



greener

**InteGRated systems for Effective
ENviroNmEntal Remediation**

NEWSLETTER

DECEMBER 2019



Welcome to the 1st Newsletter for the EU Project GREENER!!

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The GREENER project has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement No. 826312.

GREENER at a glance

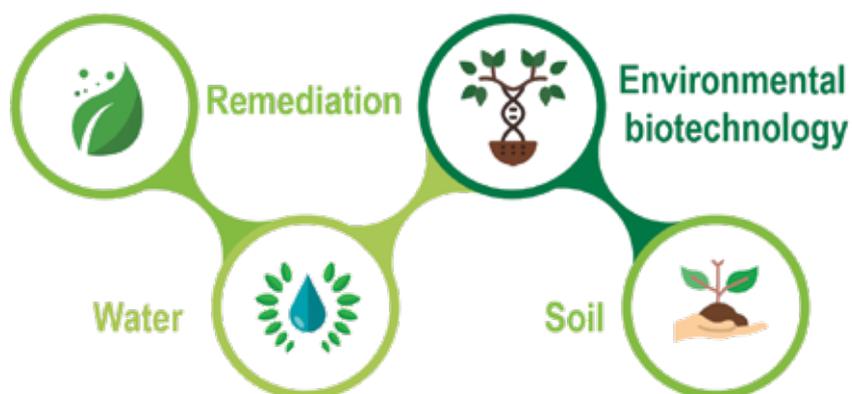
GREENER proposes the development of green, sustainable, efficient, and low-cost solutions for soil/sediment and water bioremediation by integrating several remediation strategies with innovative bio-electrochemical technologies. The project focuses on accelerating the remediation time of a range of organic 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 the field. Life-Cycle Analysis (LCA) and Life-Cycle Cost (LCC) will demonstrate the technical and economic feasibility of the solutions suggested.



The GREENER team

Technologies



GREENER include technologies such as biopile (soil/ sediment), ecopile (soil/sediment), phycoremediation (water), phytoremediation (soil/sediment and water), a 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).

