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EUROPEAN MISSION SOIL WEEK

Breakout Session

Healthy soils for healthy communities

12 November, from 13:30 to 15:30

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State of play EU-funded R&I

Luis Sánchez

Mission Soil Secretariat

European Commission

Giulia Meloni

Mission Soil Secretariat

European Commission

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Work Programme preparation cycle

Political guidelines and policy context

- New political guidelines
- Relevant policies and strategies, for example, the Common Agricultural Policy (CAP), the EU Soil Strategy and the Soil Monitoring Law (proposal)
- Horizon Europe Strategic Plan 2025-2027
- Mission Soil Implementation Plan

Co-creation process

end 2024-2025

- Analysis of the state of the art including results of Mission Soil projects
- Commission internal consultation on policy needs
- Early involvement and continuos exchange with Member States
- **<u>Stakeholder and general public consultation</u>**

Work Programme 2026 – 2027

- Publication of the Work Programme

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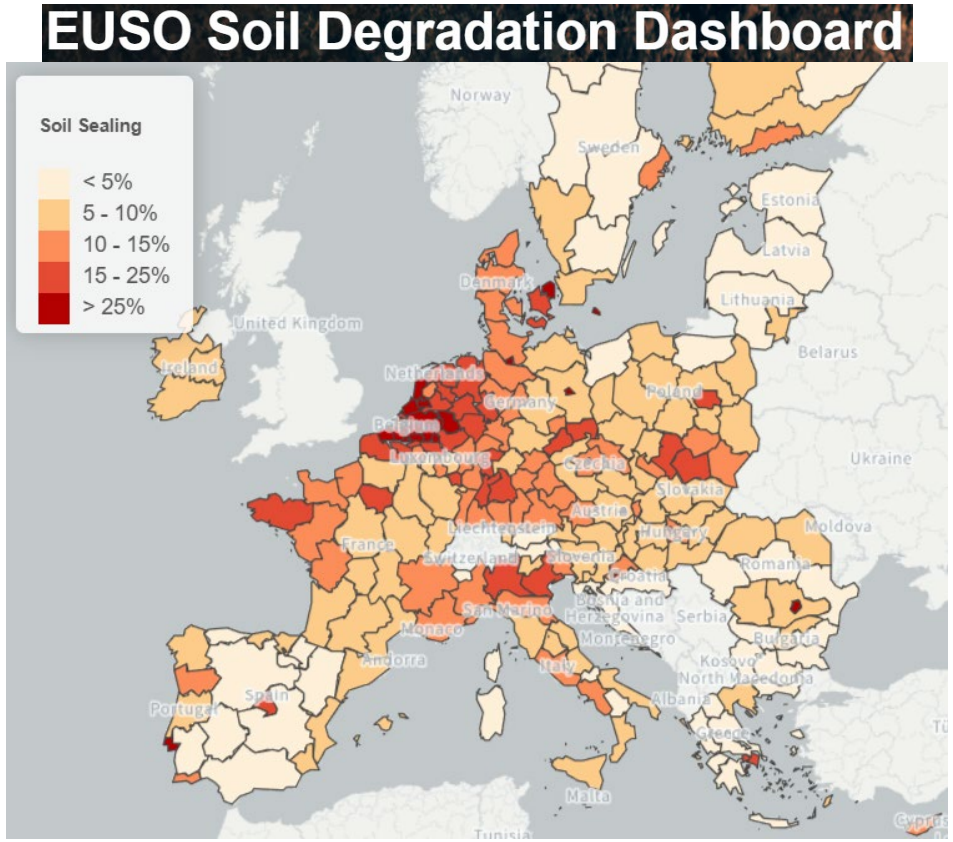
Urban soils in the Mission Soil

- Soil **research** traditionally **focused on agricultural soils**
- Urban soils face several unique **challenges**
  - Sealing
  - Contamination (heavy metals, microplastics, hydrocarbons…)
  - Compaction, poor structure and drainage, loss of OM and biodiversity
- According to the EEA, 2.72 % of European territory was **sealed** in 2016, **increasing to 2.95 %** in 2018.
- In 2020 **only 13 % of urban development** occurred on **recycled** urban land in Europe.
- Relevant Mission Soil objectives
  - 3. **No net soil sealing** and **increase the reuse** of urban soils
  - 4. **Reduce soil pollution** and enhance **restoration**



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Relevant Mission projects

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Develop, test and implement soil-inclusive **spatial planning strategies**
17 pilots in 10 member states covering urban, peri-urban and rural areas

SPADES
spatial planning and design with soil

EDAPHOS aragorn ISLANDR for Soil Health

Remediation strategies, methods and financial models for decontamination and reuse of land in urban and rural areas

Soil pollution modelling for contaminants such as metals, PFAS, nutrients, microplastics, and pesticides.

SOILPROM

Soil needs and drivers of change in urban soils

PREP SOIL

iCOSHELLs

One **living lab** in Italy focused on loss soil structure and biodiversity and high levels of pollution caused by **urbanization**, testing urban community gardens

34 pilot projects dealing with participatory soil governance

HuMUS
Healthy Municipal Soils

2024: Dedicated call for **living labs in urban areas** (under evaluation)

+4-5 urban living labs specifically addressing urban soil health challenges

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Mission Soil in Horizon Europe, 2021-2027 – a snapshot

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Food 2030: EU R&I Policy Framework future-proofing our food systems

2017-2024
Over 100 Projects
Over 760 M EUR

- Need for a systemic approach to future-proofing food systems by structuring, connecting and scaling-up R&I
- To provide **evidence** for policies and **solutions** (knowledge, methods, technologies, services, business models, etc) addressing 4 priorities.

