



BIOREMEDIATION CLUSTER OF EU PROJECTS

This cluster is formed by **7 EU projects** focusing on Bioremediation that came together to exchange knowledge on **innovative bioremediation solutions** to clean up Europe's environment. By relying on a broad range of cutting-edge, cross-cutting biotechnologies, they seek to address the highly complex and varied pollutant mixtures present in the soil and (ground)water of contaminated sites.

Bioremediation is a process that uses microorganisms to degrade, detoxify, and eliminate pollutants from the environment. Bioremediation technologies are important in Europe because they offer **a sustainable and cost-effective solution** for cleaning up contaminated sites and **restoring the environment**.

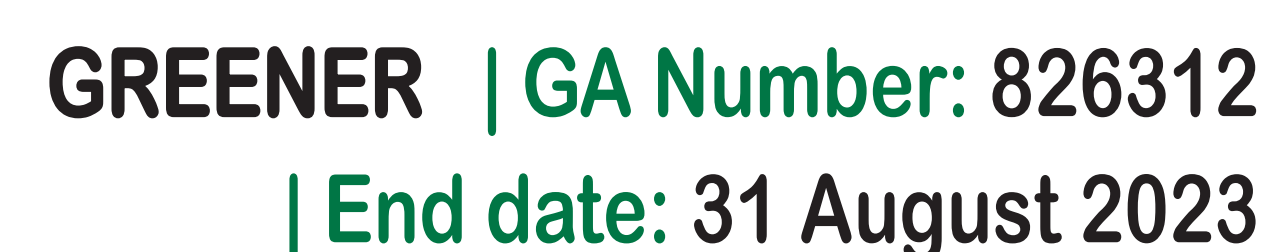
HERE ARE SOME REASONS WHY BIOREMEDIATION TECHNOLOGIES ARE IMPORTANT IN EUROPE:

- 1. Environmental Protection:** Bioremediation technologies are crucial for protecting the environment in Europe, where the industrial and agricultural activities have left behind numerous contaminated sites. These technologies help to reduce the environmental impact of pollutants and restore the ecosystem balance.
- 2. Economic Benefits:** Bioremediation is a cost-effective method for cleaning up contaminated sites compared to traditional remediation techniques like excavation and disposal. The use of bioremediation technologies can help to save costs on transportation, disposal, and remediation equipment.
- 3. Sustainable Approach:** Bioremediation is a sustainable approach to remediation that does not involve the use of chemicals or other harmful substances. The use of bioremediation technologies can help to reduce the amount of waste generated during the remediation process and promote sustainability.
- 4. Regulatory Compliance:** The European Union has established strict environmental regulations that require the cleanup of contaminated sites. Bioremediation technologies can help to meet these regulatory requirements and avoid fines and legal action.
- 5. Public Health:** Bioremediation technologies are important for protecting public health in Europe. The use of bioremediation technologies can help to eliminate pollutants that pose a risk to human health, such as heavy metals and toxic chemicals.



Electricity driven low energy and chemical input technology for accelerated bioremediation

Delivered 2 innovative sets of novel electromicrobiology-based environmental biotechnologies, facilitated/improved electron transfer during microbial degradation processes.



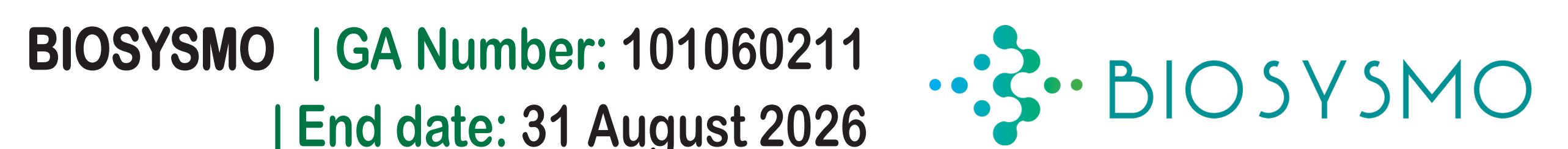
Integrated systems for effective environmental remediation

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.



Enhanced in situ bioremediation for contaminated land remediation

Develops scientific and technical innovations for in situ bioremediation technologies that will be directly developed into industrial processes for the rapid efficient cost-effective treatment of a range of environmental pollutants



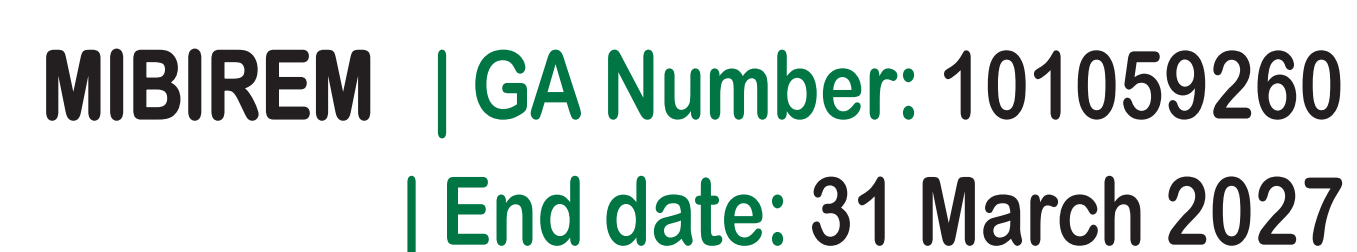
Bioremediation systems exploiting synergies for improved removal of mixed pollutants

Develops a computationally-assisted framework for designing and optimizing synergistic biosystems combining the required pathways and traits to achieve the most efficient degradation and sequestration of pollutant mixtures.



Symbiotic, circular bioremediation systems and biotechnology solutions for improved environmental, economic and social sustainability in pollution control

Improves the effectiveness, sustainability, circularity and cost-efficiency of bioremediation and revitalisation strategies for soils, sediments, surface water and groundwater.



Toolbox for microbiome based remediation

Exploits microbiomes for bioremediation of contaminated sites & develops a unique and innovative technological toolbox for microbiome-based bioremediation to clean up contaminated sites across Europe.



New system-driven bioremediation of polluted habitats and environment
Develops bioremediation/revitalization strategies based on the assembly of systems of available and new biologics developed and applied on matrices from different EU contaminated sites.

