DANISH
TECHNOLOGICAL
INSTITUTE

FOODS
MATERIALS
ENERGY

...FOR A BETTER FUTURE

AN EXCELLENT PARTNER AND WORKPLACE

1,000
COMPETENT SPECIALISTS

40,000
TECHNOLOGICAL SOLUTIONS

10,000
SATISFIED CUSTOMERS

1,200
UNIQUE R&D-PARTNERS

10th.*
MOST ATTRACTIVE EMPLOYER

70
TECHNOLOGICAL INFRASTRUCTURES

Danish Technological Institute is a self-owned and not-for-profit institution. DTI is approved as a Research and Technology Organisation by the Danish Minister of Higher Education and Science.

* In 2021, we were named the 10th. most attractive employer in engineering and science in Universum's brand survey

DANISH TECHNOLOGICAL INSTITUTE

A PART OF THE EUROPEAN R&D-NETWORK

The institute is a member of EUROTECH*, along with nine of the biggest Research and Technology Organisations in Europe:

- CEA
- Fraunhofer
- TNO
- VTT
- SINTEF
- RISE
- IMEC
- Tecnalia
- AIT
- DTI

*EUROTECH is a special interest group originating from EARTO (the European Association of Research and Technology Organisations)

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R&D ACTIVITY IMPACT ON SDGs IN 2021

*The figure shows the percentage revenue distribution of our R&D-activities' contribution to the SDGs 2021

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DTI in agriculture

1. Field trials (design, performance, data processing)
2. GHG measurements
3. Tests and verifications of technologies
4. Use of biomass and side streams
5. Drones and digitalisation
6. AI
7. Software development
8. Statistics

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SOILGUARD

4-year project (2021-2025)

25 partners from 17 countries

- 13 EU countries
- UK, Argentina, Thailand, Cameroun

Soil biodiversity

- Land degradation (cropland, grassland, forest)
- Soil management practices (organic, conventional)
- Ecosystem functioning and multifunctionality
- Ecosystem services
- Climate

The research leading to these results has received funding from the European Union Horizon 2020 Research & Innovation programme under the Grant Agreement no. 101000371.

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SOILGUARD

The aim

To boost the sustainable use of soil biodiversity to protect soil multifunctionality and increase economic, social and environmental wellbeing.