Priorities

- **NUTRITION for sustainable and healthy diets**
- **CLIMATE smart and environmentally sustainable food systems**
- **CIRCULARITY and resource efficiency of food systems**
- **INNOVATION and empowerment of communities**

Drivers

- **Research breakthroughs**
- **Innovation and Investment**
- **Open Science**
- **International collaboration**

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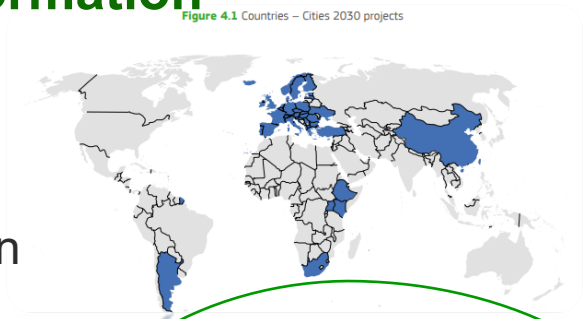
Food 2030 Urban Food Systems Transformation

- EU-funded projects cover **154 city initiatives** in 41 countries across the world.*
- Under the Food 2030 family we have **10 H2020 and Horizon Europe projects** covering with focus areas ranging from citizen engagement, local policy development and development and use of technology.
- Many projects strongly make use of place-based solutions via policy and living labs.

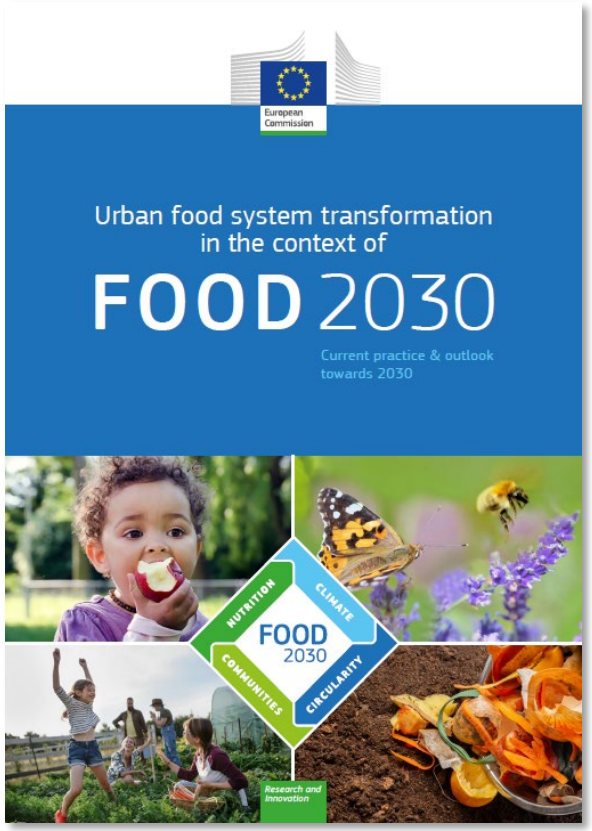


FoodE Cities2030

FoodSHIFT2030

FOOD TRAILS CULTIVATE

FUSILLI FOODCLIC



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*Link to report, numbers based on survey to 22 EU funded projects

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Food 2030 CLEVERFOOD project, supporting urban resilience and beyond

- **CLEVERFOOD EU-funded project (2022-26)** is building two networks: the ***Food 2030 Project Collaboration Network*** *and the* ***Food 2030 Connected Lab Network.***
- By joining one of the two networks, projects embrace a systemic and multi-actor approach tackling complexity and supporting the transformation of European food systems.
- The ***Food 2030 Project Collaboration Network*** is a network for projects, partnerships and networks that are sharing a similar vision of shifting the food system to become more fair, healthy and sustainable in line with EU policy priorities
  - So far **77 EU Horizon 2020 and Horizon Europe projects** have joined (including Mission Soil projects, such as **InBestSoil**).
  - Representing an investment of about **€ 500 million**.

NUTRITION CLIMATE FOOD 2030 COMMUNITIES CIRCULARITY

CLEVER FOOD

InBestSoil

https://food2030.eu/about/

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Panel Discussion

Linda Maring

Expert Researcher

Deltares

Pandi Zdruli

Mission Board member and
Senior Research Scientist

The International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) Mediterranean Agronomic Institute of Bari

Michel Chalot

Professor

Université de Franche Comté (France)

Karine Paris

Urban gardening projects coordinator
Citizens for ecological learning and living (CELL asbl)

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How to improve Urban Soil Health

Linda Maring

Expert Researcher, Deltares (applied research organisation on water and subsurface)

