TOPSOIL

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TOPSOIL

Interreg
North Sea Region
TOPSOIL
European Regional Development Fund

EUROPEAN UNION

Resilient soil and water resources: understanding the water beneath your feet.

Background of the project

When considering the major risks resulting from climate change, people often watch the skies, expecting extreme rainfall events and storm surges to have an impact on their daily lives and working lives. However, the water under our feet is also known to be a major actor when it comes to the quality and quantity of our water resources.

Many of our day-to-day activities are tied to the upper part of the soil layer. This is where we cultivate crops, build infrastructure and develop our modern societies. In addition, the main hydrological and chemical dynamics are represented in this layer of the subsurface.

Dialogues with the most important stakeholders in the North Sea Region, at local, regional and EU level, have pointed out that climate change is having a rapid impact on the topsoil and groundwater layers. As a result, many regions in Europe are faced with an increased threat of flooding due to rising groundwater, while other regions are facing drought and a scarcity of drinking water.

Objectives of the project

The Topsoil Project will explore the possibilities of using the topsoil layers to solve current and future water challenges. It looks beneath the surface of the ground, predicts and finds solutions for climate related threats like flooding during wet periods and droughts during summer seasons. The overall objective of the Topsoil Project is the joint development of methods to describe and manage the uppermost 30 m of the subsurface, in order to improve the climate resilience of the North Sea Region. In addition, the project will demonstrate a practical implementation of solutions in 16 pilot projects.

To make sure the proposed objectives are met by the end of the project, five major working areas have been identified where international cooperation will be particularly beneficial:

1. Flooding in towns and agricultural areas due to the rising groundwater table caused by changed precipitation patterns.
2. Saltwater intrusion into freshwater reserves due to rising sea levels and changed irrigation, drainage and drinking water demands.
3. The need for a groundwater buffer to store water in periods of excess rainfall. The buffer of fresh water can be used for irrigation purposes during dry periods.
4. Better knowledge and management of soil conditions, which will provide better resilience to extreme rainfall events, improve water quality and improve crop yields.
5. The capacity to break down nutrients and other environmentally hazardous pollutants in the uppermost layers is yet unexplored. By improving our understanding, better land management can be implemented.

Work packages

The Topsoil Project wishes to adopt a novel approach, in order to maximise the transferability of solutions by incorporating the collective knowledge and experiences of the partnership.

Throughout the project, the Topsoil Project will hold stakeholder consultations in order to improve the understanding of the challenges and to identify and manage the need for the development of new services. As a result, a technical investigation plan will outline the field measurements needed for targeting the different subsurface challenges. Combining this new information with existing data, will allow a more accurate interpretation of the challenges in different pilot projects. These data will allow the modelling of solutions that lead to more resilient soil and water resources management.

In the context of transnational cooperation, it is necessary to explore the best means of governance and the best practices from the five countries involved, in order to achieve new best standards. Therefore, a joint transnational governance team will be created. The team's main task will be to contribute to sustainable climate change adaptation by creating a new management regime and by developing new ecosystem services based on the demonstrated outputs from the project.

General information

Duration: 1 December 2015 – 1 June 2019

24 PARTNERS:

- **Belgium (1):** Vlaamse Milieumaatschappij
- **Denmark (6):** Herning Kommune, Horsens Kommune, Hydrogeofysik Gruppen Institut for Geoscience Aarhus University, Nationale Geologiske Undersøgelser for Danmark og Grønland, Region Midtjylland, Region Syddanmark
- **Germany (8):** Bundesanstalt für Geowissenschaften und Rohstoffe; Dachverband Feldberegnung Uelzen; Landesamt für Bergbau, Energie und Geologie; Landesamt für Landwirtschaft, Umwelt und ländliche Räume Schleswig-Holstein; Landwirtschaftskammer Niedersachsen; Leibniz-Institut für Angewandte Geophysik; Oldenburgisch-Ostfriesische Wasserverband; Universität Bremen: Geologischer Dienst für Bremen
- **The Netherlands (3):** Provincie Drenthe, Waterschap Hunze en Aa's, Waterschap Noorderzijlvest
- **United Kingdom (6):** Durham University, Essex & Suffolk Rivers Trust, Norfolk Rivers Trust, Northumbrian Water Limited, The Rivers Trust, Wear Rivers Trust

PROJECT TOTAL BUDGET: € 7,342,220

For more information, email project manager Rolf Johnsen at Rolf.Johnsen@RU.RM.DK or pay a visit to **www.topsoil.eu**