



ContaminatEd land Remediation  
through Energy crops for Soil Improvement  
to liquid biofuel Strategies

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## PRESS RELEASE

### 4<sup>th</sup> physical meeting of the EU research project CERESiS at Naples, Italy

23-24 November 2023

The fourth physical meeting of the CERESiS project was scheduled on the 23<sup>rd</sup> and 24<sup>th</sup> of November, in Naples. Consiglio Nazionale delle Ricerche (CNR), one of CERESiS partners, hosted the meeting in its facilities and also provided an extensive visit to the various laboratories. The overall goal of the meeting was to discuss the progress made so far, and any pending issues, aiming at putting everything in place towards the finalization of the project. Significant progress has been achieved within the three pillars of the project.

Furthermore, at this physical meeting, CERESiS partners invited Mrs. Natasa Kannavou, Policy Advisor at the European Parliament, to talk about Soil Monitoring and Resilience (proposal for a European Parliament Directive). Finally, a separate session was held by the WIRE project which was invited to present its views on biofuels production.

#### Update on the phytoremediation trials

The work is ongoing, and the phytoremediation pillar is on track with 16 field and greenhouse trials planted, using soils from 9 contaminated and brownfield sites in UK, Italy, Brazil, and Ukraine. Furthermore, in the UK, endpoint soil and biomass analysis has been completed at the 4 new identified phytoremediation sites, with all biomass collected to indicate yields and provide highly contaminated biomass samples for downstream processing. Furthermore, a study on the phytoremediation trial data has shown a significant gap in the literature for field trials on contaminated sites where the biomass yield, soil and biomass contamination are reported. Therefore, 27 new case studies will be added to fill this gap. Finally, partners from Brazil are currently carrying out the last harvest and analysis of soil, biomass, and roots of the five experiments that they are conducting.

#### Update on the Decision Support System updates

After concluding the CERESiS DSS architecture the focus has been on developing the CERESiS DSS platform. The CERESiS DSS platform is designed as a cloud-native web application that will support decisions on defining, assessing, and optimizing complete pathways from phytoremediation to biofuel production, including partial pathways, depending on the



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particular interest and requirement of the potential DSS users. At the moment the work is focused on developing the first version of the CERESiS DSS platform and more specifically integrating the optimization solution developed by the National Technical University of Athens (NTUA) and also developing the Machine Learning models that will support decision support process.

### Update on the trialled technologies

Significant progress has been achieved in Pillar 3 (Trialled technologies). The latest updates are that the optimization of the pyrolysis plant for the production of clean biofuel from contaminated biomass has been concluded. The produced bio-oil still contains small amounts of contaminants which are expected to be removed through the subsequent micro filtration step. The plant will be operated in the next months with many types of contaminated biomass samples to explore their potential in terms of bio-fuel production. Furthermore, with regards to SCWG, a new process design has been implemented and many laboratory tests have shown good results in terms of gasification efficiency and long-term operation. Gasification efficiencies of about 95% and operation for more than 100 hours (practically unlimited) could be achieved. Only minor differences were visible in the gasification of different CERESiS biomasses. In the upcoming last period of the project this lab-plant design will be further optimized to develop the optimal solution for SCWG of the CERESiS biomasses.

### WIRE session

WIRE COST Action CA20127 participated in a Special Session within the project meeting of CERESiS project during which, five talks covered the fundamental topics of both projects. One of the pillars of WIRE COST Action is the concept of Biorefinery, the sustainable processing of several kinds of waste and biomass into a spectrum of marketable products and energy. On the other side, CERESiS has the key message of the valorization of contaminated lands and biomasses from phytoremediation into clean biofuels by thermochemical processes. The WIRE participants and CERESiS partners attended the event with fruitful discussion and new ideas on several topics of the current European agenda, creating networking for future collaborations.

The WIRE talks were carried out by David Chiaramonti (POLITO) with “Biofuel and Biochar Production Regulations”, Roberto Solimene (STEMS - CNR) with “Production and Valorization of Liquid from Contaminated Feedstocks (Sludge)”, Margarida Gonçalves (NOVA University of Lisbon) with “Waste Derived Chars: Sources and Applications”, Nikolaos Tsongidis (CERTH) with “Concentrated Solar Thermal Systems Integration into Thermochemical Processes: Examples and Opportunities”, and Rui Galhano dos Santos (IST) with “Application of bio-oil other than fuel with focus on contaminated feedstock”.

A **highlight** of the meeting was the visit to the laboratories of CNR. Partners had the opportunity to have a look at four different labs within CNR, where experiments, with respect



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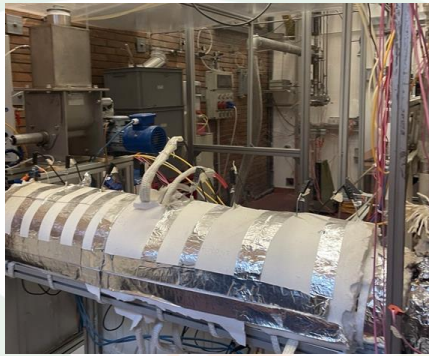


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to CERESiS activities, are conducted. For example, the auger reactor was presented, where fast pyrolysis experiments of the contaminated biomass are being developed and trialled. Photos of the auger reactor and the Consortium are presented below.

### Photos



Auger reactor for fast pyrolysis  
of contaminated biomass, CNR  
facilities



Consortium partners at CNR

### For further information

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