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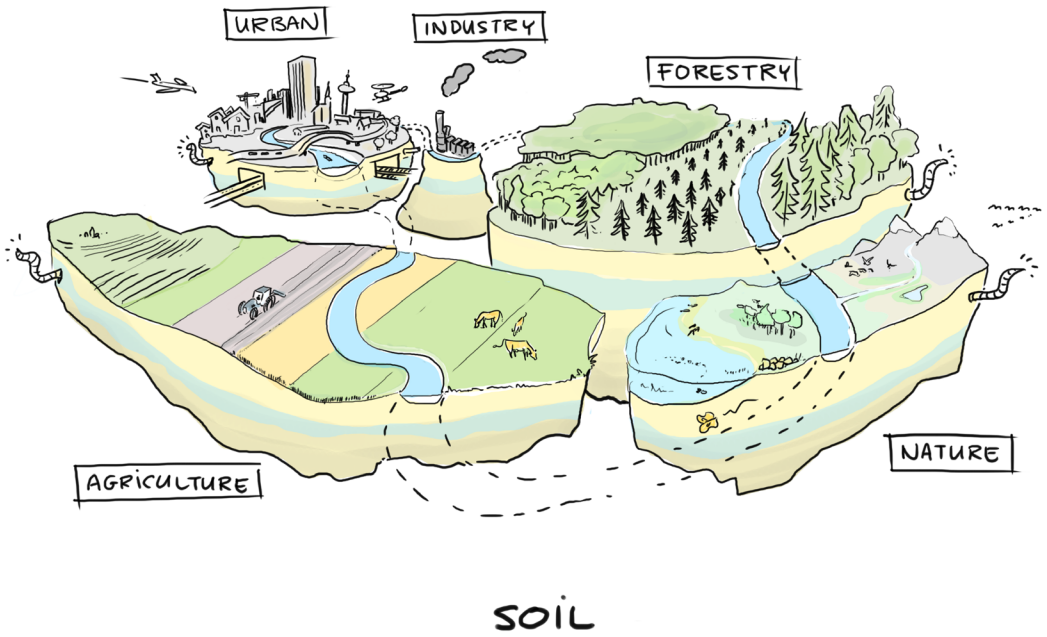
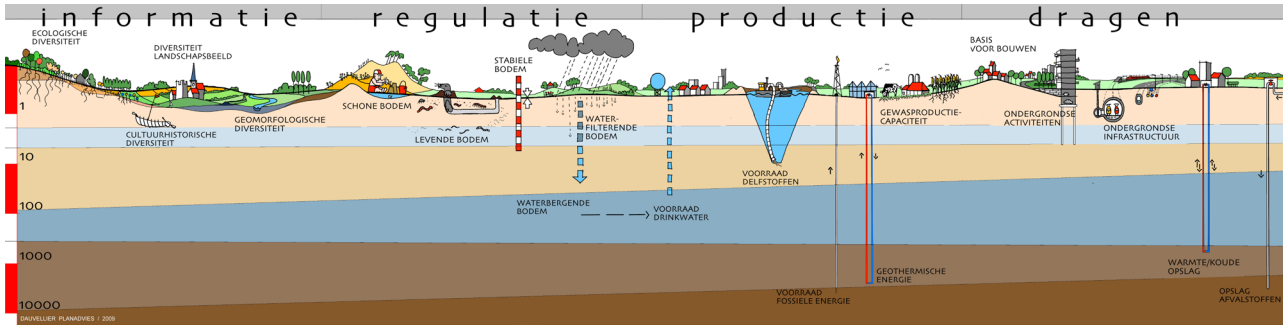
Focus



- Land Use → Soil-Sediment-Water system
- Urban soil health understudied (threath-based)
- Spatial planning and design as an instrument



Soil Mission Support

PREP SOIL

ISLANDR

SOILL

SPADES
spatial planning and design with soil

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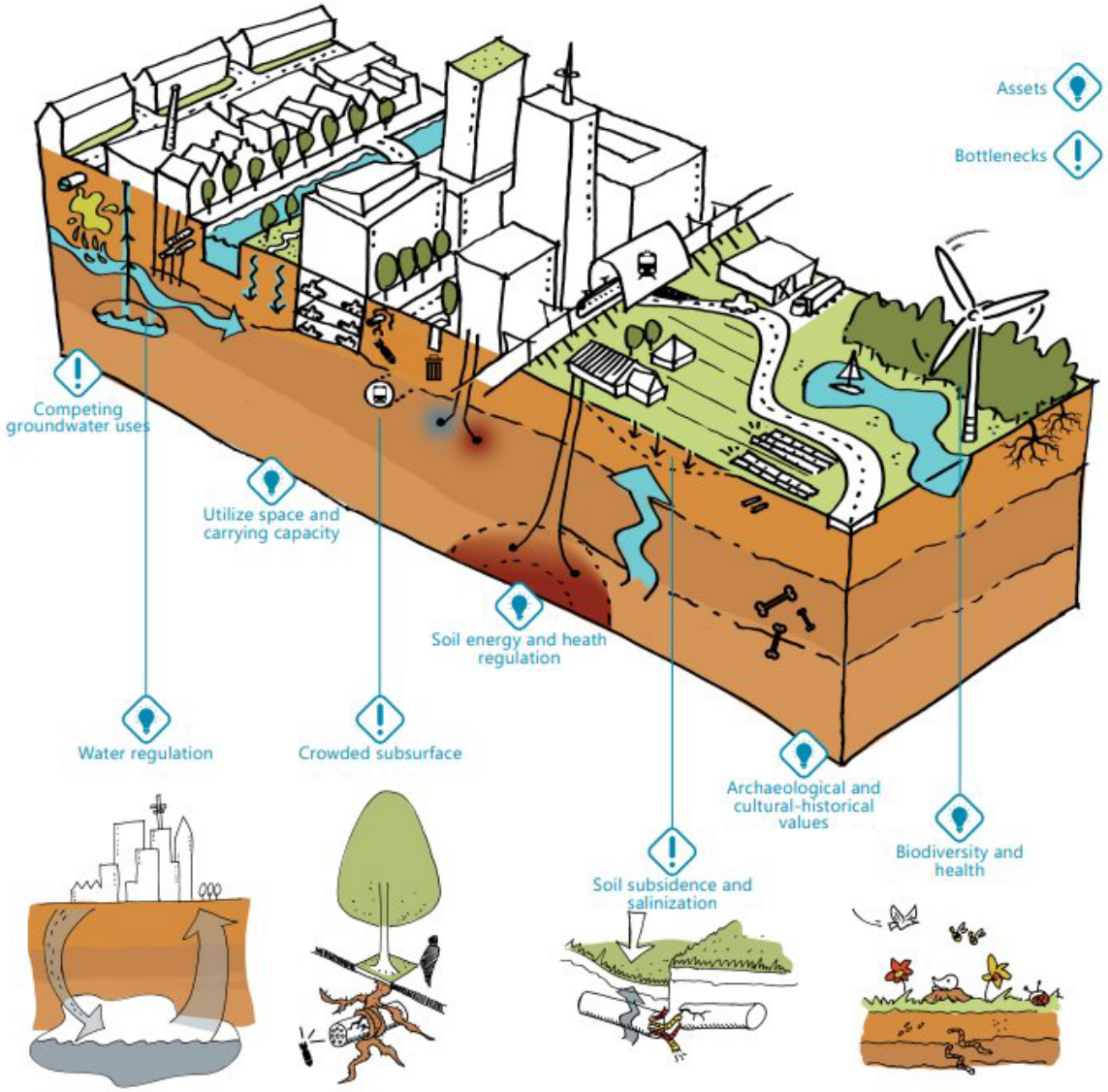
Soil and subsurface as an asset in planning and design



