, & acts like a natural sieve.

Life

Hosts diverse organisms that drive soil fertility.



In 2025, the Council reached a provisional agreement with the European Parliament on a Directive establishing a framework for soil monitoring and resilience.



...not only

Soil Health Challenges



Healthy soils are the foundation of resilient ecosystems

Living Labs turn knowledge into real, scalable solutions

Why Combating Desertification Demands Living Labs

THE CHALLENGE

Desertification across the Mediterranean

1

A systemic, place-based crisis

Soil loss, water scarcity, biodiversity decline and rural pressure interact differently in every territory.

2

No single fix works everywhere

Top-down policy and lab science alone have not reversed land degradation on the ground.

3

Knowledge stays in silos

Researchers, farmers, citizens and policymakers rarely test and decide together.



THE RESPONSE

Soil Health Living Labs

1

Solutions built on the land

Co-created and tested in real pilot sites, under local soil and climate conditions.

2

Multi-actor by design

Farmers, scientists, citizens and policymakers act as one community of practice.

3

From local knowledge to scale

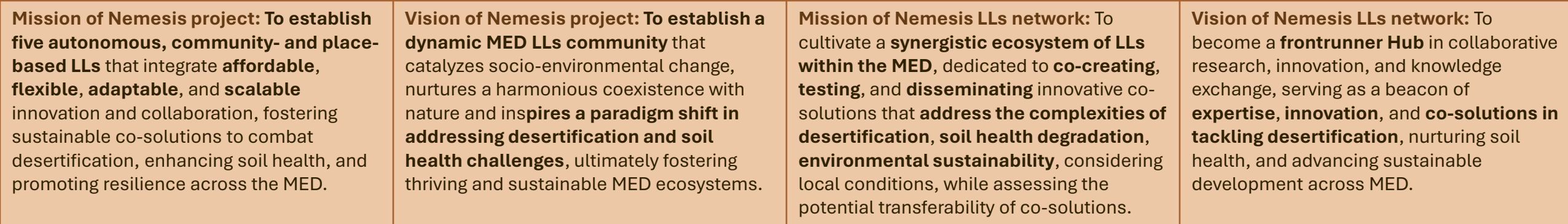
Evidence and lived experience converge into co-solutions ready to transfer across the MED.

Living Labs are the infrastructure that turns the fight against desertification into shared, measurable and place-based action.



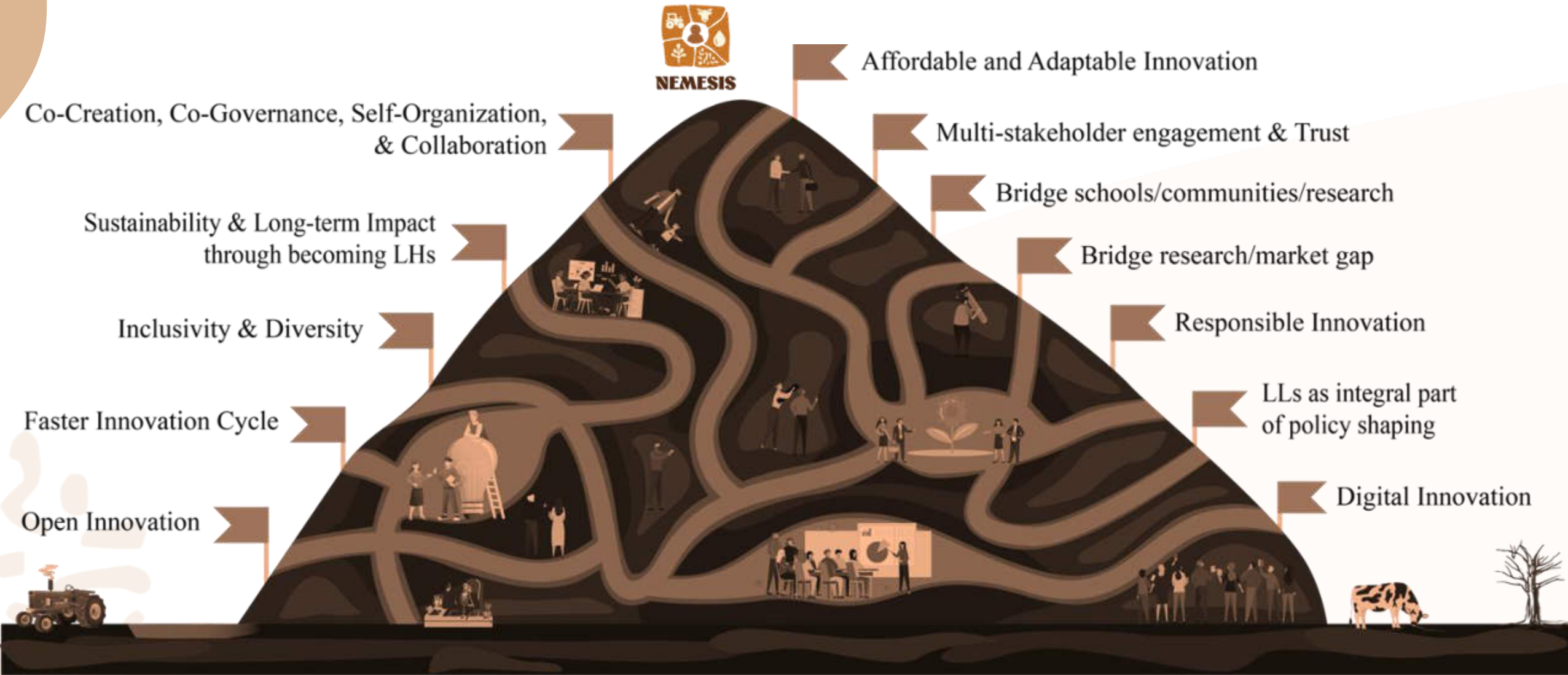
Nemesis Consortium





Ant Model for Nemesis Soil Health Living Labs

Drawing inspiration from the organization and collaboration within ant nests and establishing the core characteristics of Living Labs as interconnected nodes.



Nemesis Living Labs Leaders and Themes



Each Living Lab is a floor in the same foundation, connected through knowledge, rooted in soil health, rising together against desertification.



~CO-CREATION AT THE CORE, USERS AT THE HEART – LIVING LABS IN ACTION

Cyprus's water scarcity & drought issues, driven by factors including low & highly variable precipitation, high evaporation rates, & unsustainable soil-water management practices, provide an ideal opportunity for Soil-Water LL.



Southern France's rising desertification risk, linked to critical soil pollution from pesticides and heavy metals, and the lack of SOC data, demands urgent attention and highlights the need for sustainable Soil-Biodiversity solutions for healthy cropping systems.



Northern Italy presents an increased risk of desertification, with the highest predicted change in this and a rise in the aridity index, while stressed land productivity, making it ideal for studying desertification impacts on Soil-Crop systems



Spain, with the EU's highest livestock population and food production concentrated in semi-arid southeastern regions, faces an urgent and compelling need for sustainable Soil-Pasture management due to the heightened risk of desertification and declining soil health.



With the agricultural products rising imports from NA to EU, establishing a Soil-Management Practices LL in NA is crucial for testing co-solutions adaptability and scalability, reducing EU soil footprint, evaluating regions impacted by desertification as no-cohesive and informed actions examples.



Digital Twin as a multi-disciplinary virtual “real-life” LL operating as a demonstration and decision-support tool



Nemesis Living Labs Soil Health Challenges



Cyprus Soil-Water



France Soil-Biodiversity



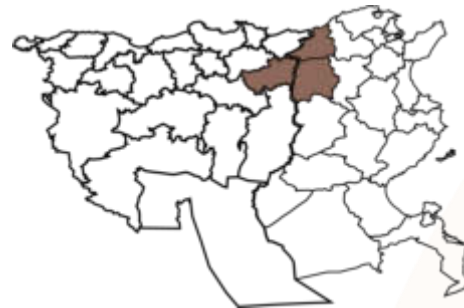
Italy Soil-Crop



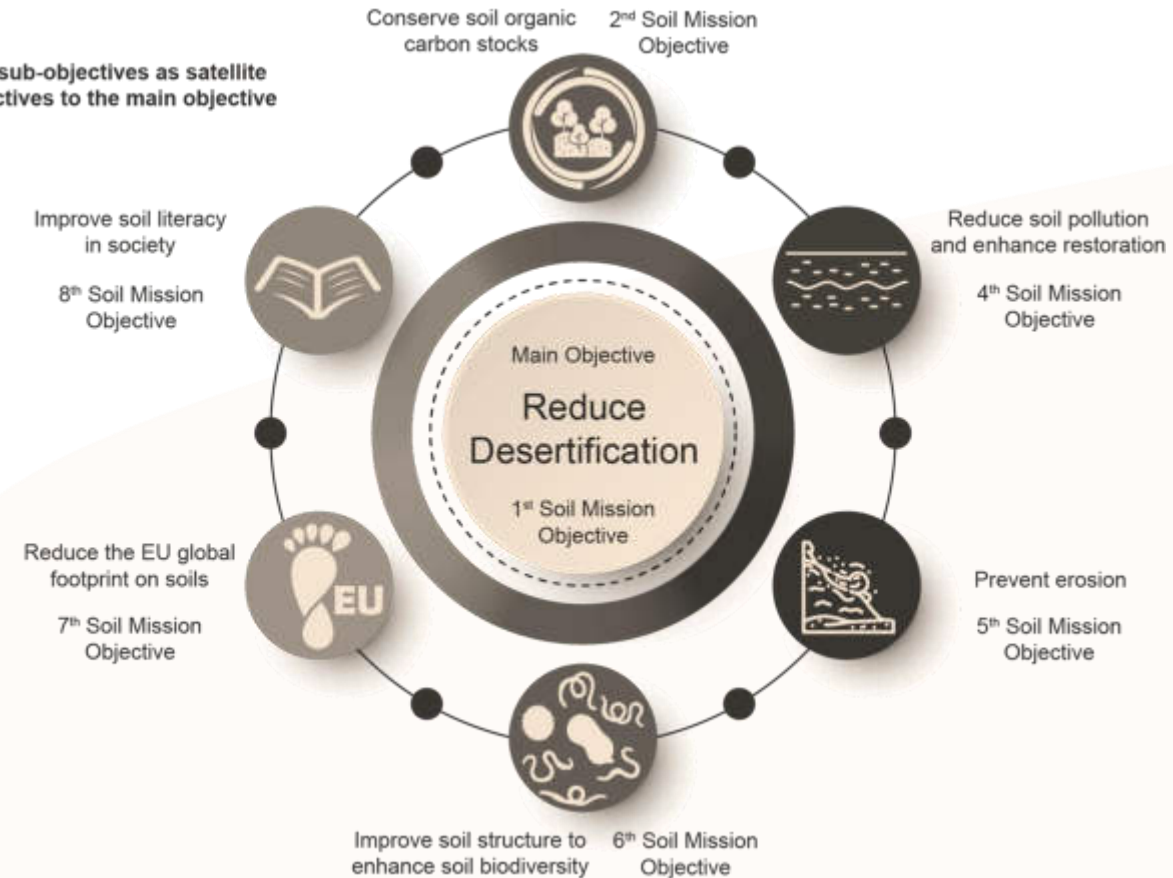
Spain Soil-Livestock



Tunisia / Algeria Soil-Practices



Six sub-objectives as satellite objectives to the main objective



❑ For all experimental sites, the main objective is combating desertification

~CO-CREATION AT THE CORE, USERS AT THE HEART – LIVING LABS IN ACTION

Nemesis Living Labs Soil Health Challenges



NEMESIS



Source for main root causes for soil degradation: Directive on Soil Monitoring and Resilience

What we aim to achieve by the end of Nemesis project

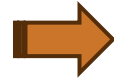


From concept

Nemesis transforms each LL into a real engine of change, where local knowledge, scientific evidence, and community engagement converge to shape practical solutions, shape policy, and build resilience against desertification across the Mediterranean.