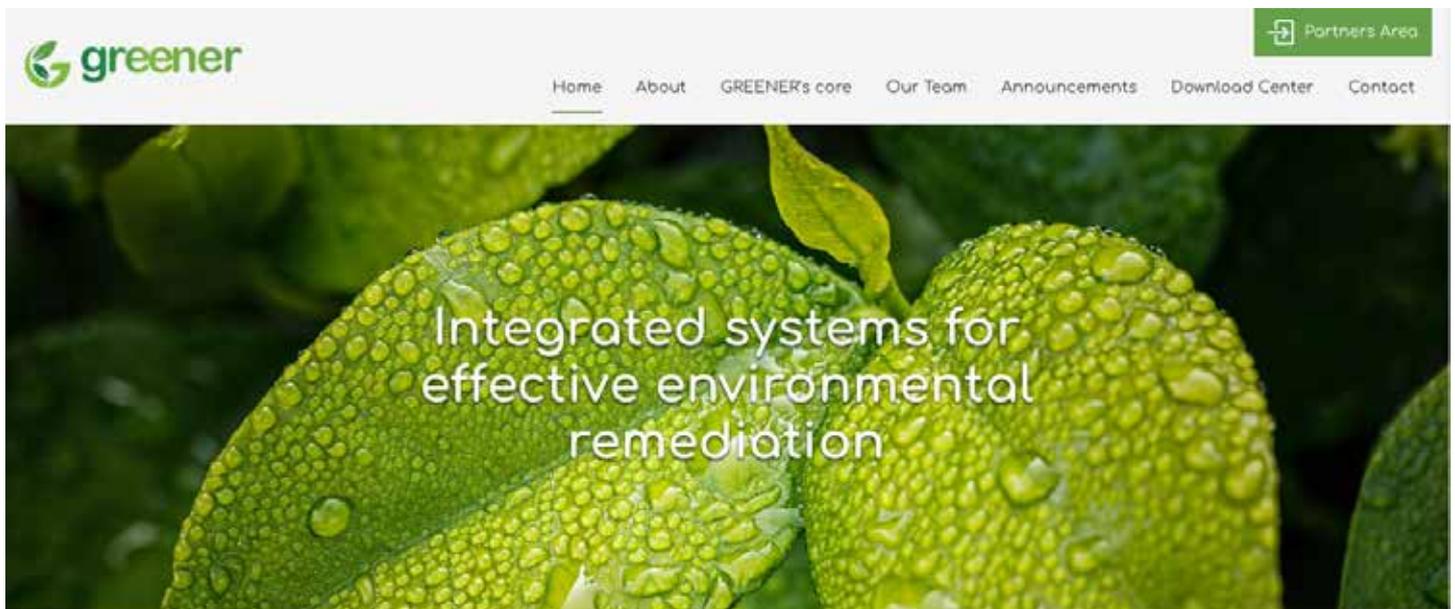


Project Website and Videos

Project Website

The GREENER webpage is daily updated with news from the project's progress as well as updates of the latest activities from the scientific community interested in bioremediation!

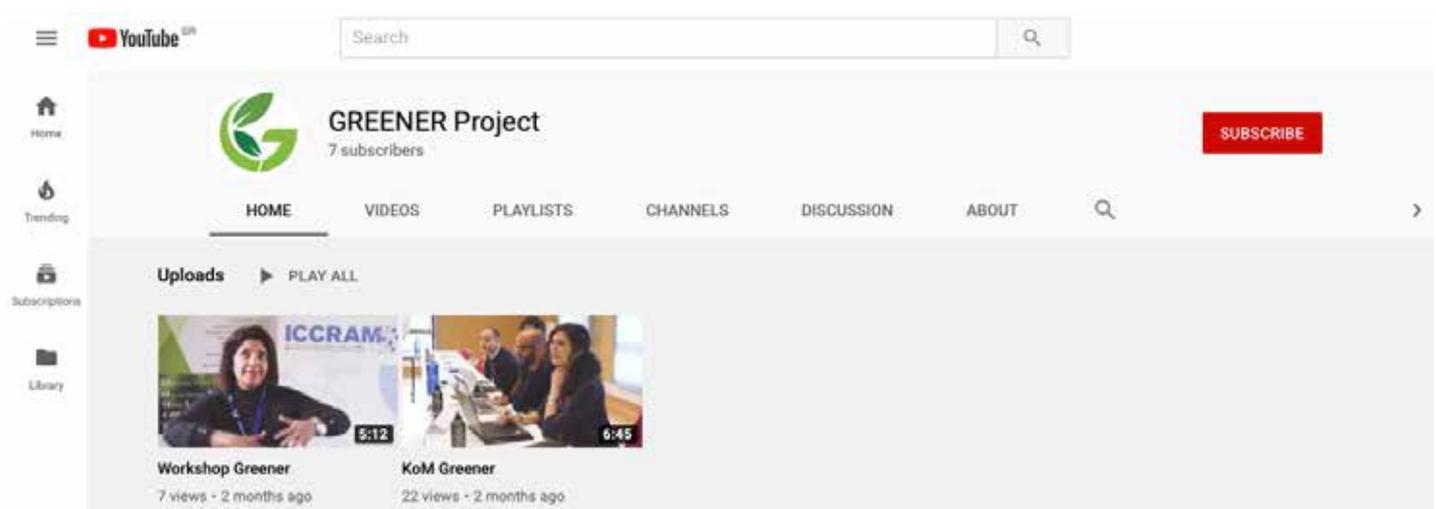
<https://www.greener-h2020.eu>



Project videos

GREENER Project has its own YouTube channel containing the first two Project videos!

<https://www.youtube.com>



Project 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 define suitable business models for diversification, exploitable results and identify potential value chains
- 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



GREENER Physical Meetings

The project's kick-off meeting was held on the 1st and 2nd of April in Burgos, Spain hosted by the University of Burgos.



Rocio Barros from ICCRAM which organised the International H2020 Workshop in Environmental Biotechnology talked about GREENER Project.

The 6M GREENER Project Meeting



The 6M GREENER project meeting took place in Brussels on 9 October 2018. It was a good opportunity for partners to meet and discuss the progress of the running work packages, their results and the upcoming activities. The first review meeting of the project took place on the following day, where the project officer and expert monitor provided valuable feedback on the future tasks of partners.

Attendance to Events

International Workshop in Environmental Biotechnology

The International Workshop in Environmental Biotechnology: “Towards a GREENER world”, was launched together with GREENER’s kick-off meeting (1-2 April) and was a unique opportunity to learn about the project and to discover successful remediation case studies at European and International level.