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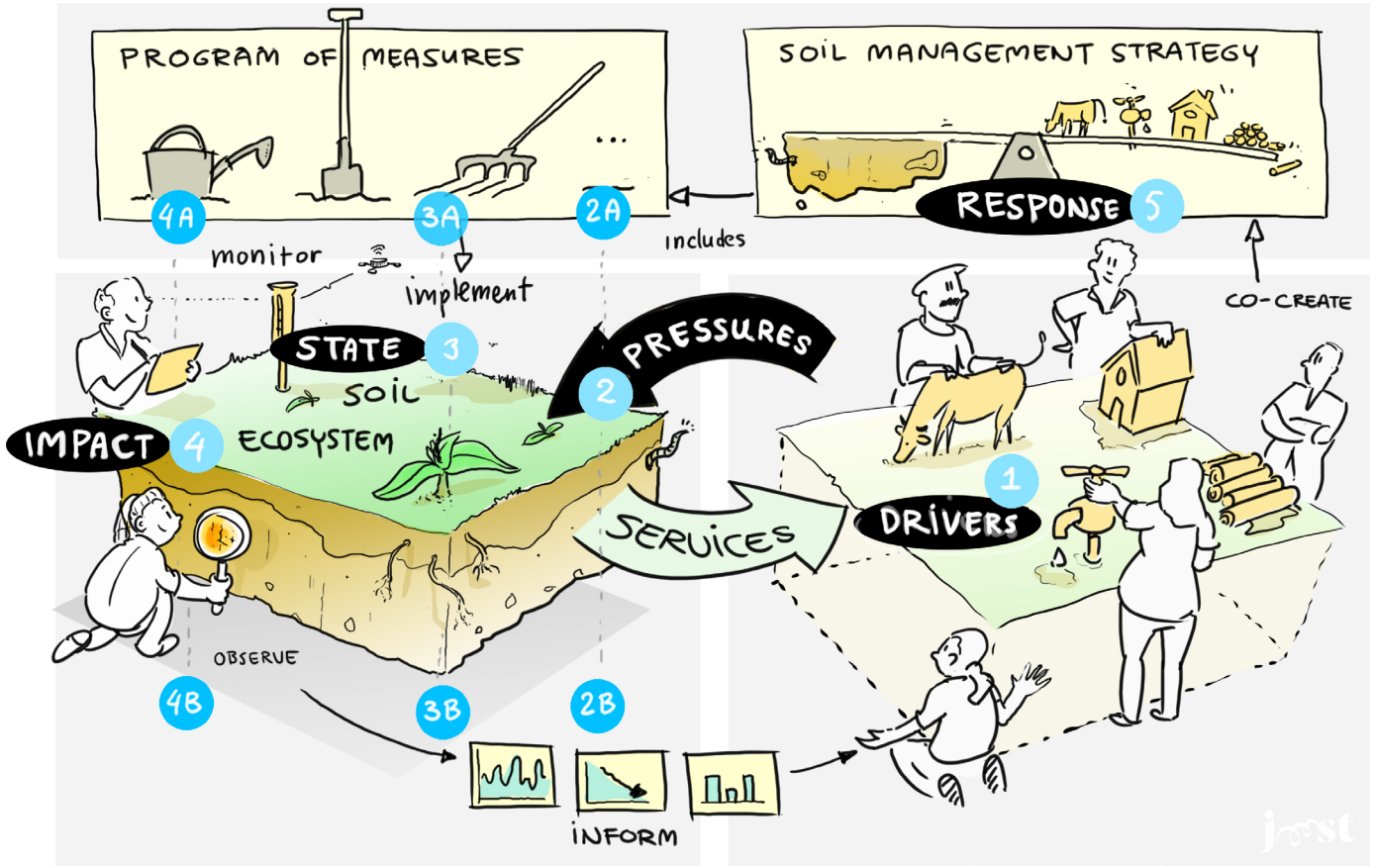
DPSIR model to analyse soil needs



Soil needs *= requirements from existing and emerging socio-economic and geo-biophysical perspectives that determine soil health*

