

## Project Details

Start date: 1 March 2019

Duration: 4 years

EU contribution: EUR 4,964,168.25

Project webpage: [www.greener-h2020.eu](http://www.greener-h2020.eu)

## OVERVIEW

GREENER proposes the development of green, sustainable, efficient, and low-cost solutions for soil/sediment and water bioremediation, by integrating several remediation strategies with innovative bio-electrochemical technologies. The project focuses on accelerating the remediation time of a range of organic and inorganic pollutants of high concern, while producing end-products of interests, such as bioelectricity and/or harmless metabolites of industrial interest. To achieve such an ambitious goal, organisms with high bioremediation ability will be identified and isolated, the influence of physico-chemical factors on the effectiveness of treatment will be evaluated and proof-of-concept experiments to define optimal integrated solutions at the lab-scale will be performed. Finally, a combination of the most promising technologies will be up-scaled and tested on field. Life cycle analyses will demonstrate the technical and economic feasibility of the solutions suggested.

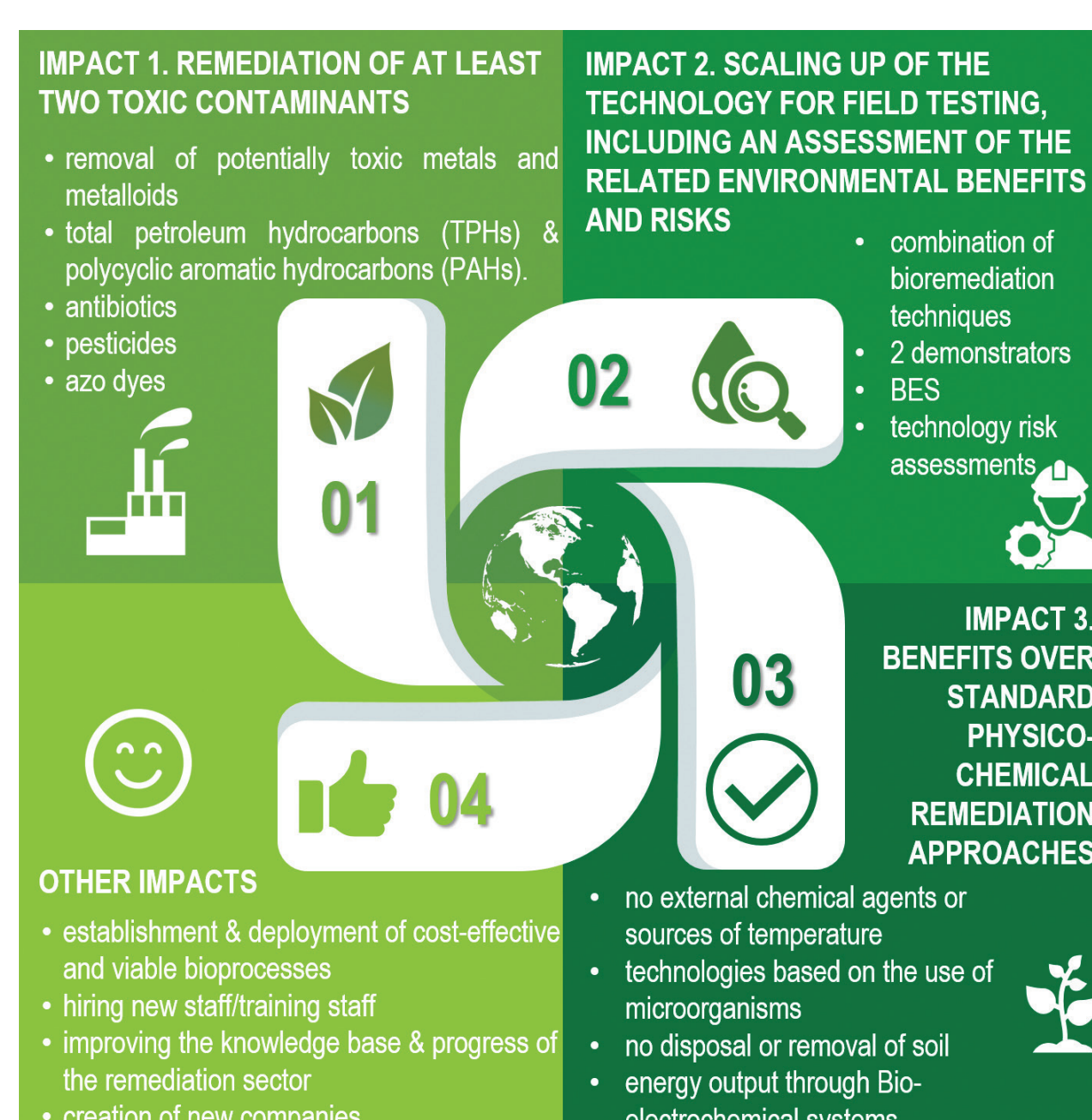
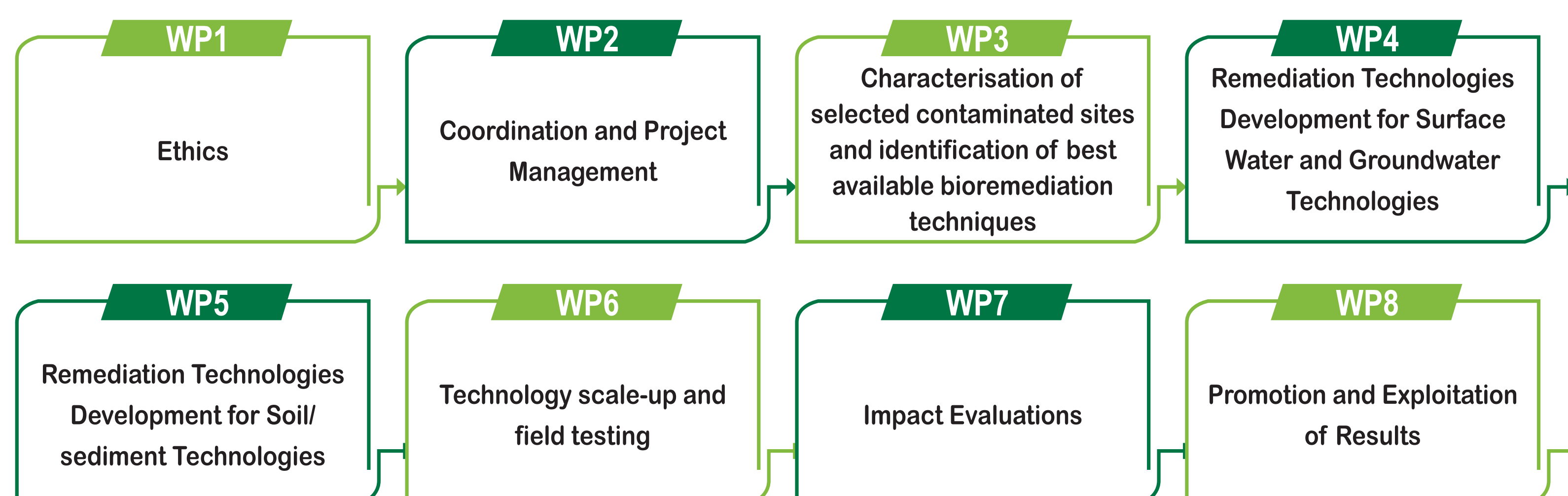
## OBJECTIVES