Field experiments

Soil biodiversity

Dissemination

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CONCEPT OVERVIEW

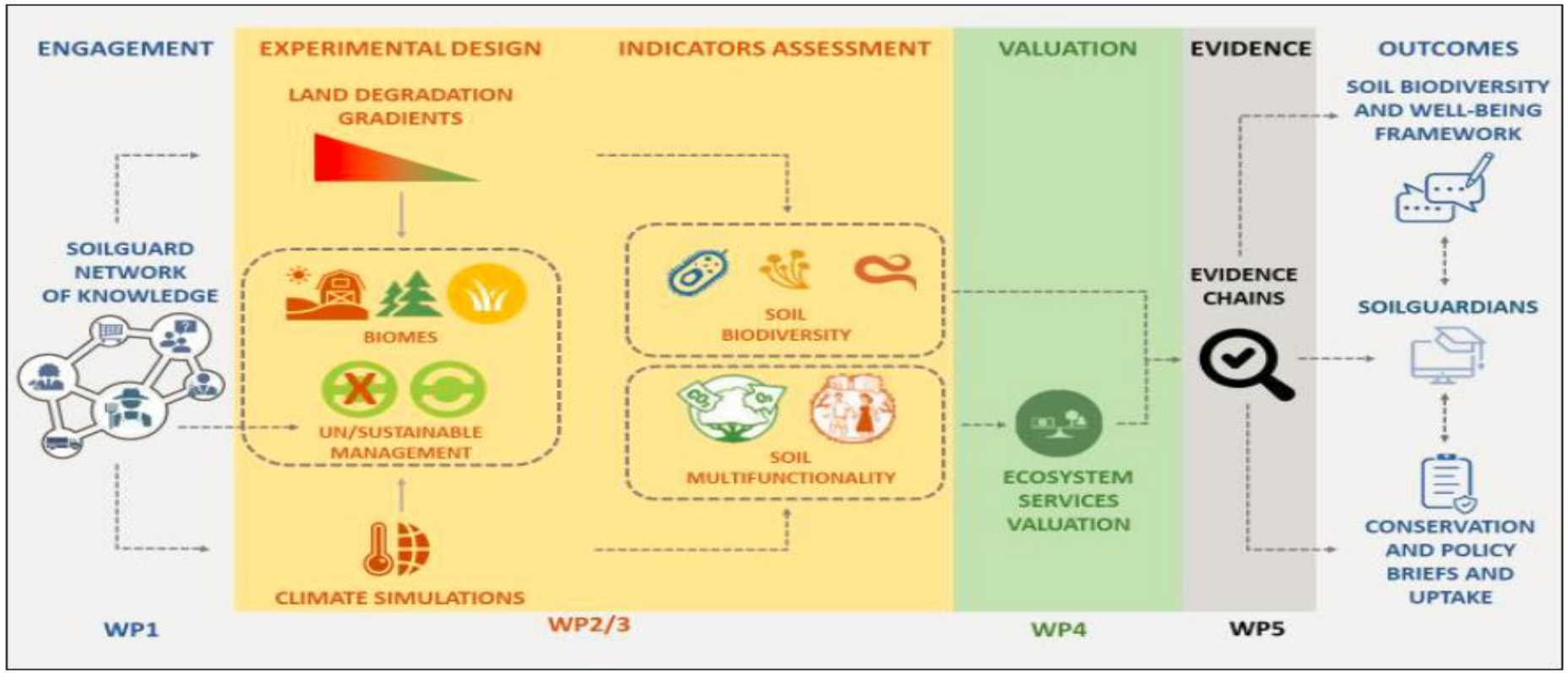


Figure 1. SOILGUARD concept

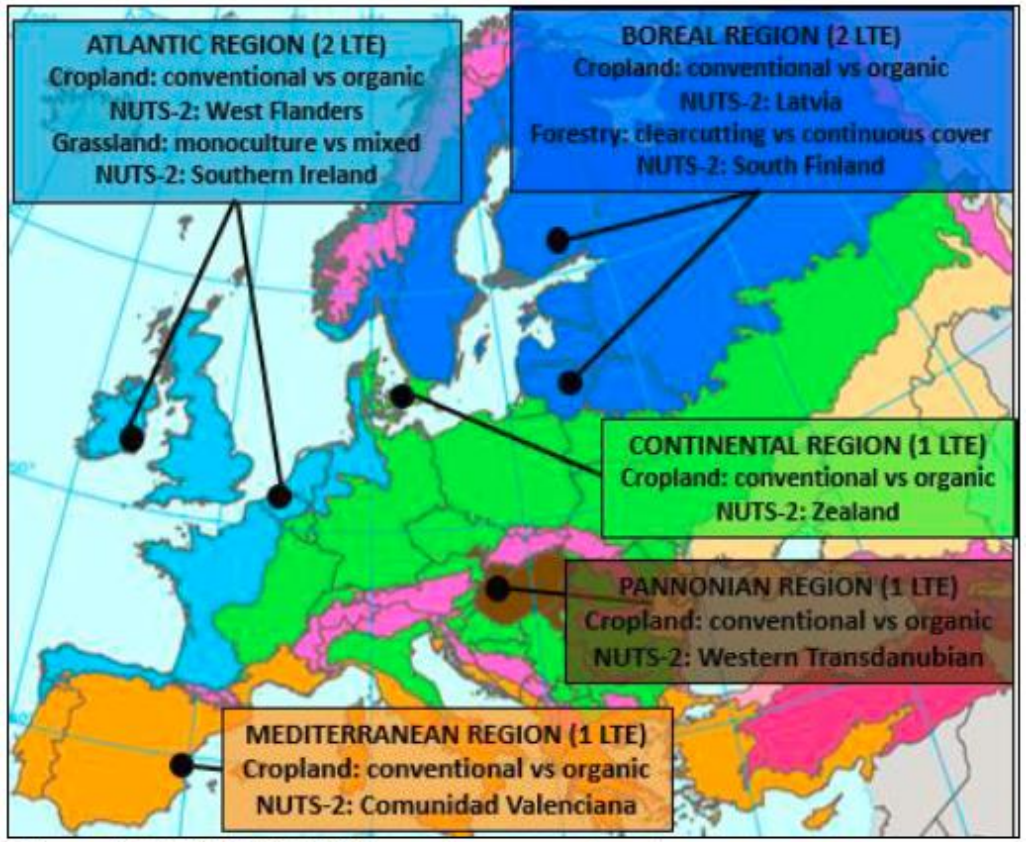


Figure 5. SOILGUARD Long-term experiments

WP2: Cross-biome network of sites across 8 biogeographical regions

234 sites from 7 European countries, Argentina, Cameroun and Thailand.