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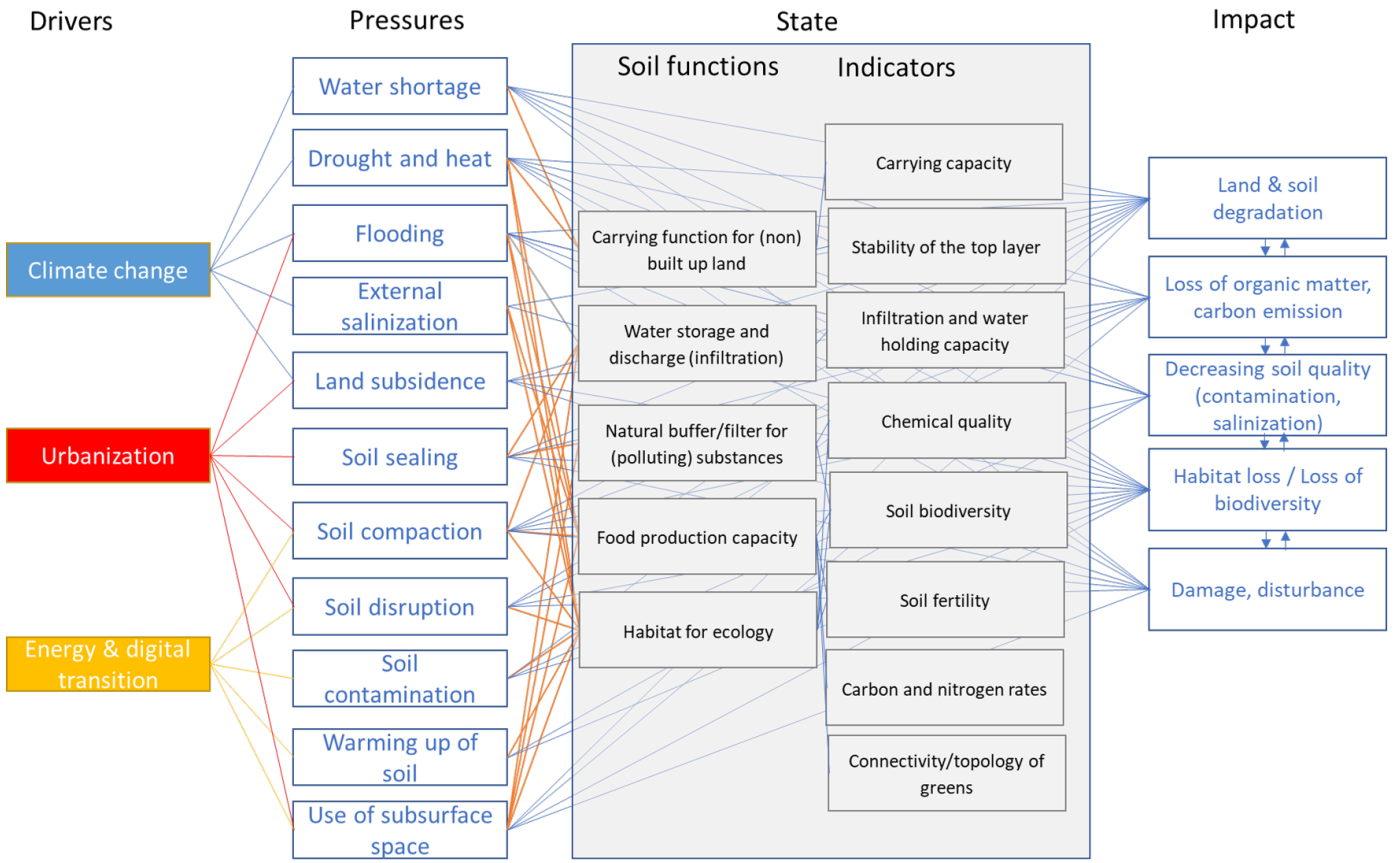
Example Amsterdam → DPSIR analysis



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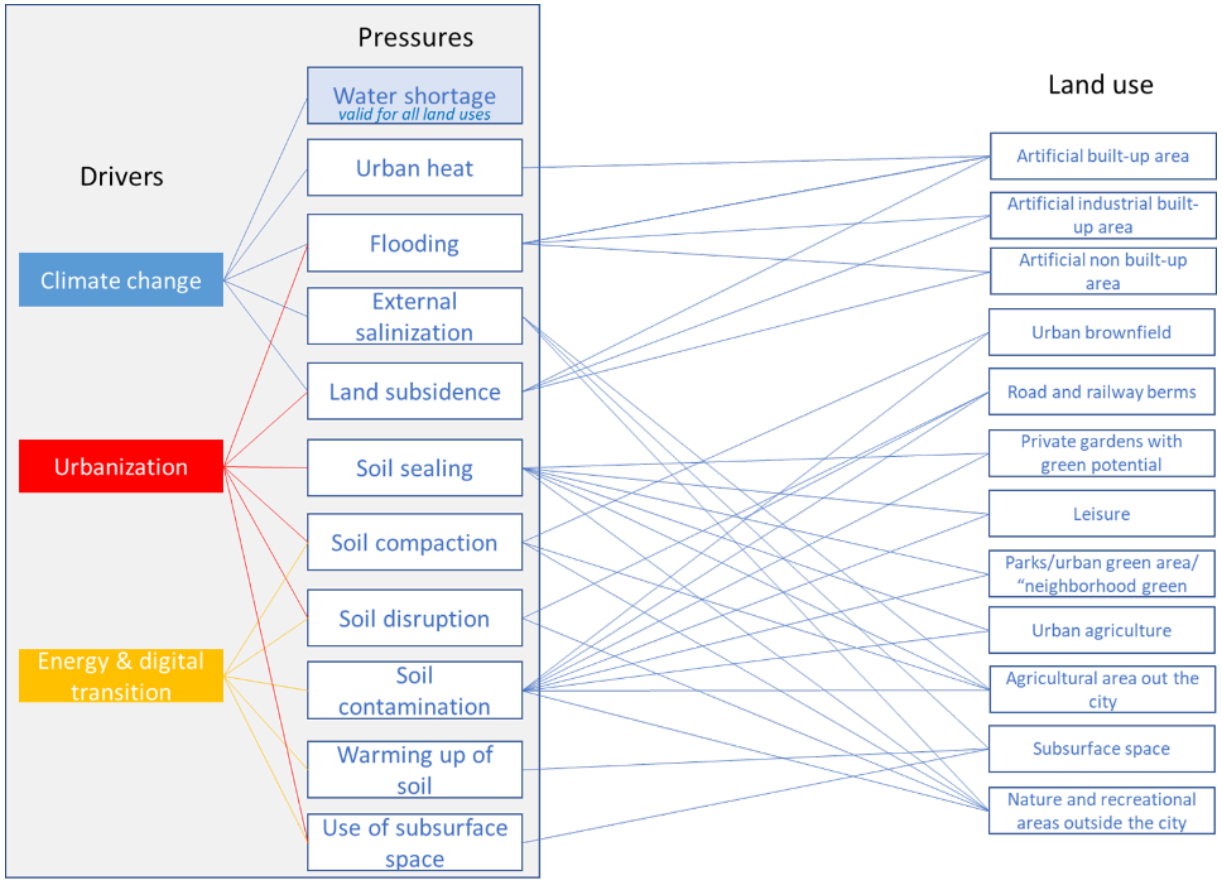
Example Amsterdam → land uses within the urban setting



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Take home messages

- Urban land contains of many different land uses with different soil needs
- Land use interacts with the Soil-Sediment-Water-System
- 4D planning and design
- Collaboration between authorities, planners, citizens, landowners
- Choose your battles???