Lighthouses are sites for demonstration of exemplary solutions, training, peer-to-peer learning, and communications related to improving soil health.

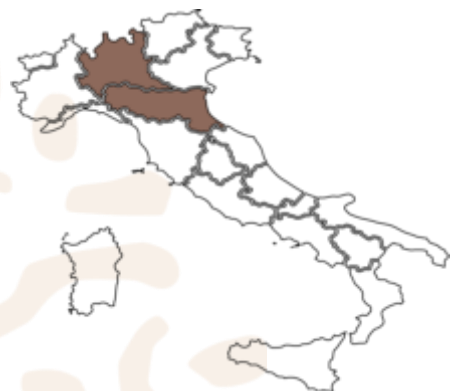


To impact:

- ❑ 5 fully established innovation LLs with solid governance, business models, ethics framework, KPIs, and maturity assessments, **fully ready to hear-discuss-assess-test-validate-provide solutions and services.**
- ❑ Complete stakeholder ecosystem: MAPs, ambassadors, dynamic WebGIS mapping, and continuous multi-actor engagement, **with all mechanisms in place to involve stakeholders, transfer knowledge, and advance their soil literacy on desertification and soil degradation.**
- ❑ **MED desertification knowledge base:** SHDs, risk scenarios, LLs intervention strategies, contingency & adaptation planning.
- ❑ **Nemesis Data Space:** Virtual Space, MED Data Cube, Living Earth, Digital Twin, crowdsourcing tools, and app synthesis engine operational.
- ❑ **Harmonized soil health data framework** aligned with EUSO and **Standardized metadata & descriptors for SHDs** across all LLs; full interoperability framework.
- ❑ **Soil health baselines for every experimental site**, including spectral library, EO-derived SHD layers, and hierarchical sampling campaigns protocols.
- ❑ **Co-solution database:** LL-tailored implementation plans for short/medium/long-term deployment.
- ❑ **Socio-economic & cost-benefit** evaluation framework.
- ❑ **Full monitoring system** tracking **environmental**, **socio-economic impacts**, **ecosystem services**, stakeholder engagement, and KPIs.
- ❑ **Continuous feedback loops linking monitoring → Data Cube → stakeholders' insights → LightHouse readiness.**
- ❑ **Policy impact ecosystem:** Each LL positioned as a policy-shaping mechanism through an operational Policy Hub, Policy Tanks, Policy Bootcamps, and policy briefs/recommendations linking local policy to DSMR.
- ❑ **Social innovation roadmaps:** LL social innovation roadmaps, Twinning Programs (LL exchange knowledge mechanisms), Social Labs, LH Readiness Level framework, e-Learning Hub, and Nemesis Academies.
- ❑ **Exploitation & sustainability:** IPR strategy through capacity-building, Entrepreneurship Hub, Factory Innovation Capitals Office, and LL 10-year sustainability plans.

Nemesis Living Labs

Living Labs Ecosystems



Nemesis Living Labs

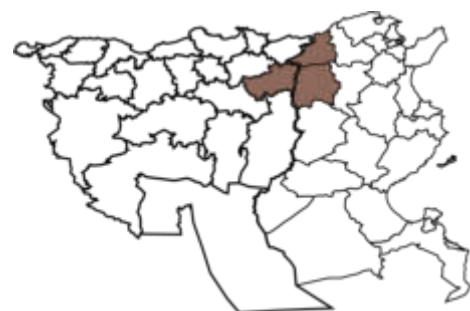
Living Lab Ecosystem



UNIVERSIDAD
DE MURCIA



FEDERACIÓN
DE COOPERATIVAS
AGRARIAS DE MURCIA



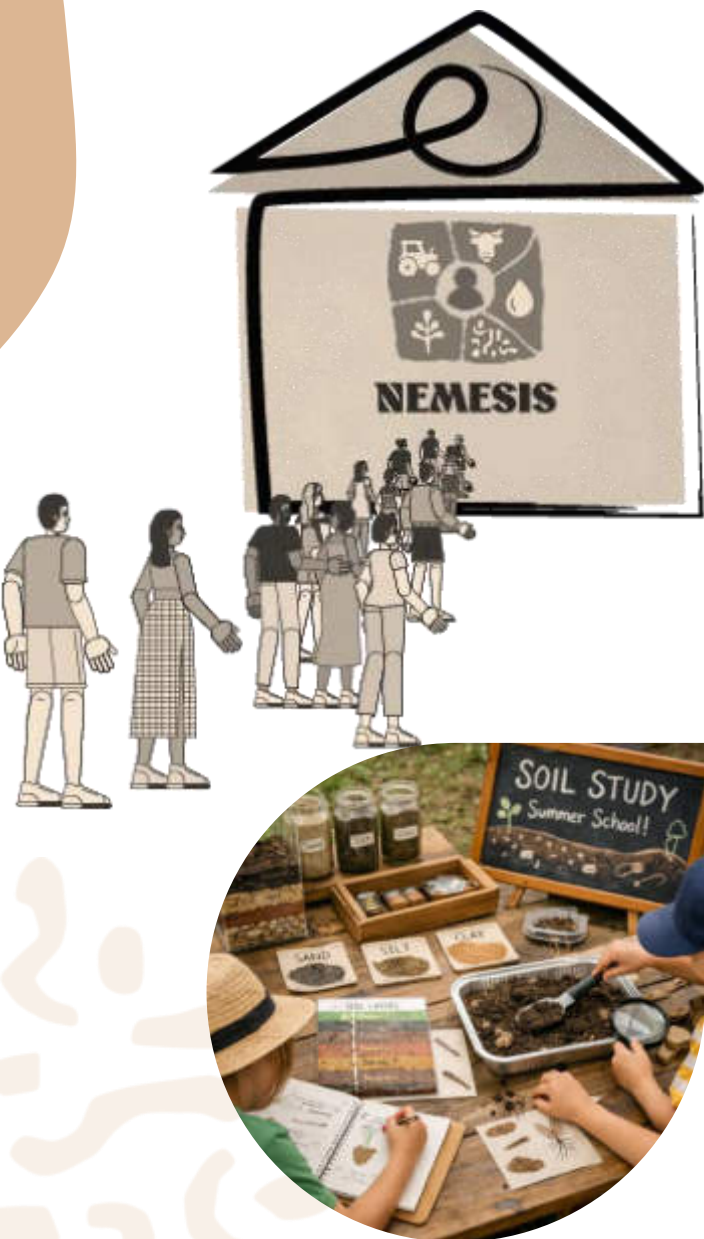
Living Labs & Experimental Sites for End-Users



Citizens, schools and future soil literacy

Nemesis already plans public-facing learning formats:

- co-deciding and co-planning Living Labs activities
- life-coaching and awareness activities
- social labs and twinning between Living Labs
- an e-learning hub with multilingual material
- Demonstration activities and vocational training structures (VETs)
- hands-on participation through citizen science and crowdsourcing
- schools' visits at the experimental sites
- policy innovation and data-driven policy shaping



ACROSS 60 EXPERIMENTAL SITES, NEMESIS CULTIVATES A LIVING NETWORK OF INNOVATION, WHERE INNOVATION, SOIL, AND SOCIETY CONVERGE TO RESTORE BALANCE AND RESILIENCE TO OUR LAND.

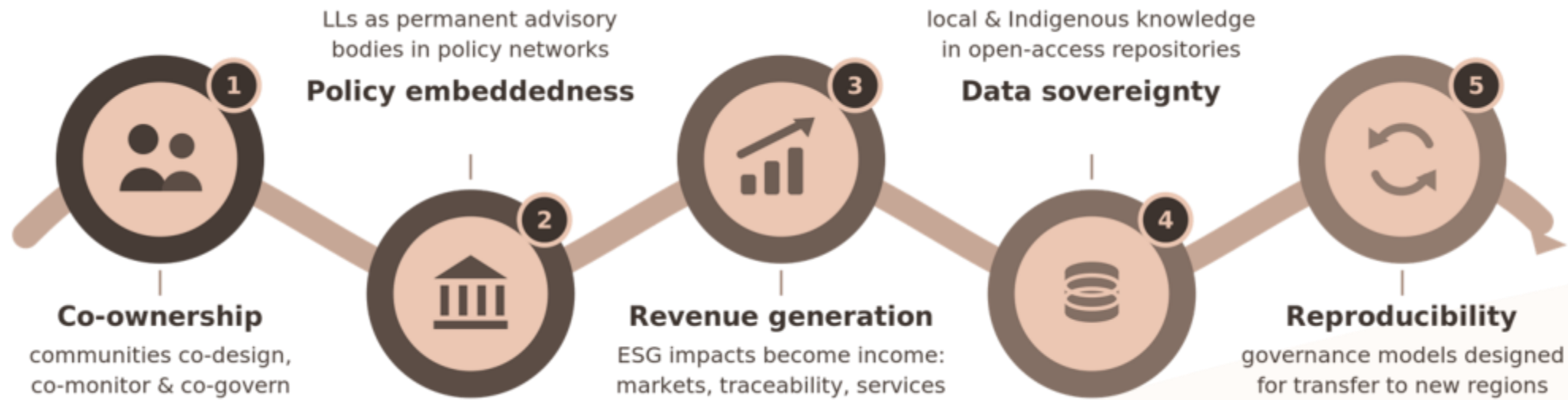


Open Call #1: New experimental sites

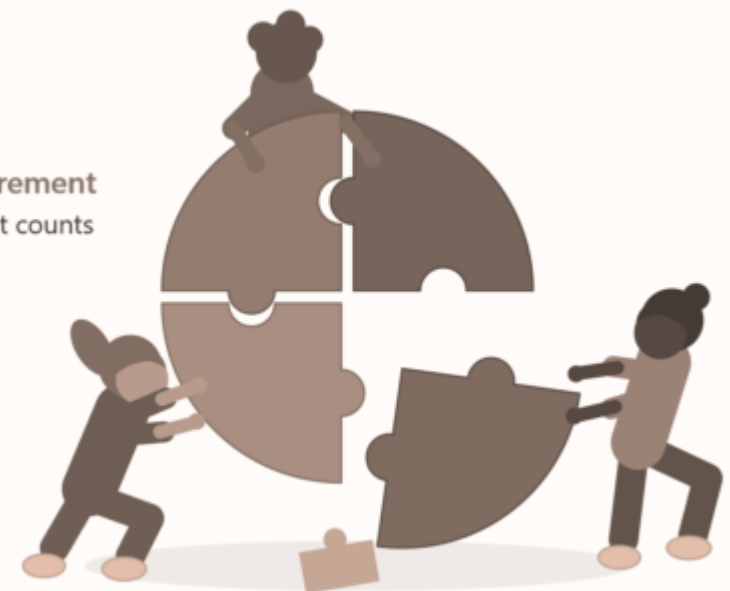
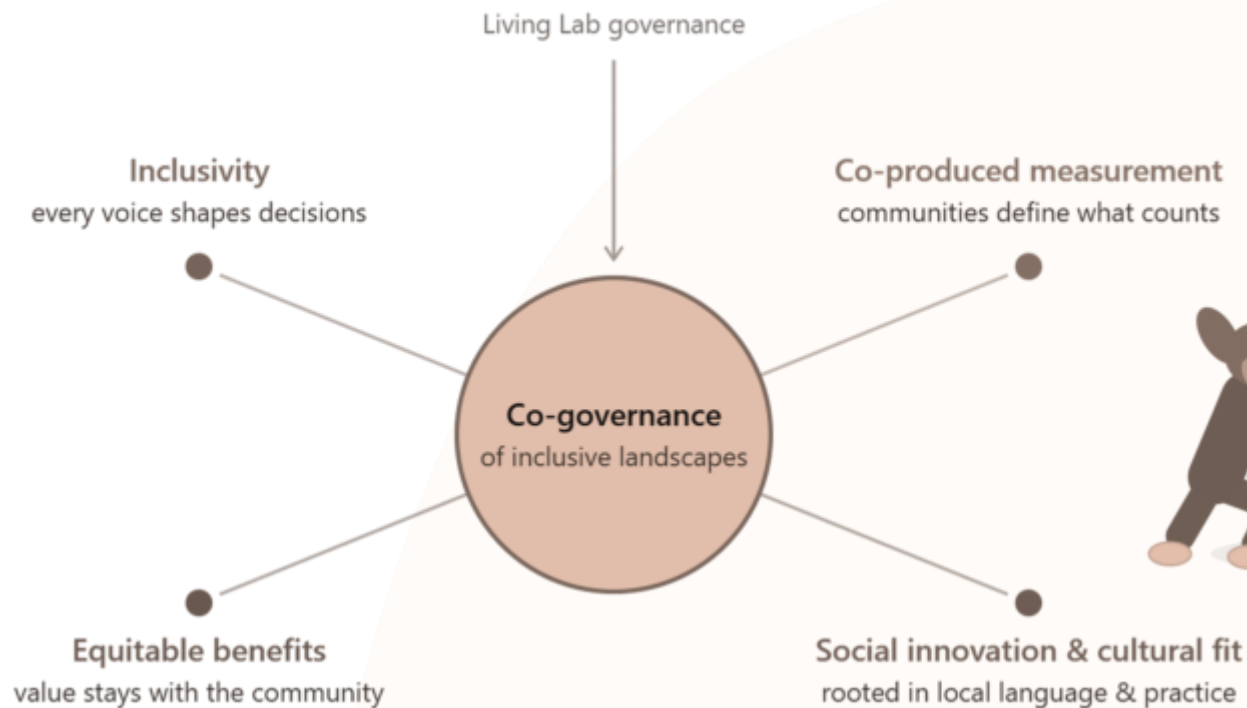
Applications are now open!

