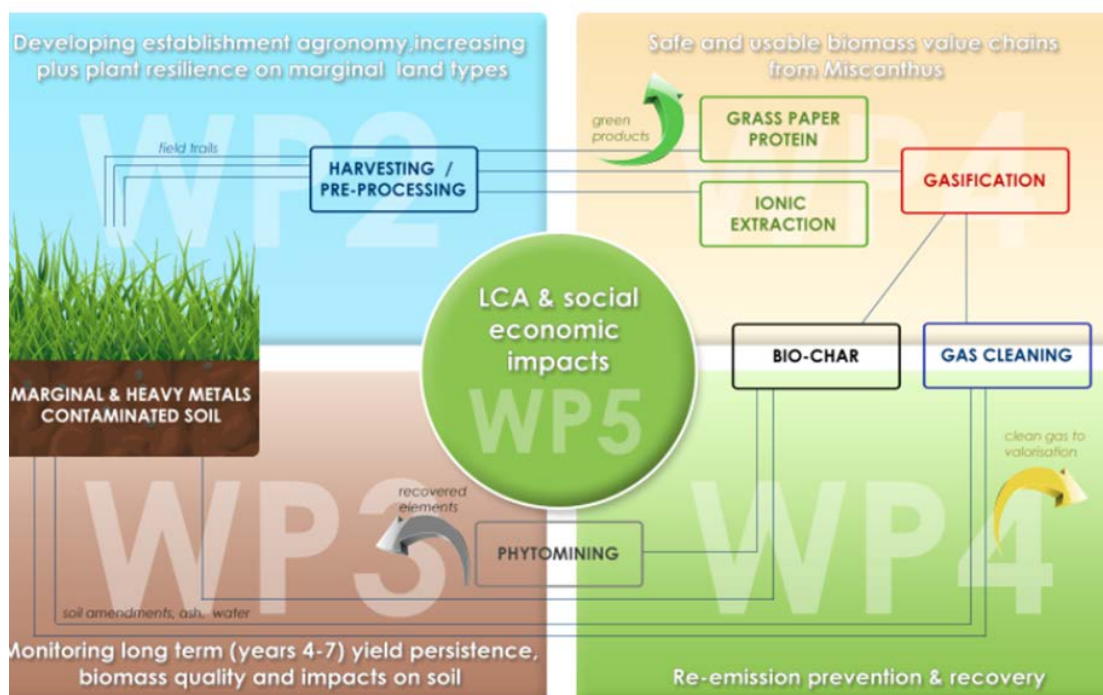


MISCOMAR+

MISCANTHUS FOR CONTAMINATED AND MARGINAL LANDS PLUS



3° Call:	2019
Project period:	07/2020 – 06/2023
Topic:	Sustainable bioenergy and bioproducts with land remediation
Keywords:	Perennial bioenergy, biomass feedstock, metal recovery, agronomy for contaminated and marginal land types, phytostabilization
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Project partners:	Institute for Ecology of Industrial Areas, Poland; Research and Innovation Centre Pro-Akademia, Poland; University of Hohenheim, Germany; Gießereitechnik Kühn, Germany; University of Nottingham, UK; Imperial College of London, UK; Terravesta Assured Energy Crops Ltd, UK; TerrAffix Soil Solutions Ltd, UK
Total funding:	1.344.000 €
Website:	projects.au.dk/faccesurplus/research-projects-3rd-call/miscomar/



FACCE SURPLUS
SUSTAINABLE AND RESILIENT AGRICULTURE
FOR FOOD AND NON-FOOD SYSTEMS



BACKGROUND

Bioenergy is a key element of the EU renewable strategy and exists at the interface of policies on agriculture/land use and energy generation. The majority of biofuels are still produced from annual food crops grown on agricultural land, whereas the majority of solid biomass used for heat and power is woody and comes from forests. To avoid tension between food and fuel production, changes to the current approach are proposed by the European Commission to grow perennial energy crops on medium or low quality agricultural land wherever possible. Miscanthus on Marginal, Contaminated and industrially damaged Lands (MaCL) represents smart bioenergy because biomass is produced by the most sustainable means on land that is currently unsuitable for food production. Our approaches have potential to boost productivity from poorly functioning land, whilst improving ecosystem services.

OBJECTIVE

MISCOMAR+ builds on knowledge from former FACCE SURPLUS projects, MISCOMAR and Supervalue, to maximize valorization. In MISCOMAR+ we are de-risking crop establishment by developing innovative agronomies for MaCL, developing innovative biomass value chains, and evaluating environmental, social, and economic sustainability. The specific objectives are as follows:

1. To decrease establishment risks on MaCL by evaluating a range of agronomic treatments with Miscanthus hybrids on three sites;
2. To monitor long term yield persistence, biomass quality and impacts on soil health indicators;
3. To develop and optimize sustainable, economic and environmental-friendly valorization options for biomass from MaCL;
4. To perform analyses of the socio-economic and environmental impacts of growing the crop on MaCL, and using it in selected valorisation chains.

METHODOLOGY

We are developing establishment agronomy on land reconstituted after lignite mining in Germany and heavy metal contaminated land in Poland, and testing a range of soil preparation techniques, including biochar. We are investigating the impacts of soil on biomass quality and utilization in the circular economy, and exploring the potential for conversion through gasification with recovery of contaminants after gasification. Gasification residues will also be tested for suitability as fertiliser. In Germany, the potential for uncontaminated Miscanthus fibres for the manufacture of packaging paper will be tested.

FUTURE

Our expected outcome is to provide evidence that Miscanthus biomass produced on MaCL provides ecosystem benefits, and commercially attractive biomass yield, with quality thresholds for conversion to specific bio-based products that can be used to replace non-renewable and less sustainable alternatives. MISCOMAR+ drives innovation for a number of new technologies at TRL 3-5, which can rapidly move to TRL 6-9 through our SME partners. Research translation from this project can deliver on most UNEP Sustainable Development Goals, particularly 7, 8, 13 & 15.