European Commission

Super soil: How *Life* protects what lies beneath our feet

Photo: Adobe Stock

Soil is a vital natural resource that is crucial to Europe's ecosystems, agriculture, and economy. It is the foundation upon which food is grown, water is filtered, and biodiversity thrives. However, soil degradation has become a growing concern, posing serious environmental, social, and economic challenges. The LIFE Programme has, since 2005, been working to raise awareness, develop innovative techniques, and implement sustainable management practices that promote healthy soil.

The importance of healthy soil

Protects the environment:

- Absorbs carbon from the atmosphere
- Helps withstand extreme weather, floods, and droughts
- Prevents natural disasters
- Improves biodiversity and makes landscapes more resilient

Improves water quality:

- Absorbs and stores rainwater, recharging groundwater and aquifers
- Prevents run-off and erosion
- Filters pollutants, improving water quality

Enhances food quality:

- Increases the nutritional value of food, improving human health
- Advances food security
- Provides plants with nutrition
- Strengthens plant resistance to pests and diseases

LIFE's work on soil protection

Since 2005, the LIFE Programme has financed 74 soil-related projects worth €183 million. Work has focused primarily on the following areas:

- Monitoring soil quality and health
- Remediating polluted areas
- Soil conservation in the agricultural sector and on degraded land
- Increasing carbon sinks and carbon stocks in rural and natural areas
- Preventing soil sealing and land uptake
- Conserving ecosystem services provided by soils, such as organic matter
- Protecting fertility and groundwater
- Preventing biodiversity loss in soils
- Awareness-raising of soil issues among policy stakeholders, professionals and citizens

European Climate, Infrastructure and Environment Executive Agency

A selection of *Life* soil successes

Promoting agroecology across Europe

Agroecology is a sustainable approach to farming that focuses on ecological principles and interconnectedness. It can potentially restore biodiversity and enhance climate adaptation and mitigation in Europe.

Photo: Adobe Stock

Based in Brussels, Belgium, **Agroecology Europe** aims to promote the merits of agroecology to European decision-makers and the wider public.

Key objectives of the LIFE project include:

- Bringing together all stakeholders to share agroecology knowledge, methods, and experiences.
- Restoring soil life, improving organic matter management, sequestering carbon in soils, and developing ecological networks by redesigning European farming and food systems.
- Fostering interactions between EU decision-makers, scientists, universities, research institutes, farmers, and citizens.
- Building EU agricultural and food policies for the transition to agroecology.
- Growing networks and communities across Europe who share common knowledge and experiences.

A new life for toxic soil

Due to centuries of mining, soil pollution is a severe issue in Slovenia's Upper Mežica Valley.

The **LIFE ReSoil** project showcased an innovative and environmentally friendly technology for soil remediation that can potentially mitigate the impacts of soil pollution on public health and the environment.

Results

- Their soil washing method removed toxic metals from the soil.
- The remediated soil was reused as a plant substrate.
- The project team scaled up the technology in a pilot plant that treated up to six tonnes of contaminated soil daily.
- They demonstrated that the remediated soil could be safely used for growing vegetables.
- The project also created new permanent jobs for the local population and contributed to the region's socio-economic development.

Photo: LIFE12 ENV/SI/000969

Photo: LIFE12 ENV/SI/000969

Photo: LIFE12 ENV/SI/000969

Photo: LIFE12 ENV/IT/000578

Giving soil a helping hand

Photo: LIFE12 ENV/IT/000578

Improving soil organic content can enhance fertility, nutrient absorption, and resilience to environmental stress, erosion, and pollution. Better soil management can increase the resilience of terrestrial ecosystems to climate change.

The **LIFE HelpSoil** project conducted a three-year experiment on 20 farms in northern Italy to test soil conservation practices.

Results

- Various techniques were implemented to encourage soil biodiversity, including no-till sowing, sub-surface irrigation, and natural fertilisers.
- This led to more efficient use of irrigation water, fertilisers, and pesticides.
- Direct environmental improvements included increased soil fertility and structure, enhanced organic carbon content, and improved biological activity and soil biodiversity.
- Their work supported climate change mitigation through CO_2 sequestration, reduced fossil fuel consumption, and decreased greenhouse gases and ammonia emissions.
- 2 000 stakeholders were reached through demonstration events, training days, and field visits.
- The primary sustainable agricultural practices are still used in 19 of the original 20 demo farms.
- The project's soil conservation practices were included in the region's rural development plan.

Stopping pollution in its tracks

Excess nitrogen in water causes eutrophication, which chokes water bodies, cuts off the oxygen supply to fish, and blocks light from reaching aquatic plants, depleting biodiversity.