Apply between 1 June and 1 August.

Soil Health Living Labs as Co-Governance Systems for Combating Desertification



Transition from Living Lab Governance to Co-governance



Nemesis Open Call 1

FSTP funding
EU Horizon Europe



€ **€500,000**

Total FSTP budget



€100,000

Max per third party



5-8

Grants awarded (≥ 1 / LL)



100%

Lump-sum funding



Five Living Labs - each adds ≥ 1 experimental site

- **Cyprus** Soil–Water
- **France** Soil–Biodiversity (agroforestry)
- **Italy** Soil–Crops
- **Spain** Soil–Livestock
- **Tunisia / Algeria** Soil–Management practices



Key dates

- 1 Jun 2026** Call opens
- 1 Aug 2026** Submission deadline · 17:00 CEST
- Early Sep 2026** Evaluation results communicated
- 1 Oct 2026** Sub-projects start · 36 months





Ioannis Varvaris

Scientific Coordinator and Cyprus LL Manager

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Thank you!

Nemesis Consortium





**Join our
community**



**Stay
Connected**





NEMESIS



Soil Health Living Lab Network for Combating Desertification and Soil Degradation in the Mediterranean

OPEN CALL 1 — “Strengthening & expanding the Living Labs with additional experimental sites” INFORMATION WEBINAR FOR APPLICANTS

**Dr. Sonja Bergner – European Research and Project Office
(EURICE)**

30/06/2026 15:00 CEST



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Confederaziun svizra

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Grant agreement No. 101219087

How today's webinar runs



Introduction to Nemesis & the aim of OC1

Brief project overview and call objectives · [Ioannis Varvaris](#)

10 min



Applying to OC1

Where to find the documents, how to submit, timeline & next steps · [Sonja Bergner](#)

10 min



Introduction to each Living Lab

Harmonized presentation by each Living Lab Leader · [LL Leaders](#)

5 min each



Q&A

Open questions from participants · [All](#)

30 min

About Nemesis



Desertification and land degradation threaten soil health across the arid, semi-arid and sub-humid Mediterranean.

Nemesis identifies, tests and applies soil management practices to combat them — supporting the EU Mission **“A Soil Deal for Europe”** (restore healthy soils by 2030).

Five autonomous but connected Living Labs bring together scientists, communities and policymakers to co-create, test and validate solutions.

5

Living Labs

5

countries & regions

60

experimental sites
identified

The five Nemesis Living Labs

Living Lab	Geographic focus	Thematic focus
Cyprus	Republic of Cyprus (Limassol, Nicosia, Paphos, Larnaca and Famagusta)	Soil–water
France	South-Eastern France (Occitanie (Gard and Hérault), Provence-Alpes-Côte d’Azur (Alpes-de-Haute-Provence and Vaucluse) and Auvergne-Rhône-Alpes (Drôme) and other neighbouring “départements” within these Mediterranean areas may also be eligible)	Soil–biodiversity (agroforestry)
Italy	North-Central Italy (Lombardy and Emilia-Romagna)	Soil–crops
Spain	Eastern & South-Eastern Spain (Murcia, Valencia, Alicante and Castellón)	Soil–livestock / mixed systems
Tunisia / Algeria	North-western Tunisia (Jendouba and Kef) and north-eastern Algeria (Souk Ahras), within and around the Medjerda–Mellègue river basin	Cross-border soil management practices

Open Call 1 adds at least one additional experimental site to each Living Lab.

Agenda



1. What Open Call 1 offers



3. Eligible activities & costs



5. Key dates



7. Evaluation, next steps



2. Who can apply



4. Living Lab-specific requirements



6. How to apply — live demonstration

The Opportunity



What Open Call 1 offers

Financial Support to Third Parties (FSTP) — lump-sum funding

Up to 100%

lump-sum funding of your eligible budget

EUR 500,000

total FSTP across all third parties

Up to EUR 100,000

maximum per third party

5–8 grants

at least one third party per Living Lab

Selected applicants operate an additional experimental site and become active actors in their Living Lab.

Eligibility

Who can apply

You must be...

- a single legal entity in an eligible country / region of the LL
- not a Nemesis beneficiary, affiliated entity or associated partner
- able to demonstrate operational capacity
- free of any conflict of interest / privileged information

Eligible profiles (examples)

- farmers & landowners, cooperatives, producer organisations
- regional / local public authorities
- environmental NGOs with demonstration sites
- applied research institutes with field sites
- SMEs and AgTech start-ups



Mandatory: proof of access to the experimental site (ownership, lease, site-use agreement or signed authorisation). No proof = ineligible.



Scope



Eligible activities & costs



Activities (examples)

- operate an additional experimental site
- participate in the LL & co-creation activities
- implement at least one management practice
- soil sampling, baselines & monitoring
- stakeholder engagement, communication & dissemination
- provide data for impact assessment



Costs (lump-sum)

- Personnel
- Travel & subsistence — incl. progress meetings (Italy 2027, France 2029)
- Other goods, works & services — soil sampling/shipment, field implementation, events, comms
- Indicative ~EUR 2,000 for soil analyses
- No indirect / overhead costs

Lump-sum principle: payment is linked to delivered activities & milestones, not to individual cost items.

Read your LL section (3.4)



Living Lab-specific requirements

Each Living Lab defines its own geographic scope, thematic focus and minimum site requirements. Check the section for the LL you apply to.

Common minimum requirements

- minimum size of 1 hectare (2–3 ha preferred in Tunisia/Algeria)
- Operational: site should be real and active on-farm site
- secured access for the full project duration
- allows monitoring under Nemesis protocols
- integrates into Living Lab activities



Thematic fit matters

Your proposal must align with the LL's focus. A minimum of 3/5 on "Alignment & excellence" is required to pass.

Timeline

Key dates



- 01 June 2026 ● Launch of Open Call 1
- 01 August 2026, 17:00 CEST ● **Deadline for submission**
- August – September 2026 ● Eligibility check & evaluation
- Beginning September 2026 ● Communication of results
- End September 2026 ● Signature of sub-grant agreements
- 01 October 2026 ● Start of the additional Living Lab sites
- Sep 2027 · 2028 · 2029 ● First, second & final assessments

Application

How to apply



Online portal only

nemesis-soil.eu/open-calls/submission — submissions by email are not accepted



Language: English

AI translation is allowed if the tool is disclosed and the result double-checked



One PDF, max 10 MB

Combine the proposal template, proof of legal entity & proof of site access into a single file



One proposal per Living Lab

Only a complete submission before the deadline is considered

Tip: don't wait until the last minute — the applicant is responsible for a complete submission.



Live Demonstration

The online submission form



nemesis-soil.eu/open-calls/submission

Which Living Lab are you applying for? *

Choose a Living Lab

Name * Surname *

Your name Your surname

E-mail * Phone number (optional)

Your e-mail address Your phone (optional)

Type of applicant *

Organisation, Company, Researcher, Farmer...

Upload PDF (File max 10 MB)

Drop your files here or click in this area

☒ Confirm PDF uploaded

☒ Privacy Policy read

Submit application

Step by step

- 1 Select your Living Lab
- 2 Fill in your contact details
- 3 Choose your type of applicant
- 4 Upload your single PDF (≤ 10 MB)
- 5 Tick both confirmation boxes
- 6 Submit — you'll receive confirmation

Before you click “Submit”



☒ All documents merged into ONE PDF (≤ 10 MB)

☒ Proposal written in English

☒ Proof of site access included

☒ All mandatory fields completed

☒ Submitted before 01 August 2026, 17:00 CEST

After the deadline, no additions or changes to submitted proposals are possible.

After submission

Evaluation & next steps



Evaluation

- 3 independent experts: 1 internal + 2 external
- Alignment & excellence — 0–5 (min 3/5)
- Capacity & implementation — 0–10
- Expected contribution / impact — 0–5
- **Maximum total: 20 points**
- At least one third party selected per LL



If you are selected

- Sub-grant agreement — no funding before signature
- Kick-off meeting — October 2026
- Milestones MS1 / MS2 / MS3 over 36 months
- **Payments: 70% (M1) · 15% (M13) · 15% (M35)**
- Reporting at M12 / M24 / M36

Questions?

Let's discuss — and feel free to ask anything about your application.



opencalls@nemesis-soil.eu



Guidelines, proposal template & FAQ: nemesis-soil.eu/open-calls



NEMESIS



Soil Health Living Labs for Combating Desertification and Soil Degradation

Nemesis Living Lab in Cyprus (Soil-Water)



Online Webinar 30/06/2026



Living Lab Partners – CY Ecosystem



- Eratosthenes Centre of Excellence **Research Organization**
Living Lab Manager



- Agricultural Research Institute (Ministry Department) **Policymaker / Research**



- Cyprus University of Technology **University**



- DEPI Spectrum LTD **Company**



- The Cyprus Institute **Research Institute**

NEMESIS Cyprus Living Lab Kick-off | 9 July 2026



Five partners and 22 stakeholders supporting the LL

What we miss? Civil Society!

