



## Newsletter #2

We welcome you to the second SIEUSOIL project newsletter!

We hope you all are in good health and high spirits!

See photo moments from our last project meeting, as well as take the opportunity to get acquainted with facts and figures about soils all around the world. Read about the EU conditions and the Sustainable Development Goals and catch up with news and upcoming events.

Do not forget to stay tuned with our project website! Follow us on social media and stay updated about news and project development.



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*and stay tuned*

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# Budapest project meeting moments



The last project meeting took place in Budapest on the 21-22 of November 2019 to assess the progress of the project and establish an action plan for the following months. We were also delighted to celebrate and communicate the 5<sup>th</sup> of December World Soil Day, taking part to FAO global campaign.



World Soil Day, December 5th

Event title: SIEUSOIL project meeting  
 Organizer: SIEUSOIL project coordinator and SIEUSOIL communication team  
 Date: 20 November 19 - 21 November 19  
 Location: Budapest  
 Website: <https://www.sieusoil.eu/>



FOOD AND AGRICULTURE  
 ORGANIZATION  
 OF THE UNITED NATIONS



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# Facts & Figures

## Globally

- Soil contains over 98% of the genetic diversity in terrestrial ecosystems (Fierer et al, 2007).
- Soils, down to one meter in depth, contain 1,500 billion of tons of organic carbon, over 3 times as much carbon as the atmosphere (Lal, 2004).
- More than half (52%) of all fertile, food producing soils globally are classified as degraded, many of them severely (UNCCD, 2015).
- More than 75% of earth's land areas are substantially degraded, undermining the well-being of 3.2 billion people. If this trend continues, 95% of the earth's land areas could become degraded by 2050.

Recent estimates indicate that every year globally:

- Soil degradation affects 1.9 billion hectares
  - 12 million hectares (23 hectares a minute) of land is lost to food production
  - 24 billion tons of fertile soil is irretrievably washed or blown away, i.e. 3.4 tons for every human on the planet (Sustainable Food Trust, 2015)
- A 12% decline in global food production over the next 25 years resulting in a 30% increase in world food prices is projected due to soil degradation (UNCCD 2015).

## In Europe



- 💡 Soil erosion costs European countries €1.25 billion in annual agricultural productivity loss and €155 million in gross domestic product loss.

- 💡 In 2016, over 80% of all areas in the EU-27 estimated to be affected by moderate to severe soil erosion were agricultural areas and natural grassland (Eurostat).

- 💡 The share of agricultural areas and natural grasslands estimated to be affected by moderate or severe soil erosion by water declined by 2.6% in the EU-27 between 2000 and 2016 (Eurostat).

## In China



- 💡 China faces severe soil degradation, with over 40% of its land area being affected by erosion (Zhou JM, 2015).

- 💡 35% of China's labour force is involved in agriculture, a sector that provided 7.9% of total Gross Domestic Product in 2017 (Xiangzheng Deng, ZhihuiLi, 2015).

- 💡 China shows that the annual costs of land degradation due to land use and cover change (LUCC) is equal to about 24.5 billion USD (Xiangzheng Deng, ZhihuiLi, 2015).

Soil is the earth's  
fragile skin  
that anchors  
all life on Earth

WWF



# Soils in the EU context and the Sustainable Development Goals

Sustainable development has been at the heart of European policy for a long time. The UN 2030 Agenda and its 17 Sustainable Development Goals (SDGs), have given a new impetus to these efforts. Eurostat's third report provides an overview on the progress towards the SDGs (*Sustainable development in the European Union – Monitoring report on progress towards the SDGs in an EU context; 2019 edition*).

Soils are examined in Goal 15 "Life on land". A set of indicators focusing on Land degradation monitors soils' progress towards this SDGs. This indicator set, limits the analysis to soil sealing, settlement area per capita and soil erosion by water.

In the EU an area of 348km<sup>2</sup>, is converted to sealed surface each year



The area of sealed soil has increased in the EU, but the rate of change is slowing. In total, from 2006 to 2015, the EU area covered with impervious materials grew by 3,131km<sup>2</sup> (4.2% increase). This means that on average an area of 348km<sup>2</sup>, larger than the size of Malta, is converted to sealed surface each year, corresponding to an average yearly growth of 0.5%. Contributing to this increase is 'land take', that has amounted to 14.049km<sup>2</sup>. Even though the rate of land take has decreased by over 40%, recultivation and renaturalisation of land was still far less than the land taken, indicating a distance from the 'no net land take' policy target for 2050.

Additionally, arable land and permanent crop areas were converted to artificial surfaces by 48.8% in 2000 to 2006, 51.7% in 2006 to 2012 and 50.2% in 2012 to 2018. This conversion was mainly towards construction sites in the first two periods, taken over by sprawl of industrial sites in the third.

The social and environmental impacts include the escalation of flood risk, damage to biodiversity and natural habitats, and the reduction of the amount of land available for food production.

