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BIOSYSMO AND MIBIREM STRENGTHEN EUROPEAN BIOREMEDIATION COLLABORATION AT FLORENCE MEETING



On 23 June 2026, the BIOSYSMO and MIBIREM consortia met in Florence, Italy, for a joint meeting dedicated to strengthening collaboration and exploring synergies in the field of environmental bioremediation. The meeting took place in the run-up of the BioRemid 2026 – the bioremediation

conference, in the same location provided by the conference host prof. Simona di Gregorio of the University of Pisa – a renowned MIBIREM partner.

The joint meeting brought together researchers, project coordinators, and partners from both Horizon Europe projects

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to exchange knowledge, review recent progress, and discuss common scientific and technological challenges. Discussions focused on microbiome-based remediation, microbial consortia, environmental biotechnology, data integration, and innovative approaches for restoring contaminated soils and water resources.

Participants also explored opportunities to accelerate the transfer of research results into practical applications, addressing topics such as technology validation, field implementation, stakeholder engagement, and regulatory considerations. The meeting highlighted the complementary strengths of the two projects, with BIOSYSMO contributing expertise in biosystem design and modelling approaches, and MIBIREM sharing experience in microbiome-driven remediation strategies and field-scale applications.

The Florence meeting further reinforced the strong partnership between the two projects and confirmed a shared commitment to advancing sustainable and scalable bioremediation solutions through continued collaboration within the ALL4BIOREM Cluster and beyond.

KEY TAKEAWAYS FROM THE BIOSYSMO-MIBIREM MEETING

According to Dr Sara Gil Guerrero (IDENER), BIOSYSMO Project Coordinator, the meeting provided a valuable opportunity for both projects to present their progress, achievements, and challenges while identifying complementarities between their approaches to environmental bioremediation. BIOSYSMO showcased advances across several remediation

systems, including plant-microbe technologies, microbial consortia, and bioelectrochemical systems, demonstrating promising results for the treatment of mixed contamination in soils, sediments, and water. In several applications, removal efficiencies exceeded 90%, highlighting the benefits of combining complementary biological and technological processes.

Particular attention was given to collaborative work on **hexachlorocyclohexane (HCH/lindane)** and **chlorinated ethenes**, which provided concrete examples of the synergies between the two projects. Joint analyses performed across contaminated sites studied within BIOSYSMO and MIBIREM demonstrated that different microbial communities can develop similar pollutant degradation capacities, while local environmental conditions strongly influence remediation



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performance. Discussions also highlighted the successful collaboration between LEITAT and SENSATEC, where microbial consortia were tested in bioelectrochemical remediation systems for contaminated groundwater, producing encouraging degradation results and opening new opportunities for optimisation.

A key conclusion from the BIOSYSMO perspective was that effective bioremediation requires integrated

and site-specific approaches combining microbial capabilities, technological solutions, and environmental understanding. The meeting further demonstrated how the exchange of knowledge, microbial resources, and technical expertise between projects can accelerate the development of robust and scalable remediation technologies capable of addressing real-world environmental challenges.

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From the MIBIREM perspective, **Dr Thomas Reichenauer (AIT), MIBIREM Project Scientific Coordinator**, emphasised that the Florence meeting clearly demonstrated the value of close cooperation between European projects working on similar challenges. One of the most visible outcomes of this collaboration has already been achieved through a joint scientific publication in the *Journal of Hazardous Materials*, which reported the isolation of 64 bacterial enrichment cultures capable of degrading hexachlorocyclohexane (HCH) and identified a previously unknown degradation pathway independent of the well-known lin-pathway.

Thomas also highlighted ongoing cooperation between BIOSYSMO and MIBIREM partners involving the exchange of specialised microbial cultures for testing in bioelectrochemical remediation applications. More broadly, the meeting provided an opportunity to present the progress of the **MIBIREM Toolbox**, which now contains over **320 fully genome-sequenced bacterial strains** targeting the degradation of petroleum hydrocarbons, HCH, and cyanides. These strains will become available for researchers and practitioners in 2027. In parallel, MIBIREM has developed molecular monitoring tools and launched the first modules of **MiBiPret**, a predictive tool designed to support the implementation of bioremediation at contaminated sites. Results from ongoing field demonstrations further suggest that bioremediation approaches can achieve significantly lower carbon footprints compared to conventional remediation methods. Both coordinators agreed that the Florence meeting reaffirmed the importance of cross-project collaboration in advancing microbiome-based bioremediation and highlighted the potential of combining complementary expertise to accelerate innovation, support field implementation, and maximise the impact of European research in environmental restoration.



MEDIA CONTACTS

BIOSYSMO COMMUNICATION TEAM

Email: info@biosysmo.eu

Website: www.biosysmo.eu

MIBIREM COMMUNICATION TEAM

Email: mibirem@rtds-group.com

Website: www.mibirem.eu