Living Lab Objectives and Sub-Objectives



Main Objective and Sub-objectives

- ☐ **Reduce land degradation relating to desertification**
- ❖ Conserve and increase soil organic carbon stocks
- ❖ Reduce soil pollution and enhance restoration
- ❖ Prevent erosion
- ❖ Improve soil structure to enhance habitat quality for soil biota and crops
- ❖ Increase soil literacy in society across MSs

Soil Health Challenges

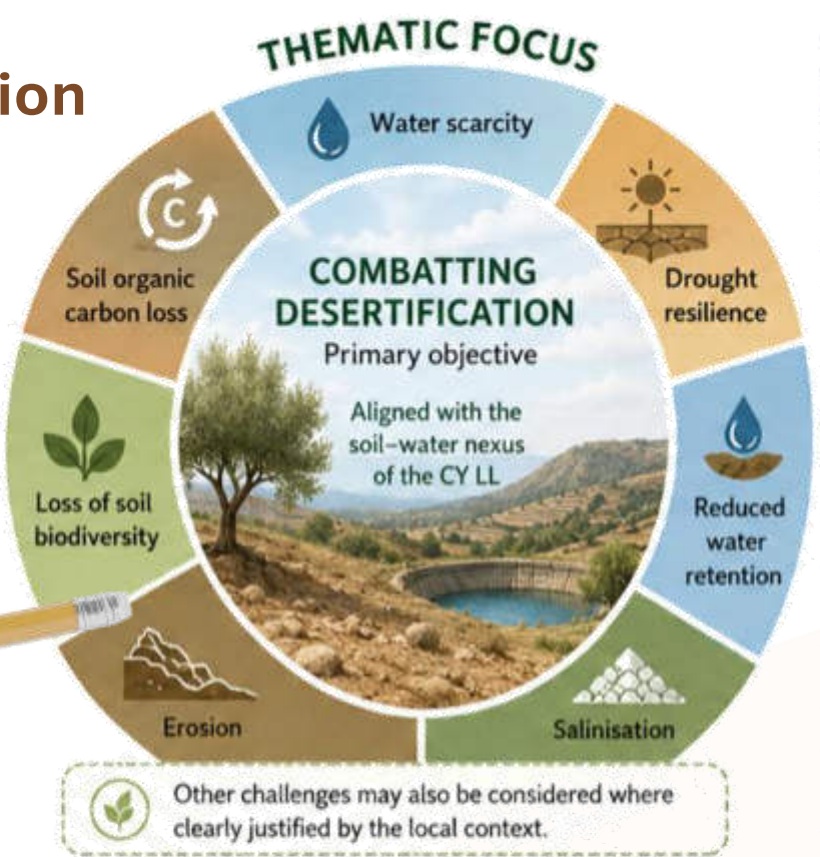
- ☐ Loss of soil organic carbon
- ☐ Compaction
- ☐ Salinization
- ☐ Desertification
- ☐ Reduced water retention
- ☐ Loss of soil biodiversity

Soil Health Descriptors

- ☐ Soil Organic Carbon
- ☐ Bulk Density
- ☐ Soil pH
- ☐ Field Capacity and Wilting Point
- ☐ Electrical Conductivity
- ☐ Total N
- ☐ Extractable N
- ☐ Extractable P
- ☐ Heavy Metals
- ☐ Abundance of nematodes, Microbial biomass, Earthworm counts in croplands
- ☐ Soil Texture



Nemesis CY LL: Scope, Priorities and Participation Framework



MINIMUM SITE REQUIREMENTS	
	The site must already be operational, with secured access rights for the full project duration.
	Demonstrate at least one year of documented activity.
	Have a minimum size of 1 hectare.
	Allow monitoring, data collection and the testing of co-created solutions.
	Agriculturally relevant sites affected by soil-water-related pressures are expected.



PARTICULARLY RELEVANT APPLICANT TYPES

The following legal entities with operational capacity and access to a relevant site are encouraged to apply:

 Smallholder farmers and landowners	 SMEs and consultants on irrigation management and soil health	 Start-ups providing soil-water decision-support tools	 NGOs focused on combating desertification and sustainable soil-water management	 Organic farming associations	 Climate-smart agriculture SMEs	 Organic and regenerative agriculture practitioners	 Food processing or distribution companies
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Nemesis CY Living Lab Experimental Sites

Sites must be located within the territory of the Republic of Cyprus, including Limassol, Nicosia, Paphos, Larnaca and Famagusta.



Current distribution

Cyprus districts	Experimental sites
Nicosia	6
Limassol	3
Paphos	3
Famagusta	-
Larnaca	-



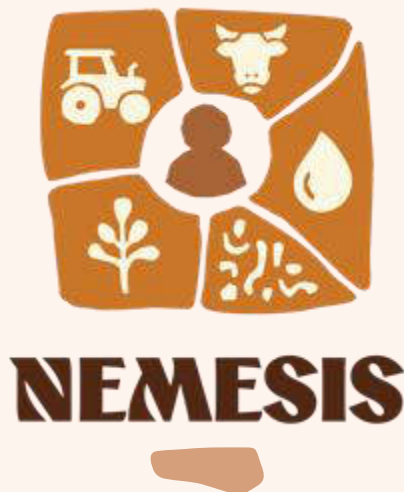
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Thank you!

Nemesis Consortium





Soil Health Living Labs for Combating Desertification and Soil Degradation

AgroForSoLL – France Living Lab of the Nemesis project

Philippe Hinsinger
INRAE

Nemesis OC#1 Webinar| Date 30/06/2026





AgroForSoLL – Partners (Beneficiaries) of NEMESIS



- Agroof



- **Camille Béral** [LL Multi-actor Facilitator]
- **Fabien Liagre** [LL Policy - Public liaison Contact]

- ARVALIS 

- **Mathieu Marguerie** + Audrey Tabone + Clémentine Bourgeois
- **Maureen Stadel** [LL Communication Manager]

- CIRAD 

- **Christophe Jourdan** + Céline Blitz-Frayret
- **Jim Félix-Faure** + Amandine Germon

- INRAE 

- **Philippe Hinsinger** [LL Manager + WP4 Leader]
- **Mickaël Hedde** [WP4 co-Leader]
- **Isabelle Bertrand** + **Fabien Ferchaud**
- **Jérôme Ngao** + **Marion Forest**

- **Claire Marsden**



- **Marie Gosme**

UMR



LL France Soil-Biodiversity



AgroForSoLL – focused on soil biodiversity in agroforestry systems

- Agroof



- ARVALIS



- CIRAD



- INRAE

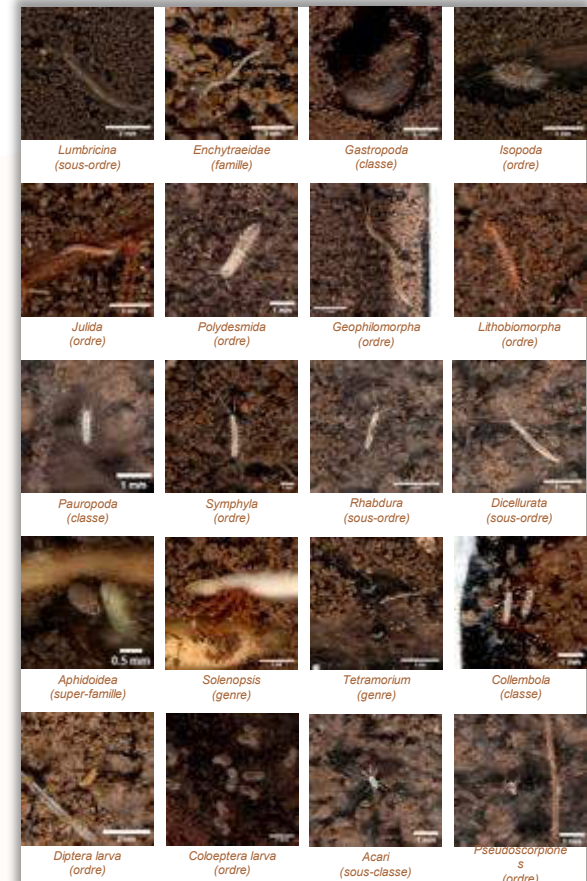


Hypothesis : plant (aboveground) diversity is promoting soil biodiversity



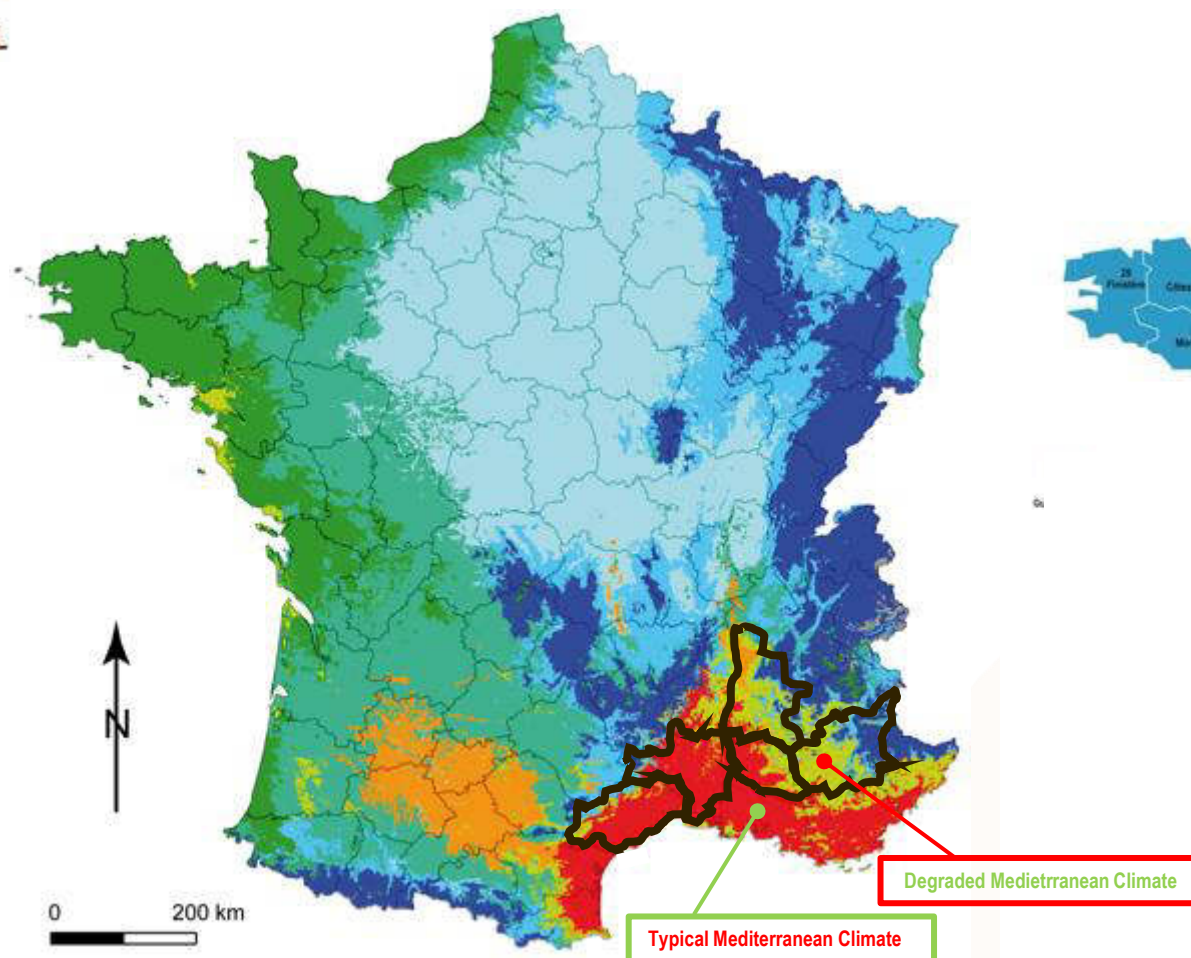
Question : how to manage trees (and residues), crops and soil to maintain or improve soil health in agroforestry systems in the context of conventional, conservation or organic farming ?