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Management of wastelands in urban settings using Nature-based solutions (NBS)

Michel Chalot

Professor, Université de Franche Comté (France)

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Management of wastelands in urban settings using NBS

How to treat contaminated areas in urban environments with NBS, when land pressure is generally high and pollution sources are multiple and heterogeneous ?

1. Setting-up the scene : assessing the risk associated with soil pollution for living organisms, including humans, on the basis of ecotoxicological indicators; applying remote sensing to better identify pollution sources;
2. Implementing NBS : selecting the most appropriate NBS, *e.g.* the most appropriate plant-plant-microbe assemblages to deal with multiple pollutions;
3. Interacting and communicating to the larger public and to stakeholders and involving them in the co-creation and co-implementation of solutions

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EDAPHOS

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1. Setting-up the scene

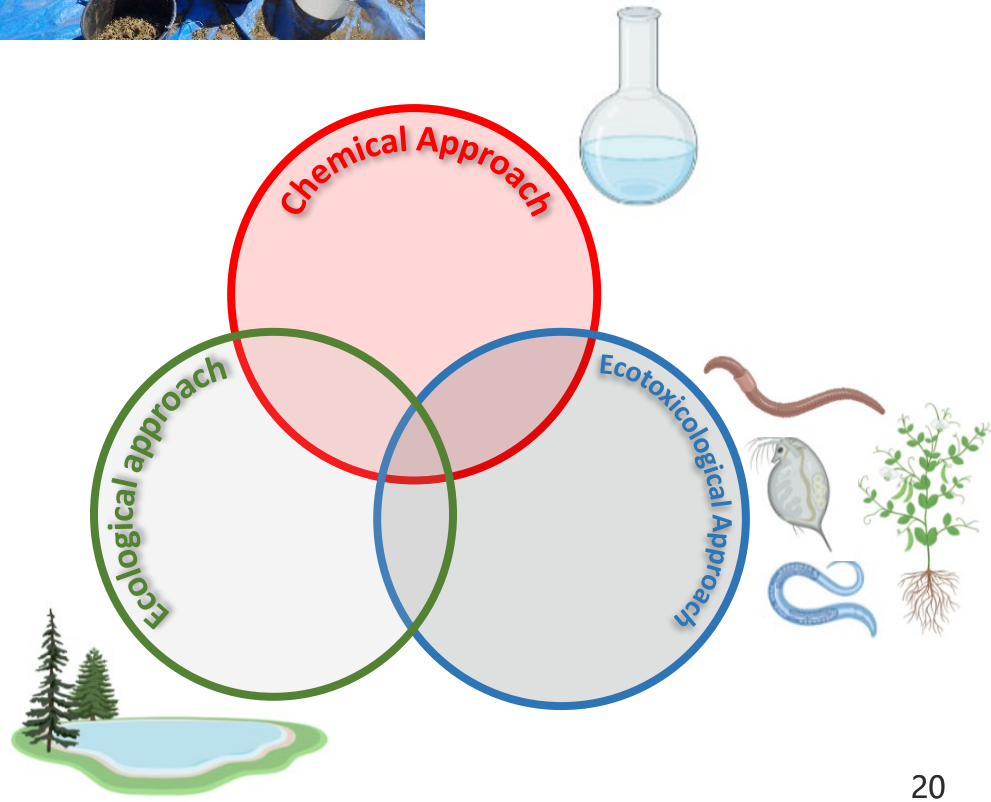
- Selection of a "**toolbox**", relevant for further ecotoxicological risk assessment (ERA) in urban area based on the TRIAD approach **(chemical data, ecotoxicological hazard data as well as soil ecology and soil functionalities data)**

→ Challenge : build a simple and cheap tool for soil ERA that can be easily applied by stakeholders

INERIS

ISO 10872: Nematod growth and reproduction test

ISO 11269-1: Plant root inhibition test



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EDAPHOS

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1. Setting-up the scene

- Selection of a "**toolbox**", relevant for further ERA based on the TRIAD approach (**chemical data, ecotoxicological hazard data and soil Ecology and soil functionalities data**)

→ Challenge : build a simple and cheap tool for soil ERA

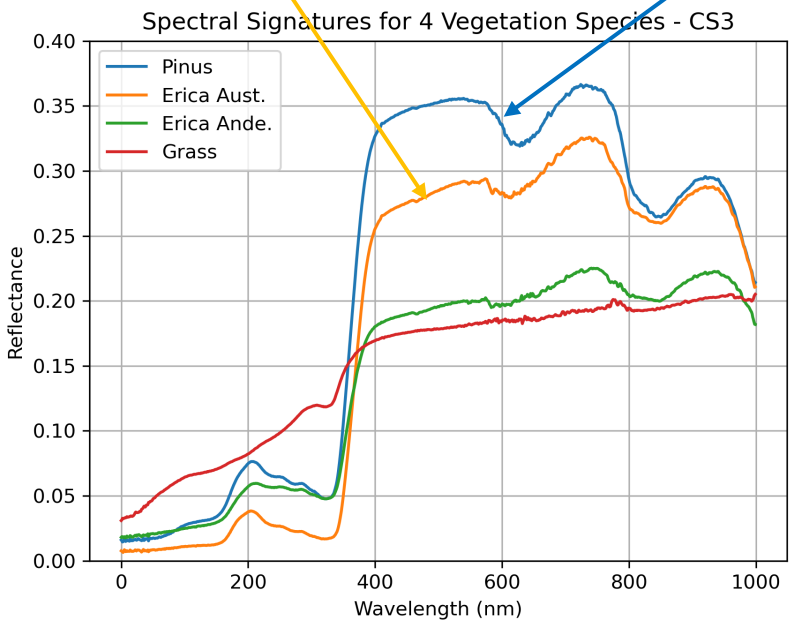
- Use of **remote sensing tools :** hyper- and multi-spectral acquisitions and machine learning algorithms are used to estimate and map plant diversity, plant biophysical parameters and leaf contamination.