EuroNanoForum2019



AXIA Innovation attended the EuroNanoForum 2019 (ENF19) event that took place in Bucharest Romania, during 12-14 June 2019.



10th National Conference on Environmental Chemistry (NCEC 2019)



Nanjing Tech Uni (NTU) participated in the 10th National Conference on Environmental Chemistry (NCEC 2019) which was held in Tianjin, China, August 15-19 2019, with the theme of “Facilitating the Prevention and Control of Environmental Pollution, Launching a New Era of Environmental Science”.

Attendance to Events

2nd International Conference on Non-point Source Pollution Control and Aquatic Ecosystem Protection (NPAE-2019)



Nanjing Tech Uni (NTU) attended the 2nd International Conference on Non-point Source Pollution Control and Aquatic Ecosystem Protection took place on 20-23 of September 2019. The conference held by Institute of Soil Science and Institute of Hydrobiology, Chinese Academy of Sciences on behalf of International Bioprocessing Association, the Soil Science Society of China and the Geographical Society of China.

China and Korea 2019 Environmental Technology Exchange and Cooperation Symposium

Qingdao University of Science and Technology (QUST) participated in the China and Korea 2019 Environmental Technology Exchange and Cooperation Symposium that took place on 21-22 of August 2019 in Qingdao, China.



Meeting of the Bioenergy Strategic Coordination Group



**Biotechnology and
Biological Sciences
Research Council**

The University of Surrey participated in the meeting of the Bioenergy Strategic Coordination Group (Biotechnology and Biological Sciences Research Council, UKRI) which was held in Swindon (UK) on 9 of September 2019.

Attendance to Events

Dissemination activities by Mendel University



GREENER Project partner, Mendel University in Brno (Department of Chemistry and Biochemistry) has disseminated the GREENER Project by participating in different actions. In particular, GREENER Project was popularized within Czech science in night open days on 27.09.2019, organized by Mendel University. Also, the University has disseminated the project in Czech TV on 26.11.2019

www.ceskatelevize.cz



Publications

GREENER Project Partners Published their Scientific Works entitled:

UAM, Daniel Garrido-Sanz, Miguel Redondo-Nieto, María Guirado, Oscar Pindado Jiménez, Rocío Millán, Marta Martín and Rafael Rivilla, “Metagenomic Insights into the Bacterial Functions of a Diesel-Degrading Consortium for the Rhizoremediation of Diesel-Polluted Soil”, *Genes*, Open Access Journal, 10(6), MDPI, 2019, p. 456 (DOI: 10.3390/genes10060456)