In Granada, Spain, the **EUTROMED** project team created an affordable solution to the problem, which has many benefits for the environment, economy, and society.

Photo: LIFE10 ENV/ES/000511

Photo: LIFE10 ENV/ES/000511

Results

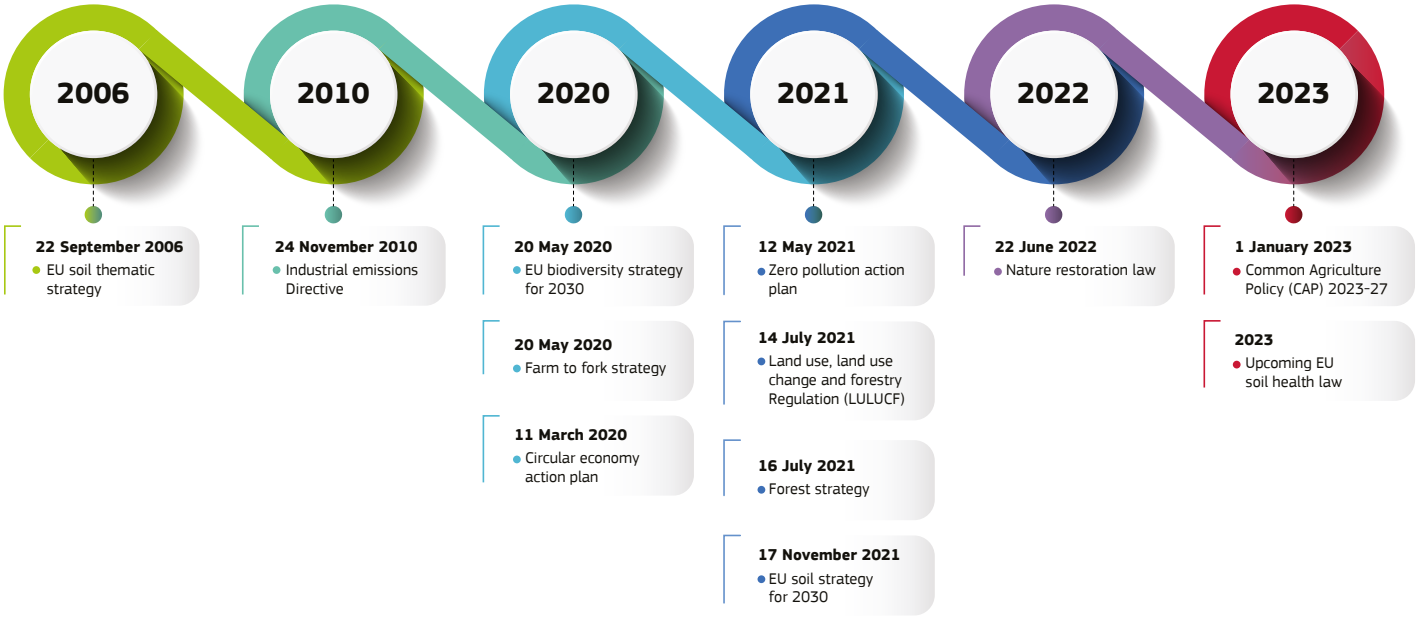
- The team developed an inexpensive technology that uses vegetable filters to intercept and retain pollutants before they reach surface water.
- The filters are made from local materials, are easy to install, and do not harm the soil.
- 29 local farmers used the filters and found them to be effective, retaining 60% of nitrates, 50% of phosphates, and 20% of dissolved organic carbon.
- The filters also increased biomass, reduced soil loss, and did not harm the soil's microbial communities.
- The project's success could lead to policies that promote healthy natural environments in agriculture.
- The vegetative cover of land is now extensive among olive farmers in the area, and its solutions have been replicated successfully by two other local projects.

HZ-03-23-152-EN-N

The EU's soil policy

The EU has for years been working towards improving soil quality by implementing various measures such as protecting and restoring soil, ensuring sustainable usage, and setting a vision to achieve healthy soil by 2050. It has also improved the framework for soil monitoring, developed a knowledge base, and supported soil research.

Timeline: Key EU soil-related strategies and laws



Learn more

ec.europa.eu/life LIFE programme lifeprogramme
@LIFEprogramme LIFE programme

How to apply for LIFE funding

The European Commission organises annual calls for proposals.
Full details are available at ec.europa.eu/life

Contact

European Climate, Infrastructure and Environment Executive Agency (CINEA)
European Commission - W910 - B-1049 Brussels, Belgium
CINEA-COMMUNICATION-LIFE@ec.europa.eu

PDF HZ-03-23-152-EN-N ISBN 978-92-95231-53-5 doi: 10.2926/205105

NATURA 2000
Life
Publications Office of the European Union