→ Challenge : use RS tools to map soil pollution with vegetation indicators relevant in urban settings (= small areas)

Vegetation analysis through remote sensing

Erica Australis

Pinus pinaster



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2. Implementing NBS

- Selection of appropriate plant species for coping with soil and environmental constraints; **either in a phytostabilisation scenario (urban areas) or for phytoextraction at moderately contaminated sites (larger areas)**

→ Challenge: cope with multiple constraints in urban environment (soil sealing, land supply, elevated temperatures in summer…);

An industrial landfill near an urban area (France)

NBS implemented on an industrial landfill (France)

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BIOSYSMO

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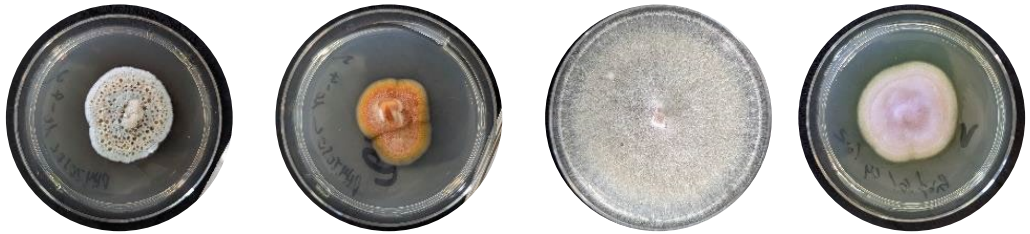
2. Implementing NBS

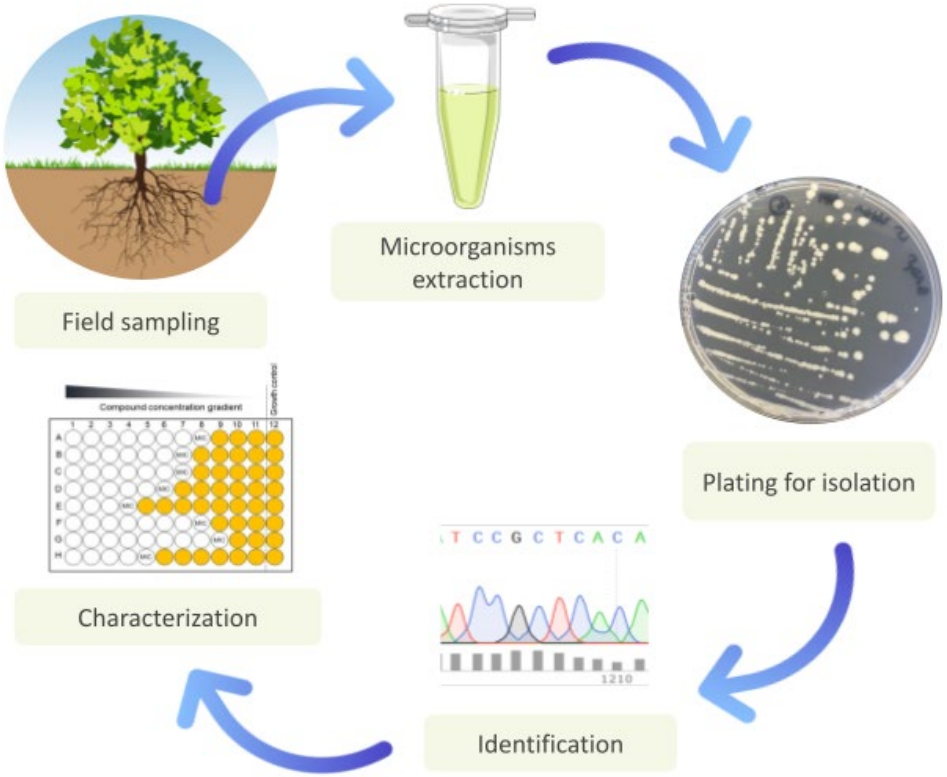
- Selection of appropriate plant species for coping with soil and environmental constraints; **either in a phytostabilisation scenario (urban areas) or for phytoextraction at moderately contaminate sites (larger areas)**

→ Challenge: cope with multiple constraints in urban environment (soil sealing, land supply, elevated temperatures in summer…)

- **Selection of plant-microbe assemblages**

→ Challenge: select consortia of microbes and plants adapted to multi-pollutions (organic and inorganic) (rather than commercial preparations) and address regulation issues





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3. Interacting and communicating

- Start with school children (and the parents !)

Interventions at school prepared by MSc students

Festivals on research organized by Ph-Ds

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ECOPOLIS

3. Interacting and communicating

- A dedicated pedagogic and research site where a lab has been built to welcome school children, students, researchers and stakeholders

→ Challenge: convince site owners to apply NBS in an environment where land pressure could be high

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Urban Gardening and Regenerative Practices in Luxembourg

Karine Paris

Project coordinator, Citizens for ecological learning and living (CELL)