- OBJ 1** To map, select, characterise and assess different polluted waters and soils/ sediments
- OBJ 2** To asses & study the microbial consortia for water and soil bioremediation and isolation of best performing species
- OBJ 3** To develop, improve, optimise and evaluate the effectiveness and impact of technologies
- OBJ 4** To improve, optimise and demonstrate the effectiveness and impact of biological strategies for soil bioremediation
- OBJ 5** To demonstrate hybrid bioremediation systems for the treatment of contaminated water
- OBJ 6** To scale-up the optimum technologies developed for water and soil bioremediation
- OBJ 7** To scale-up the optimum technologies developed for water and soil bioremediation
- OBJ 8** To demonstrate, monitor and validate the performance of the different technologies
- OBJ 9** To develop suitable business models for diversification
- OBJ 10** To demonstrate the safety & regulatory compliance, and to conduct environmental & economic sustainability assessments
- OBJ 11** To maximise the innovation impacts of the project for contributing to the uptake of the project results for growth & jobs



## CE-BIOTEC-04-2018: InteGRated systems for Effective ENvironmEntal Remediation

## WORKPLAN



## TECHNOLOGIES

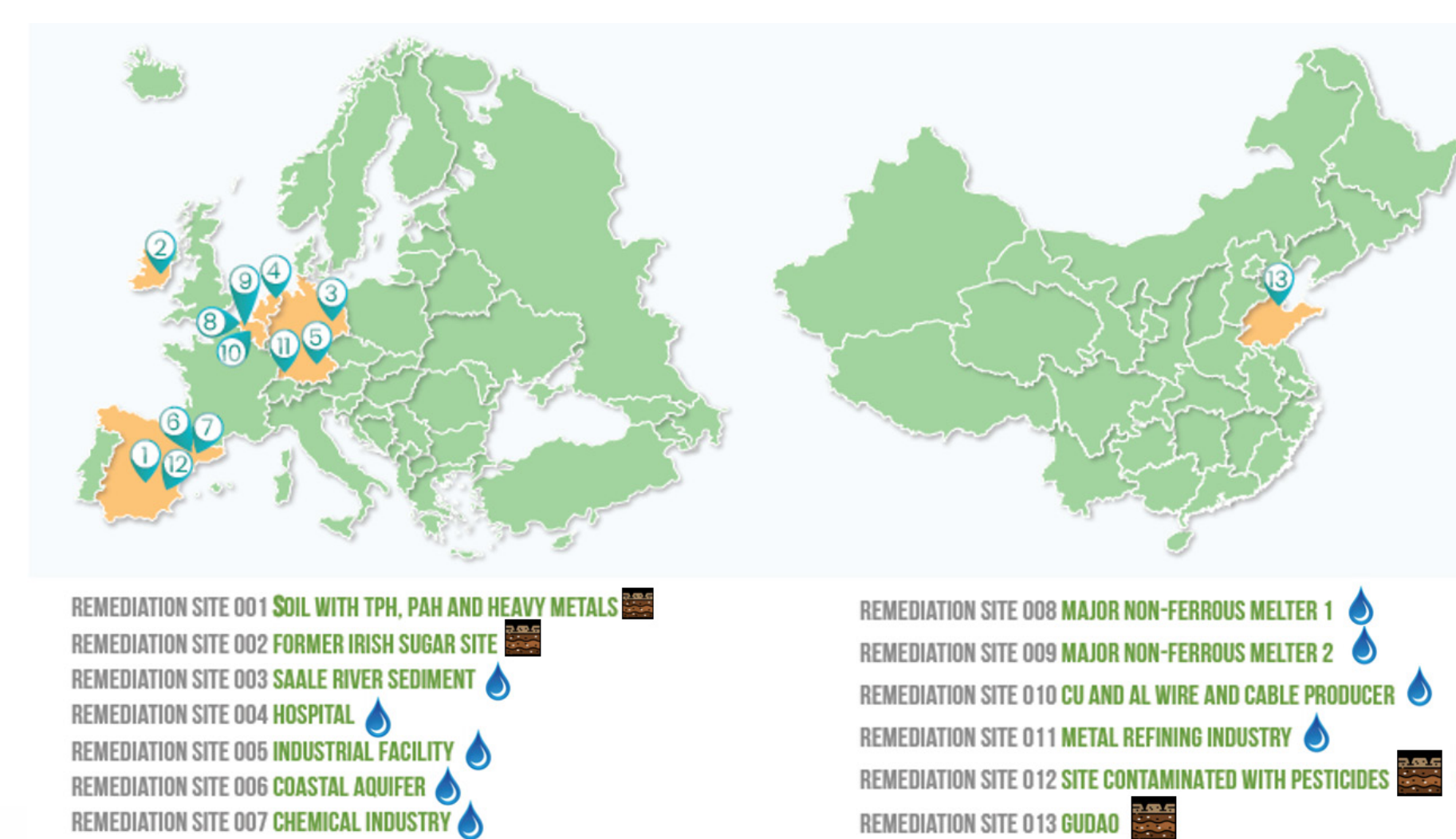
GREENER will include technologies such as, biopile (soil/sediment), ecopile (soil/sediment), phytoremediation (water), phytoremediation (soil/sediment and water), novel technology for metal and recovery of nanoparticles (water), bio-electrochemical systems such as, MFCs, MECs, SMFCs (soil/sediment and/or water) and hybrid systems such as, PFC (soil/sediment) and CW-MFC (water), two demonstrators for the pilot activities in soil/sediment (ACC, SDAS) and water (TAUW, QUST).

## GREENER VALIDATION AND DECISION-MAKING TOOL

Integrated technologies for bioremediation will be tested in relevant environments at pilot scale for their final validation. ACC, TAUW and ITC (EU), and SDAS in collaboration with QUST (International Partners from China) will offer their demonstration sites to test the final up-scaled or deployed bioremediation sites. A decision-making tool will be used, taking into consideration the GREENER outcomes, as well as potential stakeholder inputs, with the aim to support the selection of the most feasible and appropriate bioremediation technology, based on the polluted system, contaminant type, concentration, location, etc.

## CONTAMINATED SITES

The different contaminated sites are being selected by consortium (EU) partners to be used during innovation activities. As can be seen on the map below, polluted soil will be collected from Spain, Ireland, Belgium and Shandong (China). Contaminated water will be collected from Spain, the Netherlands and Germany. Overall, Spain will host 3 contaminated sites, Belgium 3, followed by Germany with 2, the Netherlands with 1, Ireland having 1 and China with 1 contaminated sites.



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