Press release

Phy2Climate virtual kick-off meeting: new project officially launched.

Phy2Climate is a project funded by Horizon 2020 EU's Research and Innovation programme, aiming at combining clean biofuel production and phytoremediation solutions from contaminated lands worldwide.

Florence, February 2021

The overall objective of the H2020 Phy2Climate project is to build the bridge between the phytoremediation of contaminated sites with the production of clean drop-in biofuels. These biofuels will present no Land Use Change risks, thus the phytoremediation will de-contaminate lands from a vast variety of pollutants and make the restored lands available for agriculture, while improving the overall sustainability, legal frame and economics of the process. In this way,–Phy2Climate aims at significantly contributing to the Mission Innovation Challenge for sustainable biofuel production and to almost all UN Sustainable Development Goals.

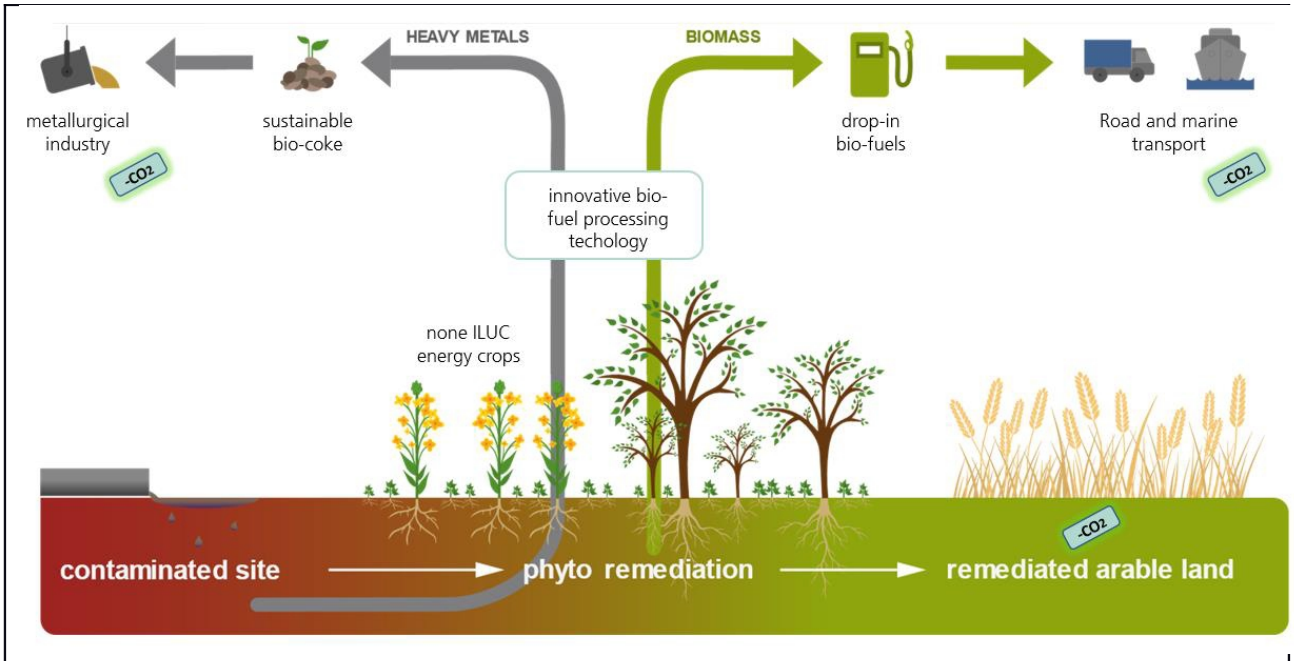
It is unquestionable that there is a growing demand for land, which increases tensions among the different groups of users. Land is a finite resource and the main competitors are Feed, Food & Fuel. From the available worldwide arable land about 71% is dedicated to animal feed, about 18% to food and only about 4% to biofuels (another 7% is for material use of crops). The multiple uttered food vs fuel debate is actually a food vs feed debate. However, the increasing demand for biofuels and biobased products also contributes to this tension, but in a much smaller dimension. The increasing land demand for energy crops leads to direct and indirect Land Use Change (iLUC), causing deforestation, soil erosion, loss of biodiversity and vital water resources.