→ Soil biodiversity

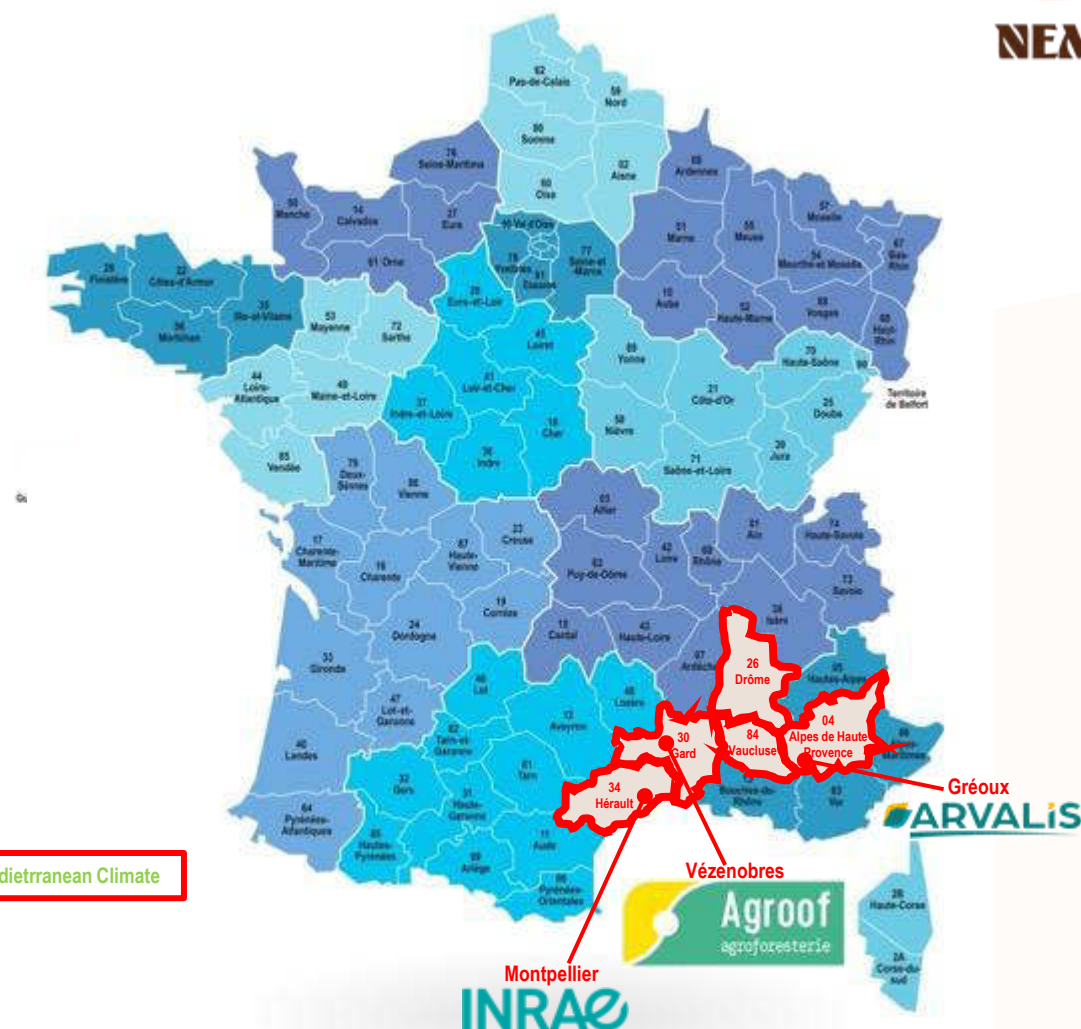


- Overarching **NEMESIS** objective – Reduce land degradation and desertification
- 1 – Improve **soil structure** to enhance **soil biodiversity**
(Soil Monitoring and Resilience Directive - objective #4)
- 2 – Conserve **soil organic carbon** stocks (**SOC**)
(Soil Monitoring and Resilience Directive - objective #1)
- 3 – Reduce **soil pollution** and enhance restoration
(Soil Monitoring and Resilience Directive - objective #2)

AgroForSoLL – Location of experimental sites

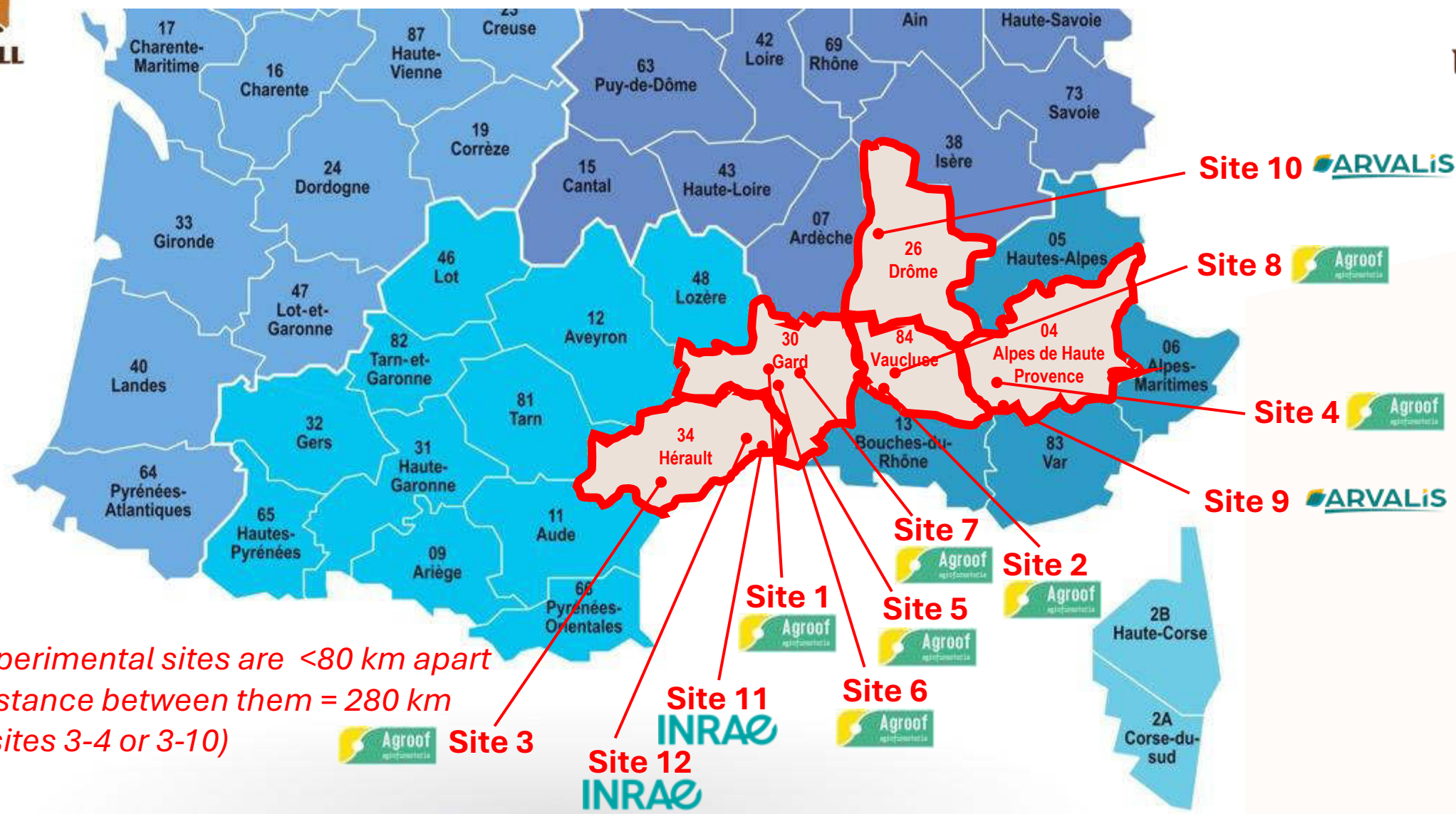


Climatic zones



Administrative regions and « départements »

AgroForSoLL – Location of experimental sites



- Stakeholder engagement in the long-term
- Facilitating communication / engagement for farmers working in distant areas and on various types of agricultural productions
- Soil monitoring taking account of **spatial heterogeneity** of agroforestry systems and temporal fate of soil health descriptors **along tree development (long-term)**
- Accounting for very young (recently designed) to older agroforestry systems
- True, **strong Policy-support for the promotion of agroforestry systems** (local level, national level, European level = CAP)

AgroForSoLL – The way forward...

- Multi-actor workshops for co-designing solutions (practices/systems)
 - Kick-Off workshop 26 May 2026

- Team work – field sampling campaign and measurements – Autumn 2026

- Field days with farmers and other actors evaluating practice/system performance
 - 17 September 2026 (30-yr anniversary of Terres de Roumassouze)



- Technical workshops and training events (e.g. soil ecology)
 - 19-23 October 2026





Philippe Hinsinger
philippe.hinsinger@inrae.fr

Thank you!

Nemesis Consortium





Soil Health Living Labs for Combating Desertification and Soil Degradation

NEMESIS IT LL

Marzia Gabriele - POLIMI

IT LL Manager

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Kick-off 17 Giugno

NEMESIS

IT Living Lab



**Pratiche innovative
per la salute del suolo**



**Italia: soil-crop
system**



NEMESIS PROJECT MISSION:

To promote a synergistic ecosystem of Living Labs dedicated to the co-creation, experimentation, and dissemination of innovative solutions capable of addressing the complex challenges of soil health in close relation to local conditions, while also evaluating the transferability potential of the developed solutions.

LIVING LAB VISION:

To become a reference point for collaborative research and for the exchange of innovation and knowledge, acting as a catalyst and disseminator of expertise, innovations, and solutions.

Common Target: Combating Desertification		Main Land Use : Agriculture
60 Pilot Sites on place and additional to be added through Open Call		
Already established Living Labs ecosystems – Quintuple Helix		
Similar maturity level	2 Open Calls	Integration of low-cost technologies

Living Lab Partners

- **Politecnico di Milano (POLIMI)**
- **University of Milan (UNIMI)**
- **Council for Agricultural Research and Economics (CREA)**
- **Legambiente Lombardia**
- **Regional Agency for Services to Agriculture and Forestry (ERSAF)**

- **IRIS Bio Cooperative (IRIS BIO)**

Living Lab Farms

- **CasciNet Farm** (Azienda Agricola CasciNet)
- **Terre di Lomellina Farm** (Società Agricola Terre di Lomellina)
- **Caremma Farm** (Cascina Caremma)
- **Cascine Orsine Biodynamic Farm** (Azienda Agricola Biodinamica Cascine Orsine)
- **Cascina Forestina Farm** (Azienda Agricola Niccolò Reverdini)
- **La Colombina Farm** (I Doria di Montalto)
- **Carioni Group** (Gruppo Carioni)
- **ASFO Valli delle Sorgenti Land Trust** (Associazione Fondiaria ASFO Valli delle Sorgenti)
- **Miriam Bologna Farm** (Azienda Bologna Miriam)
- **Stuard Experimental Farm** (Azienda Agraria Sperimentale Stuard)
- **Granaglione Chestnut Grove** (Castagneto di Granaglione)

Stakeholders

- **Istituto Calvino**
- **Regione Lombardia / DG Agricoltura**
- **Accademia N.A.**
- **Strada del Riso dei Tre Fiumi**
- **Marsilea**
- **Università Bicocca**
- **Està**
- **Casa Agricoltura**
- **Liberi professionisti (agronomi)**
- **GAL**
- **Soulfood Forestfarms**
- **ACLI Terra**



Soil Health Living Labs Network
for Combating Desertification and Soil
Degradation in the Mediterranean