WP3: Climate change simulation

- 5 croplands (conventional vs organic)
- 1 grassland (monoculture vs mixed
- 1 forest (clearcutting vs continuos cover)

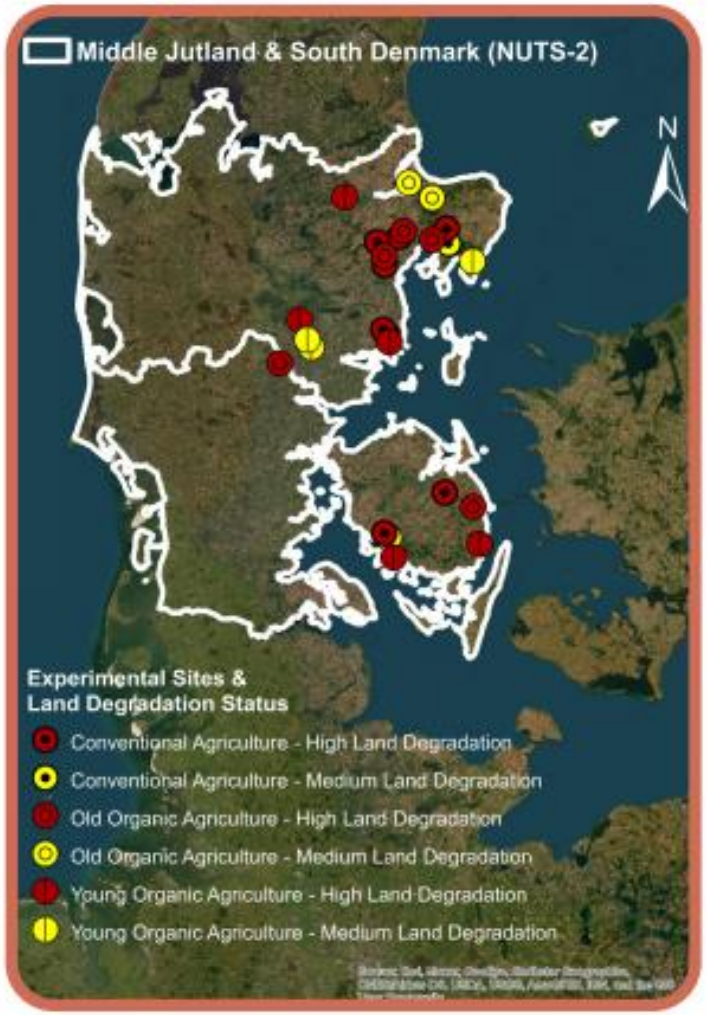
Climate conditions:

- Drought (rainfall exclusion)
- Drought + heat wave (infrared panel)
- No treatment

WP2: Cross-biome network of sites across 8 biogeographical regions

Denmarks contribution:
30 spring barley fields

- 10 conventional
- 10 ‘young organic’ (2-5 years)
- 10 ‘old organic’ (more than 5 years)



WP3: Climate change simulation

Drought (shelters)

and heatwave (infrared heaters)

experiments in

1 conventional and 1 organic

spring barley field

SOILGUARD

ANALYSIS

Bulk density

Physical-chemical properties

eDNA analysis:
Soil biodiversity
Climate simulation: Rhizosphere

Microscopy
nematodes and soil micro-athropods
(234 cross biomsites)

Litter decomposition
(Tea bag index)

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ANALYSIS

eDNA - Freezedried samples (0-10 cm)

- 3 ribosomal markers (16S, ITS and 18S) and one mitochondrial marker (CO1) using amplicon sequencing (Illumina MiSeq platform; 0,25 g samples) to assess bacteria, archaea, fungi, protists, nematodes, collembola, mites and earthworms
- Metagenomics using the HiSeq Illumina Platform and bioinformatic platforms such as virMin to assess vira.
- Quantitative-PCR (qPCR) and the analyses of phospholipid-derived and neutral lipid fatty acids (PLFAs and NLFAs) to assess the abundances of these different organisms, and also to better characterize arbuscular mycorrhizae communities
- Quantitative-PCR to assess the abundance of functional genes involved in the nitrogen cycle, encoding for ammonia oxidation and denitrification and nitrogen fixation processes (amoA, nirS, nirK, nosZ and nifH)

SOILGUARD

The aim

To boost the sustainable use of soil biodiversity to protect soil multifunctionality and increase economic, social and environmental wellbeing.

Field experiments

Better understanding of soil biodiversity as a function of land degradation, soil management practice and climatic conditions.

Contributions to standardization of methodology.

Soil biodiversity

To address the links between soil biodiversity, soil management practices, soil multifunctionality and human well being.

Increase the power to forecast soil biodiversity responses

Dissimination

Network, the creation of a SOILGUARDIAN app, policy and conservation briefs.

Policy makers, conservations stakeholders, land managers

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SOILGUARD

Would you like to be part of the SOILGUARD Network of Knowledge (SNoK)?

Please write your email in the chat

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