2012-2018 → 50.2% of arable land & permanent crop areas were converted to artificial surfaces

Settlement area per capita (i.e. areas occupied by buildings, industrial and commercial areas and infrastructure) has increased since 2009, despite EU efforts. These areas spread from 616.1m<sup>2</sup> per inhabitant (2009) to 648.2m<sup>2</sup> (2015). This trend is linked to the growing demand for increased living space per person, and to ever-expanding levels of economic activity and increased mobility.

Soil erosion by water is a major threat to EU soils contributing to land degradation by removing fertile topsoil. Land area at risk of severe soil erosion by water has reduced by 14.0% between 2000 and 2012. However, more than half of the agricultural area remains at erosion risk at a rate that is faster than soils can be replaced naturally (over 1t/ha/yr). Moderate to severe erosion (over 5t/ha/yr) is estimated to affect 12.5% of arable soils and about 10% of permanent pastureland, while 0.4% of EU soils' area is suffering from extreme erosion (over 50t/ha/yr).



0.4% of EU soils' area is suffering from extreme erosion

Overall, the indicators that focus on European soils show that pressures from land take for human settlement purposes, including soil sealing, continues to intensify. However, it needs to be noted that the selected indicators in this SDG have a somewhat limited scope.



# In case you missed...



## EJP SOIL: Towards climate-smart sustainable management of agricultural soils

EJP SOIL project will build a sustainable European integrated research community on agricultural soils and will develop and deploy a roadmap on climate-smart sustainable agricultural soil management.



VanderSat

## Multi-million investment to calculate soil moisture from space

Satellite technology company VanderSat has secured additional multi-million investments to further improve and expand its satellite technology and algorithms to determine soil temperature and moisture content everywhere in the world.



## Arable Launches New Mark 2 Sensor to Monitor Climate and Plant Conditions on Farms

Agtech company Arable announced a new version of its sensor along with a suite of tools to help farmers and food producers monitor and collect data about soil and weather conditions on their land.



## Onset announced the release of 3 new soil moisture sensors

The new sensors measure soil moisture with better accuracy and precision than comparable sensors; they also measure soil temperature, and electrical conductivity. Sharpened stainless-steel probes make installation easy, even in hard soil, and a large volume of influence provides better results and a more accurate view of soil moisture.



## Sensoterra and NNNCo partner in soil moisture monitoring

Dutch technology provider Sensoterra and Australian LoRaWAN network operator NNNCo announce a partnership to bring affordable soil moisture monitoring to farmers in the Asia Pacific region.



## Cropx: The sensors and software behind the soil intelligence

Cropx cloud platform crunches data from our soil sensors integrated with multiple layers, to provide the best insights on when, where and how much to irrigate and fertilize and the best crop protection plan to follow.



## BGU Researchers Introduce Soil Nitrate Sensor for Agricultural Productivity and Pollution Prevention

The invention relies on an optical nitrate sensor that is based on absorption spectroscopy. The technology enables continuous, real-time, measurement of nitrate in the soil pore-water and is highly resistant to harsh chemical and physical soil conditions.

## SMART SOIL MOISTURE SENSOR MARKET PLAYERS

- Husqvarna
- Parrot
- Toro Company
- Meter Group
- Campbell Scientific
- Acclima
- Streat Instruments



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### The Global Symposium on Soil Biodiversity

The Global Symposium on Soil Biodiversity will be postponed to the tentative dates of 2 - 4 February 2021 at FAO headquarters, Rome (pending approval by FAO management and GSOBI Organizing Committee).

The Symposium will bring together international experts with the aim of reviewing the status of knowledge on soil biodiversity and ecosystem services, the sustainable use and conservation of soil biodiversity, and the contributions of soil organisms to the SDGs.

### 'Healthy soils for Europe: sustainable management through knowledge and practice'

DG AGRI and EIP-AGRI are organising the seminar *'Healthy soils for Europe: sustainable management through knowledge and practice'*. The seminar will take place on 7-8 October 2020 in Setubal, Portugal. Deadline for applications, 14 May 2020. The objectives of the seminar are: a) Raise awareness on the importance of soil health, b) Promote and build upon the results and outcomes of past EIP-AGRI activities, c) Share good practices to maintain soil health, d) Identify synergies between different of projects, e) Discuss challenges and solutions for soil health.

### IUCN World Conservation Congress 2020

In light of the ongoing COVID-19 pandemic, the International Union for Conservation of Nature (IUCN) and the Government of France have decided to postpone the IUCN World Conservation Congress 2020 in Marseille to 7-15 January 2021 from its original date of 11-19 June.



### Other events

- EIP-AGRI workshop "Towards carbon neutral agriculture". 9-10/9/2020. Estonia.



- Eurosoil 2020 - Connecting people and soil. The congress is postponed to the second half of 2021.