NEMESIS

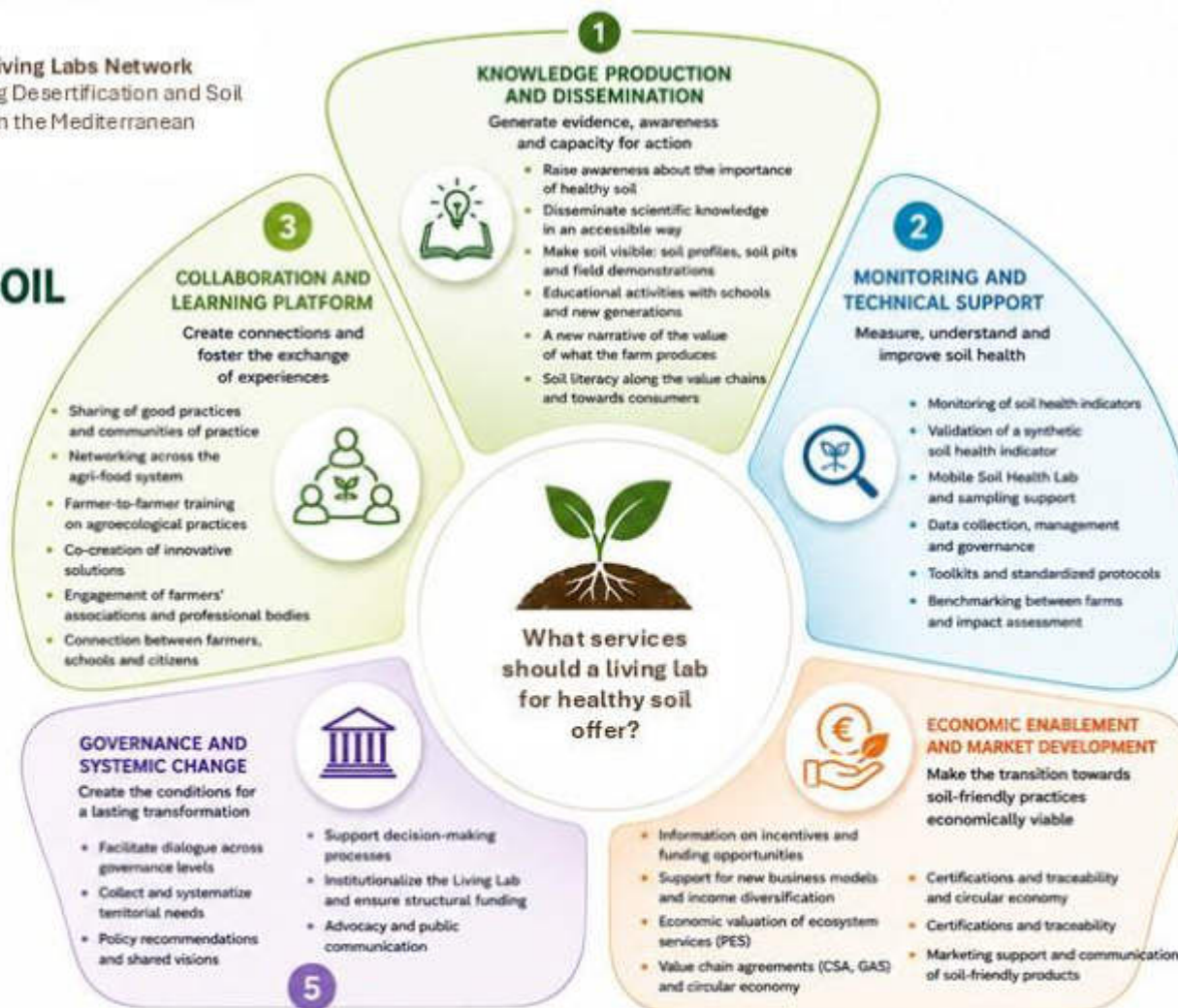
LIVING LAB FOR HEALTHY SOIL

An infrastructure of services
that generates knowledge,
connects actors, provides
tools and enables the transition
towards healthy soils and
sustainable agri-food systems.



OUR OBJECTIVE

Generate evidence, capacity
and value for soil health,
for the well-being of territories
and for the competitiveness
and sustainability of
businesses.



KEY SERVICES



Mobile Soil Health Lab
and soil analysis



Support for the choice and
assessment of agroecological practices



Monitoring over time
and farm reports



Territorial data, benchmarking
and open data



Advice on carbon farming
and ecosystem services



Field demonstrations
and innovation pathways



Technical training
and farmer-to-farmer learning



Communication and promotion
of good practices

FOR WHOM



Farmers



Cooperatives
and value chains



Public authorities



Associations
and advisors



Schools and research



Citizens
and consumers



Businesses and service
providers



Finance and insurance

THE PRINCIPLES THAT GUIDE US



Participatory
and inclusive
approach



Evidence-based
decisions



Environmental,
social and
economic
co-benefits



Collaboration
along value
chains and in
territories



Continuous
innovation and
adaptation

OUR ROLE



We turn knowledge
into concrete action



We build networks
and partnerships
for innovation



We provide tools
and data-driven support
for informed decisions



We enable value
and sustainability
over time



We promote
systemic
and change



A PUBLIC INTEREST FUNCTION

The Living Lab performs a public interest role
that should be supported by structural public
funding and not rely exclusively on private
funding or occasional public calls.





Geographic scope: The IT LL focuses on north-central Italy — **Lombardy and Emilia-Romagna.**

Thematic focus: Proposals must contribute to combating desertification and align with the IT LL's focus on agroecological soil–crop systems, with particular attention to soil erosion. **Eligible sites must be linked to agricultural land use with permanent crops and/or agroforestry**, and must support demonstrative, monitoring, and experimental activities. **Relevant agroecological practices include**, for example: crop rotation, intercropping, agroforestry, organic farming, agrobiodiversity support, mulching, cover crops, minimum tillage / no-till seeding, irrigation innovation, erosion control, forest restoration, and monitoring technologies.

Minimum site requirements: The site must have a minimum area of 1 hectare and be active and suitable for soil-related practices, monitoring, and experimental purposes, as well as being integrable into LL activities. Sites with experience in agroforestry or regenerative agriculture, hilly contexts exposed to erosion, existing monitoring experience or data, dissemination experience, and links to broader business networks or agricultural districts are particularly valued.

Challenges for the IT Living Lab – toward the agroecological transition

- **Stakeholder engagement**
 - Context-specific needs, co-creation, knowledge sharing.
- **Infrastructure**
 - Monitoring equipment, diverse sites, varied tools, data management infrastructure, sensor deployment.
- **Monitoring**
 - **(Universal Challenges):** Loss of Soil Organic Carbon (SOC), Loss of Soil Biodiversity, Compaction, Soil literacy.
 - **(Site-Specific Challenges):** Erosion, Excess Nutrients, Salinization, Contamination, Acidification, Reduced Water Retention.

Geographical eligibility:
LOMBARDY
EMILIA ROMAGNA



The 12 Experimental Sites of the NEMESIS Italian Living Lab



Site ID	Experimental Sites	Support Partners	Crop Type	Interests / Development Lines
LL3-1	Azienda Agricola CasciNet	UNIMI; LEGAMBIENTE	Agroforestry, cereals, laying hen farming	Development of educational offerings, valorisation of ecosystem services, activation of mobile soil health assessment lab, application of proxy monitoring tools (NDVI/Sentinel-2, inputs/yields), development of forest nursery and phytoremediation activities.
LL3-2	Cascina Caremma	UNIMI; POLIMI	Rice, peas, soy (organic); cereal and livestock farming	Education, valorisation of ecosystem services, scientific validation of historical rotations, recovery of marcite (flooded meadows), soil health monitoring and multifunctionality.
LL3-3	Società Agricola La Forestina – Niccolò Reverdini	LEGAMBIENTE; UNIMI	Agroforestry, woodland and horticulture, livestock, permanent meadows, nature (multifunctionality)	Tools and pathways for ecosystem services valorisation; maintaining farm economic sustainability through multifunctionality; maintaining educational activities; stewardship and defence of small organic farms and mutual support network; investment in soil capital and biodiversity (no-till, preservation and sustainable management of lowland forest, biodiversity conservation).
LL3-4	Gruppo Carioni	LEGAMBIENTE; ERSAF	Annual and permanent fodder for milk and dairy products, Friesian	Further development of on-farm circular economy; efficient use of digestate, biomethane/stripping; conservative-regenerative agriculture; carbon farming; agrivoltaics on low-productivity land; productive diversification (integration of human-consumption crops).

LL3-5	IRIS Soc. Coop. Agricola di produzione e Lavoro P.A.	POLIMI; IRIS	Tomatoes, watermelons and cereals (rotation)	Organic supply chain valorisation and sustainability.
LL3-6	Azienda Bologna Miriam – Lido di Spina	CREA; POLIMI	Mainly vegetables: cucurbits (watermelon)	Seed experimentation, sustainable practices to mitigate salinity, irrigation management, demonstration days for farmers and technicians.
LL3-7	Soc. Agr. Terre di Lomellina ss – Rosalia Caimo Duc	POLIMI; UNIMI	Organic rice	Bottom-up network, advanced QBS/DNA data, small-scale material experiments, biodiversity and the role of landscape elements.
LL3-8	Azienda Agricola Biodinamica Cascine Orsine	POLIMI; UNIMI	Rice, soy, barley, fodder (organic). Silviculture/crops. Agroforestry.	Scientific measurement of environmental impact, valorisation of ecosystem services, soil biodiversity and agroecosystem, recognition of the biodynamic method.
LL3-9	I Doria di Montalto – La Colombina	ERSAF; UNIMI	BIO-Vineyard	Soil health beyond fertility, climate adaptation of the vineyard, cover crop management, targeted tillage and valorisation of ecosystem services.
LL3-10	Associazione Fondiaria ASFO Valli delle Sorgenti	LEGAMBIENTE; CREA	Silviculture, chestnut cultivation, blackcurrant grove	Valorisation of ecosystem services (water, carbon, biodiversity), new agroecological supply chains (blackcurrant), sustainable tourism, circular economy of chestnut by-products, forest carbon farming.
LL3-11	Azienda Agraria Sperimentale Stuard Scrl	UNIMI; POLIMI	Cereals, legumes, temporary and permanent fodder	Seed experimentation; conservation of heritage varieties.
LL3-12	CNBF – Castagneto Didattico Sperimentale di Granaglione	CREA; LEGAMBIENTE	Timber and fruit chestnut cultivation, coppice	Education, forest biodiversity conservation, local supply chains, sustainable tourism, circular economy of chestnut by-products.



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Soil Health Descriptors (SHD) and Soil Health Challenges (SHC)



SHD	Description
1	Presence of soil pollutants, excess nutrients and salts
2	Soil organic carbon
3	Soil structure
4	Soil biodiversity
5	Soil nutrients
6	Vegetation cover
7	Landscape heterogeneity
8	Soil water holding capacity
9	Soil erosion rate/risk
10	Extractable phosphorus in mg/kg
11	Electrical Conductivity dS/m
12	Concentration of heavy metals and a selection of organic contaminants.
13	Nitrogen in soil
14	pH
15	Potential soil basal respiration, eDNA, Abundance and diversity of nematodes and earthworms; Microbial biomass.
16	Bulk density

SHC	Description
Transversal Challenges	
1	Loss of soil organic carbon
2	Loss of soil biodiversity
3	Compaction
4	Soil literacy
Site-specific Challenges	
5	Erosion
6	Excess Nutrients
7	Salinization
8	Acidification
9	Reduced water retention

- **Key priorities:** soil organic carbon (SHD2) and soil structure/compaction (SHD3) aligning with the main farm challenges (SHC 1, SHC 3). **Soil biodiversity** loss (SHC2) and monitoring (SHD 4) are top priorities for over 75% of cases.

