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PROJECT PARTNERS



 **13 ORGANISATIONS**

 **8 COUNTRIES**

 **10 FIELD SITES**

 **EU CONTRIBUTION 4.8M**

PROJECT COORDINATOR

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#BIOSYSMO



**BIOREMEDIATION
SYSTEMS EXPLOITING
SYNERGIES FOR IMPROVED
REMOVAL OF MIXED
POLLUTANTS**

PROJECT DETAILS

START DATE: SEPTEMBER 1, 2022

DURATION: 4 YEARS

EU CONTRIBUTION: EUR 4.8M

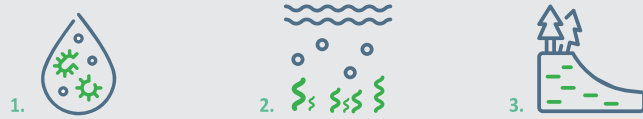
WWW.BIOSYSMO.EU



**UK Research
and Innovation**

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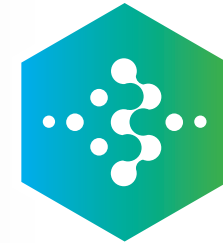
APPLICATIONS



- 1. Water phytoremediation:** Polluted water treated with plant/microbe hydroponic systems and enhanced with bioelectrochemical systems (BES).
- 2. Groundwater remediation:** Microstructured electroactive microbial biofilms applied in BES reactors to process contaminated water: treatment of pollutants at electrodes and at water volume.
- 3. Soil phytoremediation:** Modified poplar lines to integrate

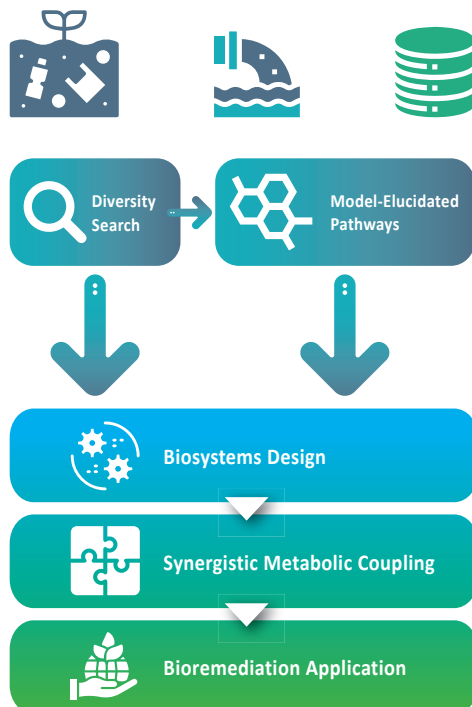


- new traits from microorganisms and plants for endophyte root colonisation and pollutants resistance.
- 4. Soil bioaugmentation:** Genetically improved strains with high contaminant removal are applied to bioaugment the community, to test biostimulation and to adjust soil physicochemical factors.
 - 5. Sediment bioremediation:** Uptake and biodegradation of contaminants enhanced by microorganisms inoculated in plant-sediment systems in estuarine environments.



IMPACTS

PROCEDURE



IN BRIEF

BIOSYSMO develops a computationally assisted framework for designing and optimising synergistic biosystems (bacteria, fungi, and plants) for efficient degradation and sequestration of pollutants in soil, sediments, and water. The project screens samples from polluted sites to identify existing microorganisms to metabolise target pollutants. Research is expanded to microorganisms by applying data mining tools to genomic and metagenomic data to identify improvements in biosystems.

OBJECTIVES

- Bioremediate polluted soil, water and sediments
- Collect and characterise polluted samples
- Design, apply and optimise synergistic biosystems
- Enhance plant-microbe interactions and engineered bacteria
- Maximise pollutants uptake and degradation



10 Target Contaminated Sites

5 Bioremediation Strategies



70-80% Pollutants Removal

TRL4-5 BIOSYSMO Technologies



- Biobased solutions for zero-pollution
- Circular bio-based systems to reverse climate change
- New improved synergistic biosystems
- Lab (TRL4) and field validated (TRL5) bioremediation
- Reduced environmental footprints of bioremediation
- Healthy symbiotic microbes-plants biosystems
- Protected soil health and water quality
- Restored biodiversity