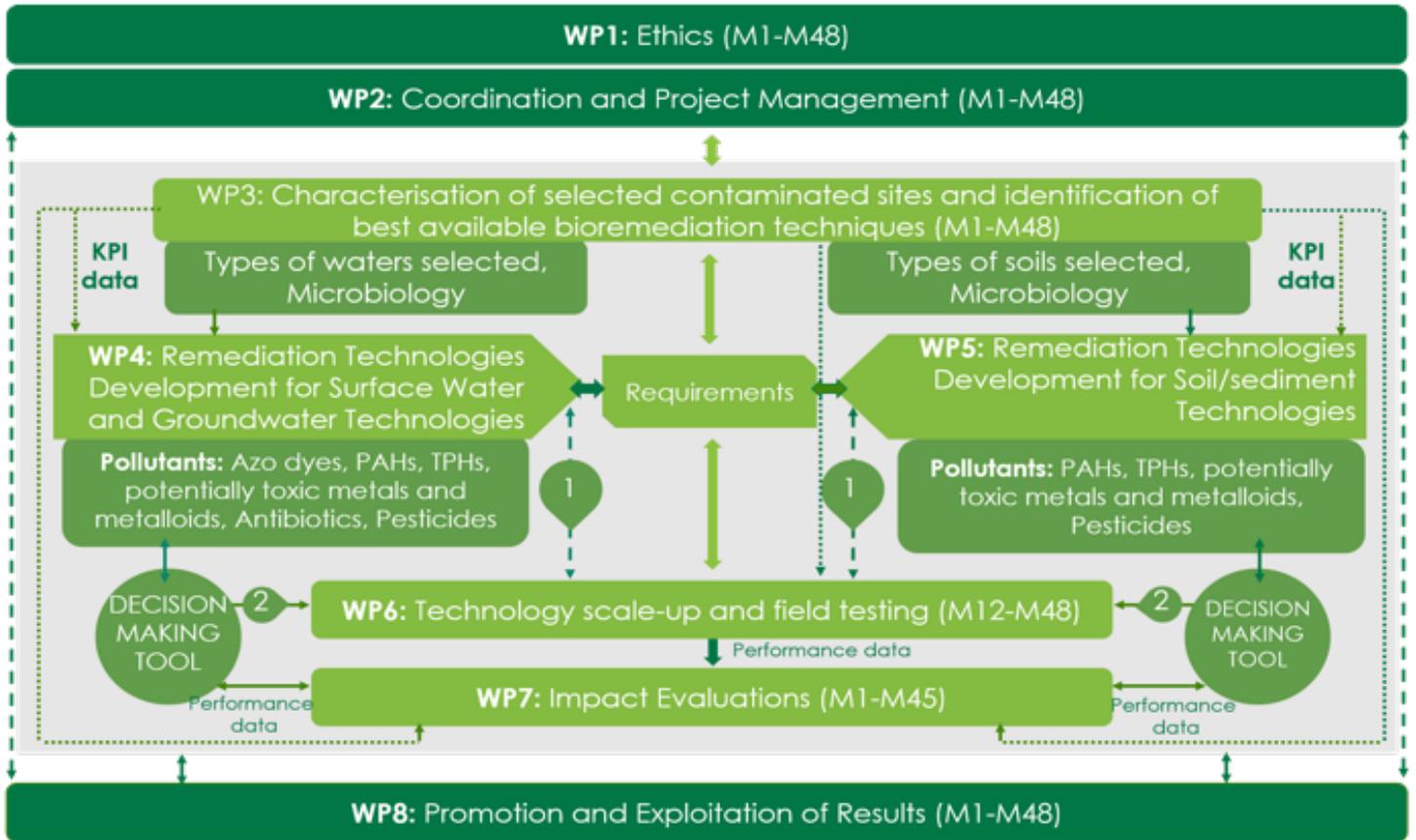
JiaU, SaraschandraNaraginti, Yang-YangYu, Zhen Fang, Yang-Chun Yong, “Novel tetrahedral Ag₃PO₄@N-rGO for photocatalytic detoxification of sulfamethoxazole: Process optimization, transformation pathways and biotoxicity assessment”, *Chemical Engineering Journal*, 375, ELSEVIER, 2019, p. 122035 (DOI: 10.1016/j.cej.2019.122035)

JiaU, Yang-Yang Yu, Qian-Wen Cheng, Chong Sha, Yu-Xuan Chen, Saraschandra Naraginti, Yang-Chun Yong, “Size-controlled biosynthesis of FeS nanoparticles for efficient removal of aqueous Cr(VI), *Chemical Engineering Journal*, 379, ELSEVIER, 2020, p. 122404, (DOI: 10.1016/j.cej.2019.122404)

QUST,WangHuihui;KuangShaoping;LangQiaolin;YuWenjuan,“Effects of Aged Oil Sludge on Soil Physicochemical Properties and Fungal Diversity Revealed by High-Throughput Sequencing”, *Analysis, Archaea-An International Microbiological Journal*, 2018.9.6, Hindawi, 2018, 8 (<https://doi.org/10.1155/2018/9264259>)

NTU, Xiayuan Wu, Zuopeng Lv, Zixuan Chen, Xueru Chen, Yongdi Liu, Honghua Jia, Jun Zhou, Xiaoyu Yong, Xinxin Xie, Ping Wei, Yan Li, “Combat poison with poison: positive effects of concomitant heavy metals and their reductants on hexavalent chromium removal in microbial fuel cells” *Chemosphere*, Elsevier

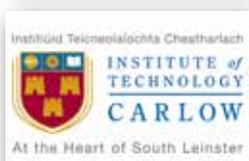
Progress Updates



Project Partners

exergy

Engineering that inspires



GREENER is a multidisciplinary research innovation project involving 21 entities from 9 European countries and China (four Chinese International Partners from three different regions). The multidisciplinary GREENER team combines all relevant skills and organizations needed to address the challenge of demonstrating new biotechnologies for environmental remediation.

For more details visit:

www.greener-h2020.eu/en/static/partners

21 Partners

17 EU

& 4 Chinese partners



48 Months

4 Demo Sites



4.9M Funding



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