NEMESIS IT LL

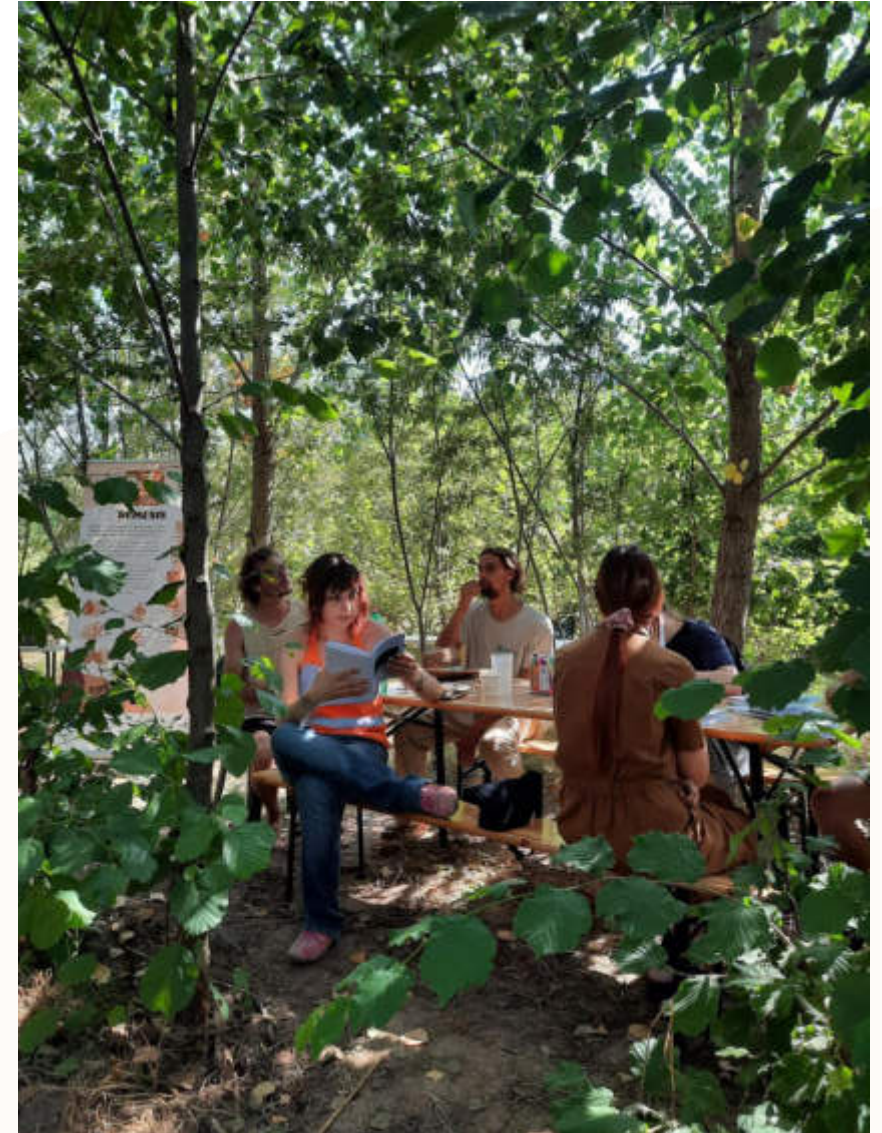
Co-working to build a territorial infrastructure to develop, solutions, products, services and governance for soil health - **MULTI STAKEHOLDER PLATFORM – MAP EVENTS**



NEMESIS IT LL

Dissemination and events to support public awareness & literacy on soil health
From project grant agreement → **activities with schools**







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Presenter

IT LL NETWORK

Thank you!

Nemesis Consortium





NEMESIS

Soil Health Living Labs for Combating Desertification and Soil Degradation



ReSoilMed LL
by **NEMESIS**

Spanish Living Lab of the Nemesis project

Julian Colunje Diaz



**UNIVERSIDAD
DE MURCIA**

Nemesis OC#1 Webinar | Date 30/06/2026



**Funded by
the European Union**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them. Grant agreement No. 101219087

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
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Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

ReSoilMed LL by NEMESIS



ReSoilMed LL provides a real-world environment for co-creation and experimentation where farmers, livestock farmers, cooperatives, researchers, public authorities and innovation stakeholders can validate practical solutions to improve soil health, reduce the risk of desertification and strengthen Mediterranean resilience.



Who are the partners of ReSoilMed LL?

An ecosystem of complementary partners

UMU

Coordination of the **ReSoilMed** LL, scientific leadership and strategy.



AVA-ASAJA

Connection with farmers and the Valencian region.



La Junquera

Experience in regeneration, extensive land management and living landscapes.



FECOAM

Cooperatives, agricultural production and experimental sites.



OdinS

Technology, sensors, IoT and digital support.





ReSoilMed LL
by NEMESIS

Locations of the 15 experimental sites of ReSoilMed LL



NEMESIS

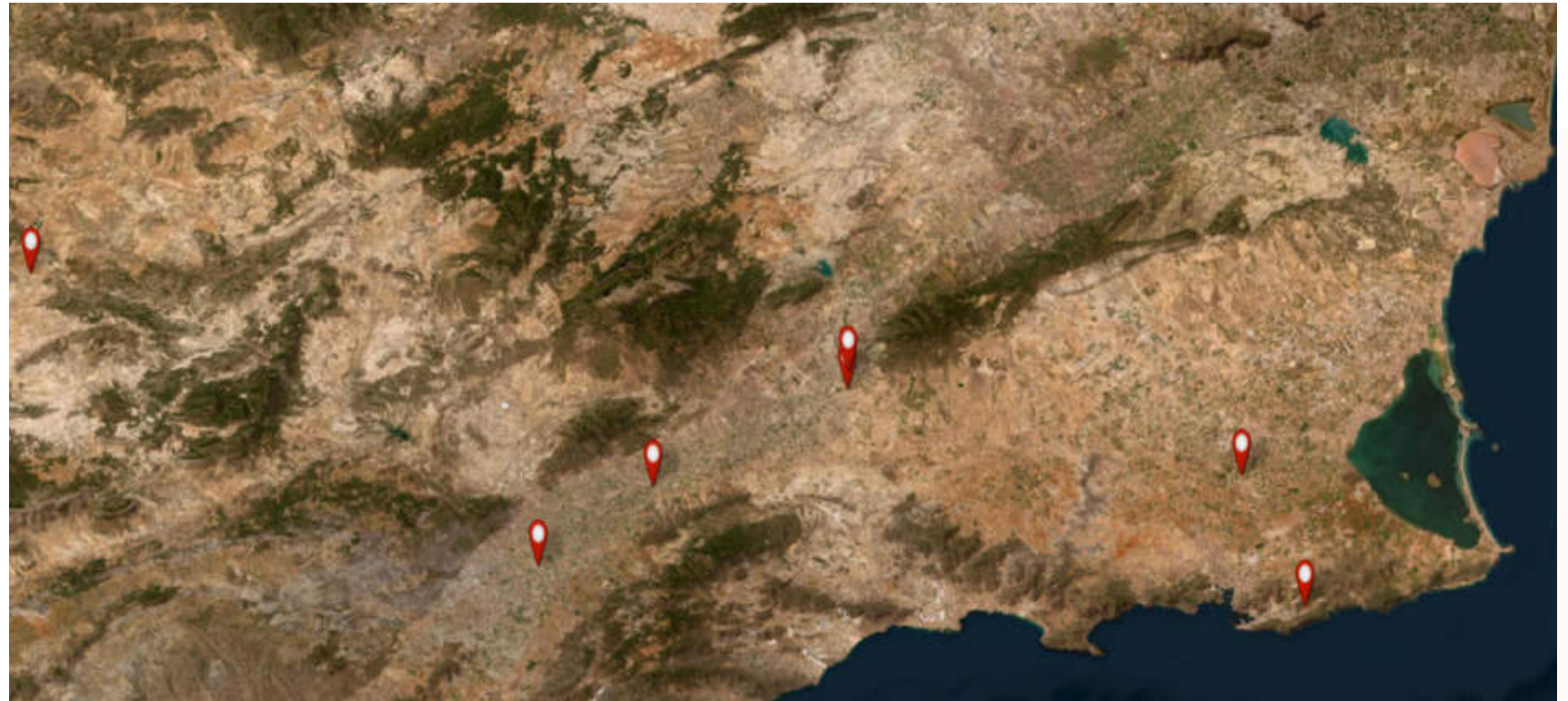


ReSoilMed LL
by NEMESIS



NEMESIS

Locations of the 15 experimental sites of ReSoilMed LL





ReSoilMed LL
by NEMESIS

Description of the experimental sites of ReSoilMed LL



Stabling and management of livestock, including cows, pigs (intensive) and sheep (extensive), as well as the collection and maturation of manure and slurry and their application to permanent crops.



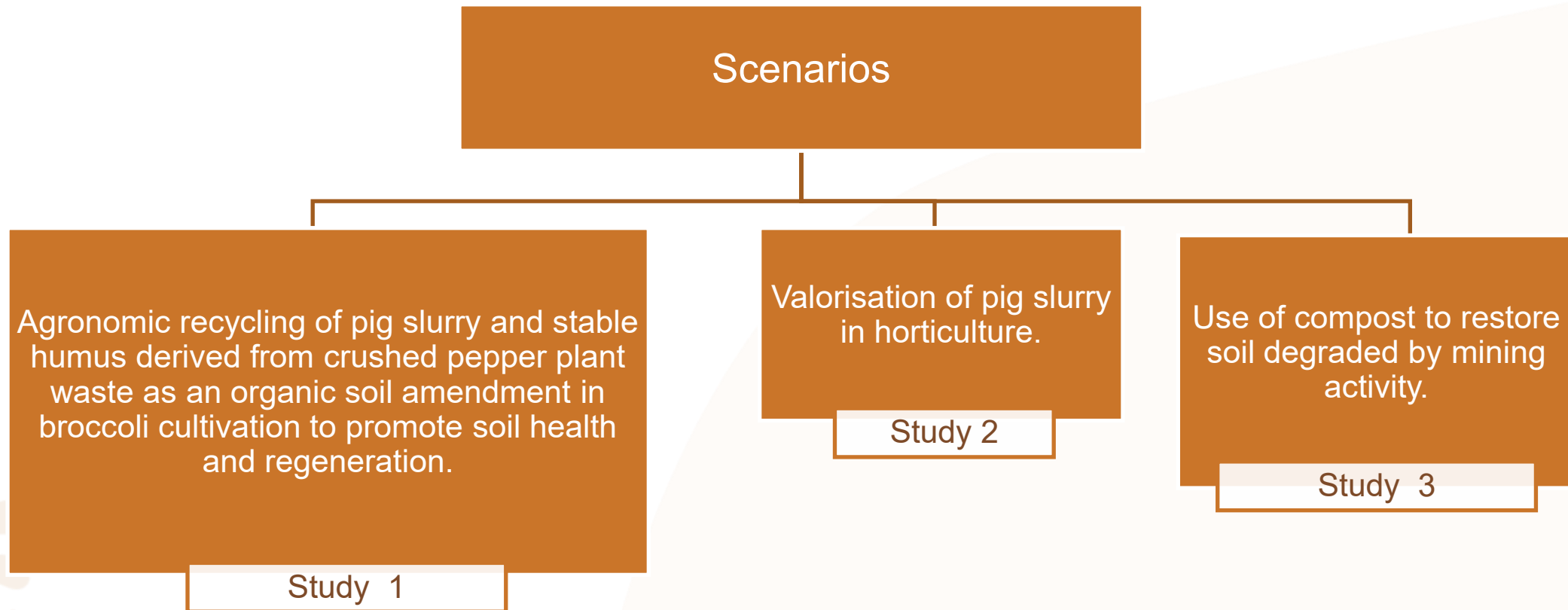
Description of the experimental sites of ReSoilMed LL



+



Universidad
Politécnica
de Cartagena





ReSoilMed LL
by NEMESIS

Description of the experimental sites of ReSoilMed LL



LA JUNQUERA
REGENERATIVE FARM & VILLAGE

Test the transition from cereal-based systems to regenerative grazing with permanent pastures. The work includes direct seeding of adapted pasture mixtures, holistic cattle grazing, and soil monitoring to improve organic matter, biodiversity, water retention and reduce erosión.