On the other hand, there is a significant area of land which is contaminated and therefore unusable for any purpose. Even worse, the exploration, registration as "contaminated site" as well as the management are very cost-intensive.
Soil pollution degrades major ecosystem services provided by soils. This directly affects human and environmental health, and it reduces food and water safety. Soil pollution is omnipresent and according to several studies and available official numbers, a large number of contaminated sites are existing. In Europe alone there about 2.5 Mio suspected sites, of which about 600,000 sites are officially registered. In the USA it is estimated that contaminated sites cover about 9 Mio hectare and in China between 13 to 20 Mio.

The method of phytoremediation consists of the use of plants and their associated microbes to stabilize, degrade, volatilize and extract soil pollutants. While it is considered a cost-effective and environmentally friendly method, there has been still no significant commercial application of phytoremediation and related produced crops. One of the most important remaining hurdles for commercial implementation of phytoextraction of heavy metals is the disposal of large amounts of the produced contaminated biomass. Currently, contaminated crops are treated as waste and end up in incineration plants or disposed in landfills. For both options gate fees incur and valorisation of the contaminated biomass is not given, making these options not economically attractive. The lack of innovation in the contaminated biomass conversion to added value products is evident and needs to be addressed.

In line with the strategy for EU international cooperation in research and innovation, the Phy2Climate approach synergistically interlinks the remediation of contaminated soil with the production of added value products. The Phy2Climate approach consists of the phytoremediation of contaminated sites in 5 regions all over the world (S-America, Europe and Asia) with different characteristics (type of contamination, type of soil, climate, legislation) and combines it with innovative cascadic biomass converting technologies to produce added value products such as drop-in biofuels for the road and shipping transport as well as bio-coke as substitution of petroleum coke (pet-coke) in the metallurgical industry. In case of heavy metal contamination of the soil, the extracted metals and metalloids will be also valorised in the metal smelting process.

Greenhouse Gas (GHG) reduction will be achieved by substituting fossil fuels and pet-coke as well as by enhancing the organic carbon content in the soil (Figure, *The Phy2Climate concept*). The approach has a significant potential to provide a sustainable and economic solution to lower the pressure in the land-use competition.



The Phy2Climate concept

LINKS and REFERENCES

- https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-sc3-res-37-2020
- https://sdgs.un.org/goals
- http://mission-innovation.net/our-work/innovation-challenges/sustainable-biofuels/
- Pérez, A. P., & Eugenio, N. R. (2018). Status of local soil contamination in Europe.
- Pilon-Smits, E. (2005). Phytoremediation. Annu. Rev. Plant Biol., 56, 15-39.

About Phy2Climate and Project Partners:

Phy2Climate is a H2020 project with title “A global approach for recovery of arable land through improved phytoremediation coupled with advanced liquid biofuel production and climate friendly copper smelting process”. The project consortium has put together 17 partners from 10 countries with long-term expertise in soil remediation, phytoremediation, biofuel technologies and energy processes, environmental and social sustainability, legislative analysis, communication and dissemination as well as business development

for innovative technologies. Phy2Climate project is coordinated by ITS-Förderberatung GmbH (Austria).
Partners include: Fraunhofer UMSICHT, Aurubis AG, Pro Umwelt, Trägerverein Umwelttechnologie-Cluster Bayern e.V. (Germany), Leitat Technological Center, Litoclean, Compañía Logística de Hidrocarburos (Spain), Institute of field and Vegetable Crops - National Institute of the Republic of Serbia, University of Novi Sad Faculty of Sciences, Public Water Management Company Vode Vojvodine (Serbia), Silesian University of Technology (Poland), ETA-Florence Renewable Energies (Italy), Hasselt University - Centre for Government and Law (Belgium), Instituto Nacional de Tecnología Agropecuaria (Argentina), Biovala SME (Lithuania), Central University of Jharkhand (India).

Project website: www.phy2climate.eu

Contacts:
Contact Point ITS-Förderberatung GmbH: Markus Ortner, Coordinator
Contact Point ETA-Florence: Stefano Capaccioli, Project Dissemination Team

The project has a total duration of 54 months from January 2021 to June 2025 and has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 101006912.