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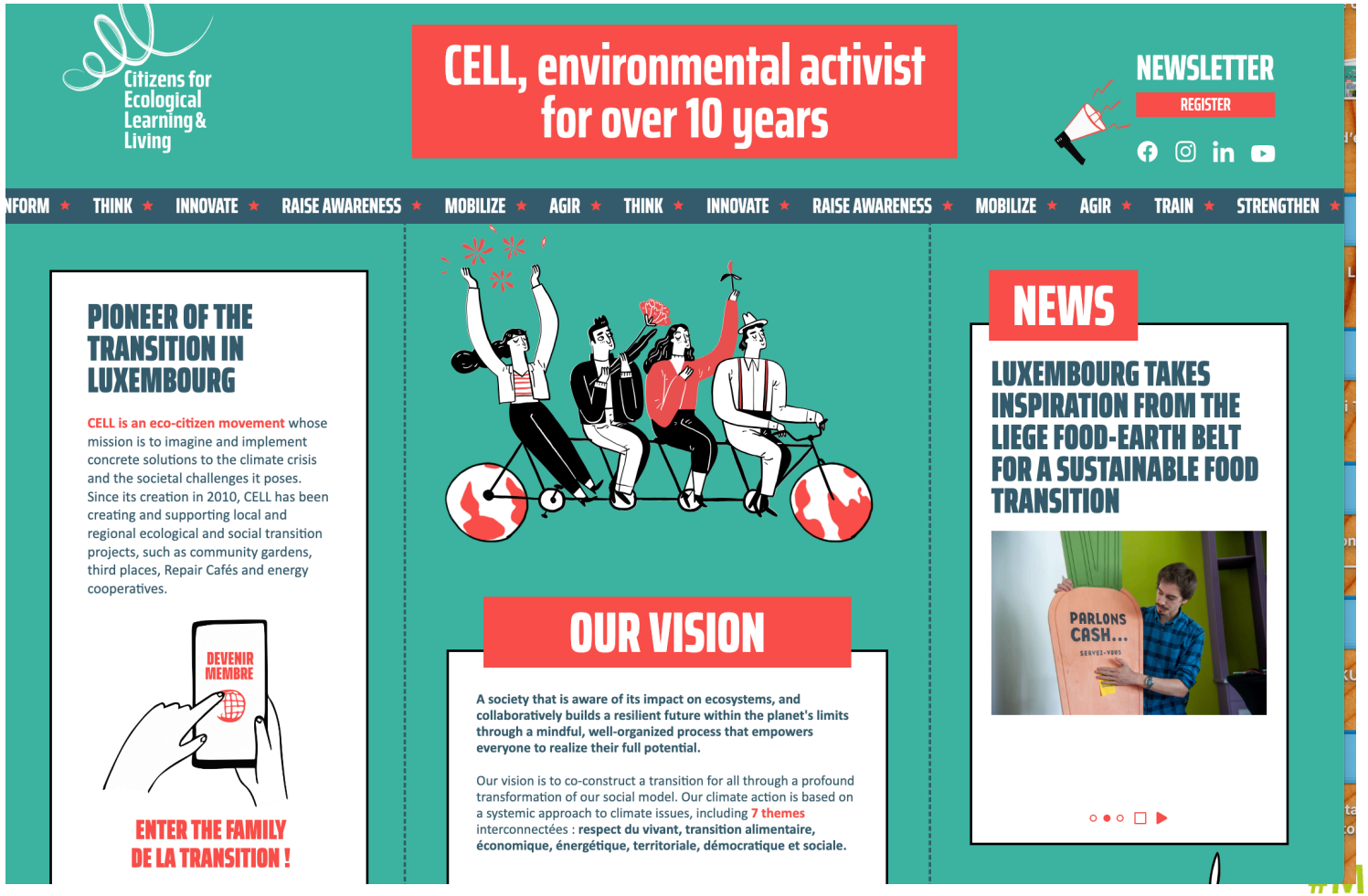
CELL, a grassroot movement



Vision:

Be an agent of change to:

- Reverse the decline in biodiversity
- Explore post-carbon lifestyles (degrowth)
- Improve our quality of life
- Reconnect with nature

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Community building : HOW?

- CELL, a long-term actor
- Bringing awareness and being on the field
- Listening at needs
- Multiscale cooperation
- Building trust and a network
- Financial support from the Ministery of Environment

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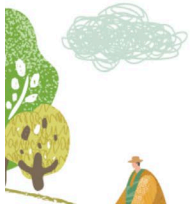
URBAN GARDENING: WHAT?

Capacity building

EISEGAART

MAP GARDENS RESOURCES PARTICIPATIVE RESEARCH SEED NETWORK POLYNATUR AGENDA CONTACT

FR EN DE



Citizen science projects

2021: THE DENSIFICATION OF CULTURES

THE PROJECT 2021, WHICH HAS BEEN ENTIRELY THOUGHT OUT BY THE GARDENERS WITH THE SUPPORT OF TWO SCIENTISTS OF THE MNHN, IS ABOUT THE DENSIFICATION OF CULTURES

2020: THE OYAS

EMERGENT OUT OF THE PROJECT JOS, END OF 2019, THE ACTION GROUP OF PARTICIPATIVE RESEARCH OF CELL, AIMED TO LEAD RESEARCH PROJECTS WITH THE GARDENERS ON COMMUNAL ISSUES

2017-2019: JOS

CELL AND THE MUSEUM OF NATURAL SCIENCES COLLABORATED ON A FIRST PROJECT OF PARTICIPATIVE RESEARCH: JOS

JOS: CITIZEN RESEARCH IN COLLECTIVE GARDENS (Jardins collectifs font science citoyenne)

Citizen seed network

Réseau Semences Citoyennes

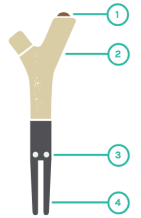
POLYNATUR

GROW OBSERVATORY

Changing Climate Mission

Collecting Data from your sensor

The sensor allows you to:



1. Measure light intensity to establish sunlight exposure
2. Measure the ambient temperature to establish temperature conditions
3. Measure the level of fertilizer required by the soil composition
4. Measure the moisture level of the soil to establish if you need to water your soil.

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What's next?

Living Labs in Urban Areas for Healthy Soils (HORIZON-MISS-2024-SOIL-01-02)

This call aims to enhance urban soil health through collaborative, real-life experimental environments. It involves stakeholders like citizens, researchers, companies, and policymakers to develop and test sustainable soil practices, share knowledge, and integrate solutions into urban planning. The objective is to establish 100 Living Labs by 2027 to ensure healthy soils by 2030. The call supports Soil Mission objectives 3, 4, 5, and 8, which include preventing net soil sealing and increasing urban soil reuse, reducing pollution, and enhancing restoration, preventing erosion, and boosting soil literacy in society.

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Thank you!

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European Research Executive Agency (REA)

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