OC1: who fits? ReSoilMed LL

1. Geographic fit

- Eastern & South-Eastern Spain, Especially **Murcia, Valencia, Alicante and Castellón.**
- Mediterranean conditions, desertification risk and soil degradation context.

3. Site requirements

- Minimum **1 ha.**
- At least **1 year of activity.**
- Operational and accessible site.
- Suitable for NEMESIS monitoring and LL activities.

2. Thematic fit

- Soil–livestock and mixed farming systems.
- Grazing, forage, manure/slurry valorisation, organic amendments.
- Soil carbon, water retention, erosión, reduction and biodiversity of soil.

4. Relevant applicants

- Research/Academic institutions.
- Farmers, landowners and livestock farmers.
- Pastoralist/grazing associations and cooperatives.
- Feed/forage producers, composting or organic matter recycling actors.
- SMEs, consultants, NGOs and AgTech start-ups.

A real, active and accessible site able to connect soil health, livestock-related practices and practical solutions against desertification.



NEMESIS

Soil Health Living Labs for Combating Desertification and Soil Degradation

Thank you very much for your attention!



ReSoilMed LL
by **NEMESIS**

Nemesis OC#1 Webinar | Date 30/06/2026



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Federal Department of Economic Affairs,
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Research and Innovation SERI



NEMESIS

Soil Health Living Labs for Combating Desertification and Soil Degradation

Cross-border Living Lab in Tunisia/Algeria (Soil Management)

Bouznad Imad Eddine

Nemesis OC#1 Webinar | Date 30/06/2026



nemesis-soil.eu





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NEMESIS

North Africa Living Lab

Cross-border Soil Health Living Lab

Algeria ↔ Tunisia





NEMESIS

2 WHERE IS OUR LIVING LAB?

North-East Algeria – North-West Tunisia

TRANSBOUNDARY BASIN MEDJERDA – MELLÈGUE

A shared natural resource, a common challenge



NEMESIS

Soil Health Living Labs for
Combating Desertification
and Soil Degradation



ALGERIA



TUNISIA



2 Countries



12 Pilot Sites
(6 Algeria – 6 Tunisia)



Cross-border Basin
Medjerda – Mellègue



Mediterranean
Agricultural Landscapes

THE MEDJERDA – MELLÈGUE BASIN

- ✓ Shared water resources
- ✓ High agricultural potential
- ✓ Biodiversity hotspot
- ✓ Common environmental challenges

OUR LANDSCAPES – OUR COMMON HERITAGE



ADMINISTRATIVE MAP

ALGERIA (Wilayas)

- Annaba
- El Tarf
- Guelma
- Souk Ahras
- Constantine
- Mila
- Oum El Bouaghi

TUNISIA (Governates)

- Jendouba
- Béja
- Le Kef
- Siliana

BIOCLIMATIC ZONES

- Humid
- Sub-humid
- Semi-arid
- Aride

- Main rivers
- Secondary rivers / Wadis
- International border (Algeria – Tunisia)
- Wilaya / Governorate boundary
- Main cities

0 25 50 75 km



2
Countries



12
Pilot Sites



Medjerda – Mellègue
Transboundary Basin



Sustainable Soils
Better Future



Funded by
the European Union

NEMESIS
Horizon Europe

OUR MISSION



Land Degradation



Healthy Soils



Sustainable Agriculture



Resilient Communities



We aim to:

- ✓ Combat desertification and soil degradation
- ✓ Improve soil health and water management
- ✓ Strengthen climate resilience
- ✓ Promote innovation and knowledge exchange
- ✓ Support sustainable livelihoods



OUR EXPERIMENTAL SITES

ALGERIA – 6 SITES

- DZ1
- DZ2
- DZ3
- DZ4
- DZ5
- DZ6



TUNISIA – 6 SITES

- TN1
- TN2
- TN3
- TN4
- TN5
- (TBC)



Diverse landscapes – Different climates – Common challenge: healthy soils

CLIMATIC ZONES IN OUR REGION

ALGERIA

- Humid (> 800 mm)
- Sub-humid (400 – 800 mm)
- Semi-arid (200 – 400 mm)
- Arid (100 – 200 mm)
- Saharan (< 100 mm)



TUNISIA

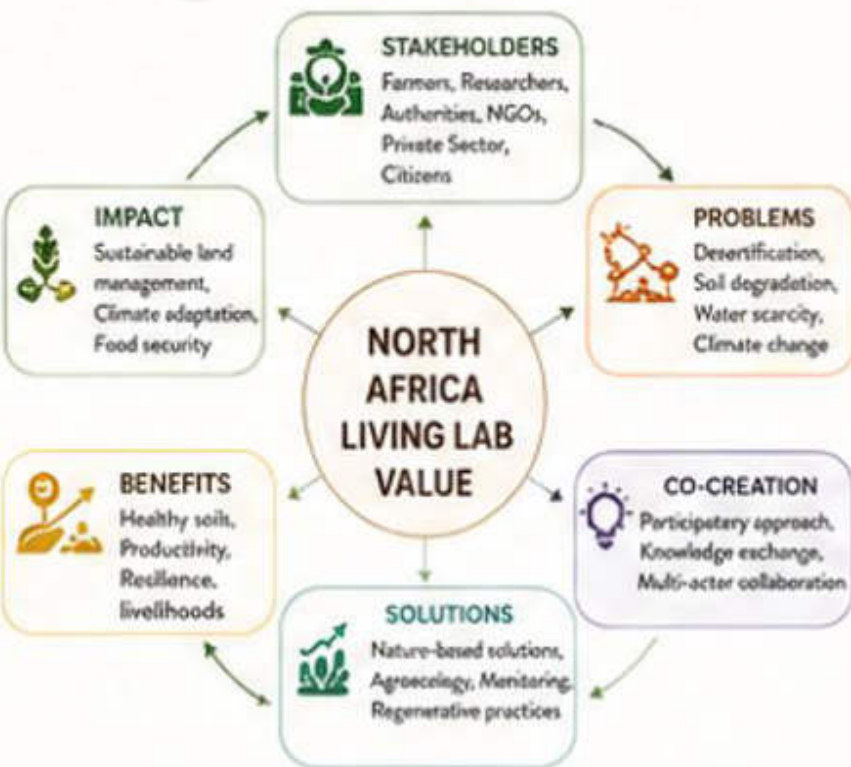
- Humid (> 800 mm)
- Sub-humid (400 – 800 mm)
- Semi-arid (200 – 400 mm)
- Arid (100 – 200 mm)
- Saharan (< 100 mm)





NEMESIS

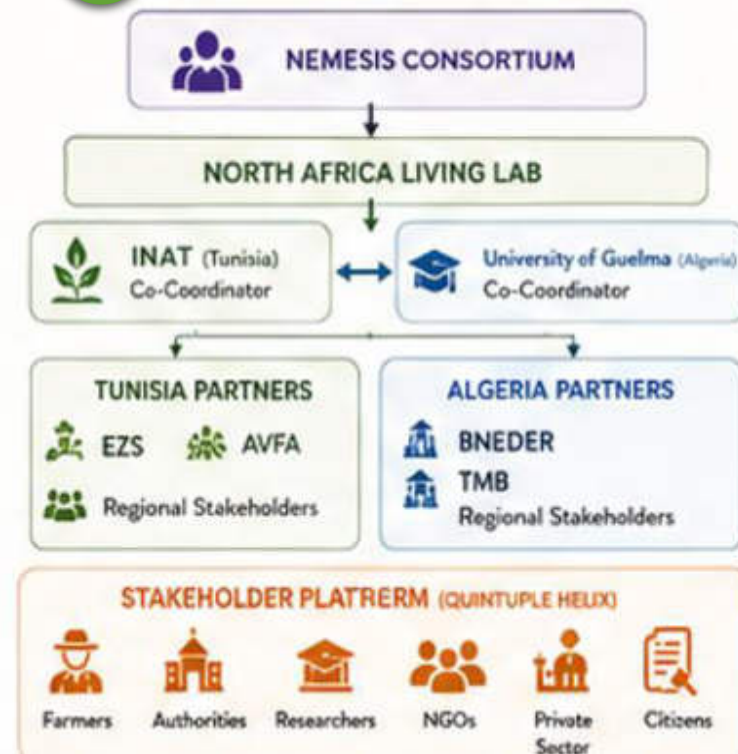
VALUE PROPOSITION



LIVING LAB ECOSYSTEM



GOVERNANCE STRUCTURE



WHAT WE OFFER TO APPLICANTS



A collaborative platform for innovation and impact

ORGANIGRAM & OC1: WHO FITS?



NEMESIS



1. GEOGRAPHIC FIT

- North-East Algeria and North-West Tunisia.
- Within the Medjerda–Mellègue Basin (Constantinois–Seybouse–Medjerda system).
- Preferably in semi-arid to arid areas (priority) to test solutions under real stress conditions of desertification.
- Regions facing soil degradation, water scarcity and/or desertification risk.
- Our Living Lab covers a climatic gradient from humid (North) to arid (South).



Humid (North)



Sub-humid



Semi-arid



Arid (South)



2. THEMATIC FIT

- Soil–livestock and mixed farming systems.
- Grazing, forage, manure/slurry valorisation, organic amendments and composting.
- Soil carbon, water retention, erosion reduction and biodiversity of soil.
- Sustainable agriculture and climate adaptation.
- Nature-based solutions and ecosystem services.
- Innovation in water management and soil restoration.



3. SITE REQUIREMENTS

- Minimum 1 ha (up to 10 ha preferred).
- At least 1 year of activity on the site.
- Operational, accessible and secure site.
- Willingness to collaborate and share data.
- Suitable for NEMESIS monitoring and Living Lab activities.
- Located in areas where solutions can be tested and their impact measured (degradation or desertification trend).



4. RELEVANT APPLICANTS

- Research/Academic institutions.
- Farmers, landowners and livestock farmers.
- Pastoralist/grazing associations and cooperatives.
- Feed/forage producers, composting or organic matter recycling actors.
- SMEs, consultants, NGOs and AgTech start-ups.
- Local authorities and extension services.



OUR CLIMATIC GRADIENT (FROM NORTH TO SOUTH)



Humid



Sub-humid



Semi-arid



Arid

FROM HUMID (NORTH) TO ARID (SOUTH)



Humid

High rainfall
High vegetation cover
High organic matter



Sub-humid

Moderate rainfall
Good vegetation
Moderate degradation



Semi-arid (Upper)

Low rainfall
Vegetation stressed
Erosion risk increasing



Semi-arid (Lower)

Low rainfall
Sparse vegetation
Land degradation evident



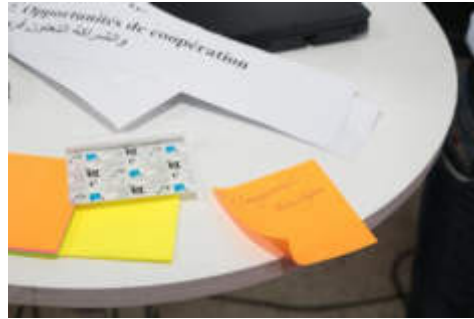
Arid

Very low rainfall
Bare soil
High desertification risk



Desertification Trend

Land degradation
Loss of productivity
Climate vulnerability





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Thank you!

Nemesis Consortium

