

# HEALTHY SOILS STRATEGY

Building on the Water-Soil Nexus for an Integrated &  
Circular Economy

April 2021



# Building on the Water-Soil Nexus for an Integrated & Circular Economy

## Water Europe Vision

Water Europe has set out a blueprint for a society in which the true value of water is recognised and realised, and all available water sources are managed in such a way that water scarcity and pollution of water are avoided, water and resource loops are largely closed to foster a circular economy and optimal resource efficiency, while the water system is resilient against the impact of climate change events.



Multiple Waters



Digital Water



Value in Water



Hybrid  
Grey-Green Infrastructure

## Healthy Soils Strategy

The EU's new "[Healthy Soils](#)" Strategy is an opportunity to apply innovative, circular solutions to the issue of soil degradation and take advantage of the synergies between the different EU frameworks and directives

(the European Green Deal but also the Water Framework Directive, the Common Agricultural policy, the Farm-to-Fork strategy, the Biodiversity strategy etc.) to tackle environmental challenges.

2/3

Wetlands lost since the beginning of the 20<sup>th</sup> century

20-30  
Mt

Of phosphorus used in Europe annually, mainly imported

1<sup>st</sup>

Source of soil contamination: waste disposal

109

EU Water-oriented Living Labs which can carry soil-water-waste challenges

While the strategy considers the interdependence between the quality and resilience of soil and the management of water, wastewater, and wetland ecosystems, we would like to reiterate some recommendations for a truly circular and sustainable soil management:

1

### BUILD A COMPREHENSIVE AND WATER-SMART FRAMEWORK FOR SOIL MANAGEMENT

Water Europe endorses the [EEA conclusions](#)<sup>1</sup> about the need for a comprehensive and coherent policy framework to protect land and soil. Under the umbrella of the Green Deal and particularly the Zero Pollution Action plan, the Farm to Fork strategy and the Biodiversity strategy, we support:

1. <https://www.eea.europa.eu/themes/soil>



**The creation of a Soil Framework Directive, including the Sewage Sludge Directive as one of its daughters** to build on the benefits of circular urban sewage sludge management, to promote the reuse of materials extracted from wastewater (such as sediment, soils, sand etc...) and to set up a common level playing field for all the economic operators, avoiding potential distortion of the Single Market as well as rules and limits that don't consider regional/national land uses.



**The consideration of the specific role of soil and water management** in avoiding soil depletion and reaching the goals of the Water Framework Directive. Healthy soils with a good soil structure and high organic matter content retain more water, allow crops to root deeper and increase nutrient/pollutant retention time. In this way, the probability of biodegradation of contaminants is increased, as well as biodiversity and biological activity, resulting in more efficient and functional nutrient cycling, reduced nutrients lost and diffuse pollution to groundwater and surface water. In addition, it increases the soil water availability to plants, decrease the need for additional irrigation and thus decrease the pressure on groundwater resources.



**The valorisation of the buffer function of healthy soil** (chemically, biologically and physically) for the water system, making sure the sensitivity to drought and flooding is limited and thereby contributes to climate change resilience.



**The development of more knowledge on the positive role healthy soils with sufficient organic matter can play** in further reducing diffuse pollution to water from pesticides, fertilisers and emerging pollutants. This requires improved monitoring of soil quality and simultaneously of groundwater quality.

## 2

### ENCOURAGE THE DEPLOYMENT OF DIGITAL WATER SOLUTIONS FOR SOIL MONITORING OBJECTIVES

Innovative digital sensors embedded in water streams are an essential tool to collect data, orient policy and detect issues of water or soil pollution. These sensors allow for:



**Applying finer monitoring of polluting substances and contaminants** such as microplastics or pesticides, thus making possible the full reuse of water and of its embedded substances or their safe release in nature.



**Making the use of environmental big data viable** through extended and constant controls, to better monitor progress and inefficiencies in the policy framework as well as map the status of European soils. In particular, the potential of remote sensing for data acquisition could be used to prevent water pollution.

In addition, new technological innovation can be used to investigate the connection between soil and water quality/quantity and increase the ability of soil to clean water and store carbon (via bio stimulation/microbial inoculum/engineered substrate).

# 3

## ENCOURAGE THE EXPLOITATION OF THE VALUE IN WATER TO REDUCE SOIL POLLUTION

Preventing soil pollution is one of the economic and societal values that can be accomplished by extracting and valorising substances such as nutrients, minerals, chemicals, and metals, as well as energy, embedded in used water streams. The European institutions are already supporting innovative solutions which work and prevent deterioration of soil quality<sup>2</sup>. Nature-Based Solutions and water conservation are essential tools to preserve this defence:

- ✓ **Nature-Based Solutions, including restoration of wetlands and peatlands**, ensure a stable presence of rich organic soil, avoid enormous amount of greenhouse gas (GHG) emissions (in 2017 around 5% of total GHG emissions from EU came from drained peatland<sup>3</sup>), restore biodiversity, and contribute to water storage and the soil's resilience against wind and water erosion, preventing mudflows and dust storms.
- ✓ **Support the reuse of water** with the appropriate quality for different activities to contribute to water conservation. This practice can significantly reduce abstraction of ground and surface water and the consequent water stress and the related soil degradation.
- ✓ **Promote the use of organic matter and nutrients present in sludge and sludge-based products**, following the principles of circular economy and contributing to closed cycle of N and P.

# 4

## ENCOURAGE THE DEPLOYMENT OF NEW BUSINESS MODELS/VALUE NETWORKS FOR SOIL MANAGEMENT

The development of new solutions for soil, water and waste management can be carried through Water-oriented Living Labs (WoLLs), cross-sectoral ecosystems water aimed at driving innovation, increasing cross-sectoral collaboration, testing, and validating new technologies, business models and policies. Additional benefits are:

1. Enabling the development of in-depth knowledge under controlled conditions.
2. Acting as demonstration sites.
3. Contributing to the collaboration between stakeholders and researchers, providing an improved understanding of the need for sustainable management.
4. Improving participation and communication.
5. Improving communication towards citizens.

All soils should be used in accordance with the societal needs and climatic changes. In particular, in the agricultural sector, farmers could become a central pivotal figure in improving the resilience of land and soil in light of the various sustainability challenges we are facing. In this regard a clear European framework and national strategies are essential to explore new business models/value network and to develop a new future proof perspective for farmers.

2. H2020 project: NextGen project ( <https://nextgenwater.eu/> ) ; Hydrousa ( <https://www.hydrousa.org/> )  
3. Joosten (2009) The Global Peatland CO2 Picture, <https://unfccc.int/sites/default/files/draftpeatlandco2report.pdf>

