A global approach for recovery of arable land through improved phytoremediation coupled with advanced liquid biofuel production and climate friendly copper smelting process

Deliverable D7.9:

Video series available online No.1

presented by Phy2Climate project consortium

N°	Short	Beneficiary	Role
1	ITS	ITS Foerderberatung GmbH	CO
2	Fraunhofer	Fraunhofer Gesellschaft	BEN
3	AUR	Aurubis AG	BEN
4	LEITAT	LEITAT Technological Center	BEN
	CUJ	Central University of Jharkand	IL3P
5	IFVCNS	Institute of Field and Vegetable Crops	BEN
6	SUT	Silesian University of Technology	BEN
7	ETA	ETA Florence Renewable Energies	BEN
8	UHA	University Hasselt	BEN
9	INTA	National Institute of Agricultural Technology Argentina	BEN
10	UNSPMF	University of Novi Sad - Faculty of Sciences	BEN
11	BVA	Biovala	BEN
12	PWMCVV	Public Water Management Company Vode Vojvodine	BEN
13	LTC	Litoclean SL	BEN
14	CLH	Compania Logistica de Hidrocarburos S.A.	BEN
15	PUW	Pro Umwelt	BEN
16	UCB	Umwelttechnologie Cluster Bayern	BEN

CO: Coordinator, BEN: Beneficiary, IL3P: International linked 3rd party under article 14a

Firenze, 07.12.2023

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General Information

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Dissemination Level:	Public

Document Type		
PRO	Technical/economic progress report (internal work package reports indicating work status)	
DEL	Technical reports identified as deliverables in the Description of Work	**X**
MoM	Minutes of Meeting	
MAN	Procedures and user manuals	
WOR	Working document, issued as preparatory documents to a Technical report	
INF	Information and Notes	

Dissemination Level		
PU	Public	**X**
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	
CON	Confidential, only for members of the Consortium	

Version History				
Version number	Date	Reasons for release	Responsible	Comments
1.0	21/11/2023	Internal review	Coordinator	---
2.0	28/11/2023	Internal review	WP Leaders	---
3.0	07/12/2023	Final version	WP Leader	---

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY 4

2 INTRODUCTION 6

3 VIDEO ON THE PROJECT 7

4 PARTNERS INTERVIEWS 8

5 PROJECT WEBINARS 11

6 CONCLUSIONS 13

7 ACKNOWLEDGEMENTS 15

8 BIBLIOGRAPHY / REFERENCES 15

1 EXECUTIVE SUMMARY

The Phy2Climate D7.9 is a public report with the description of the first tranche of project videos available online.

In order to easing the engagement with the wider public outside of conventional stakeholder groups, ETA puts together a series of videos pitched towards a more general audience. These will focus on the rationale for the project, the project concept, the plant validation phase and the project results (with recordings taken on the Phy2Climate trial areas and pilot plant). Inputs from all partners, in addition to external experts and stakeholders, will be duly valorised. In addition, short interviews to partners and guests from relevant national/international organizations were and will be collected during the project meetings, workshops, a selection of Open Days, etc. All the videos are available on a dedicated Phy2Climate YouTube channel, https://www.youtube.com/channel/UCFDX-M2WpLLNOelCFSvKZ7A, as well as being displayed on the website, https://www.phy2climate.eu/resources/, and promoted through social media.

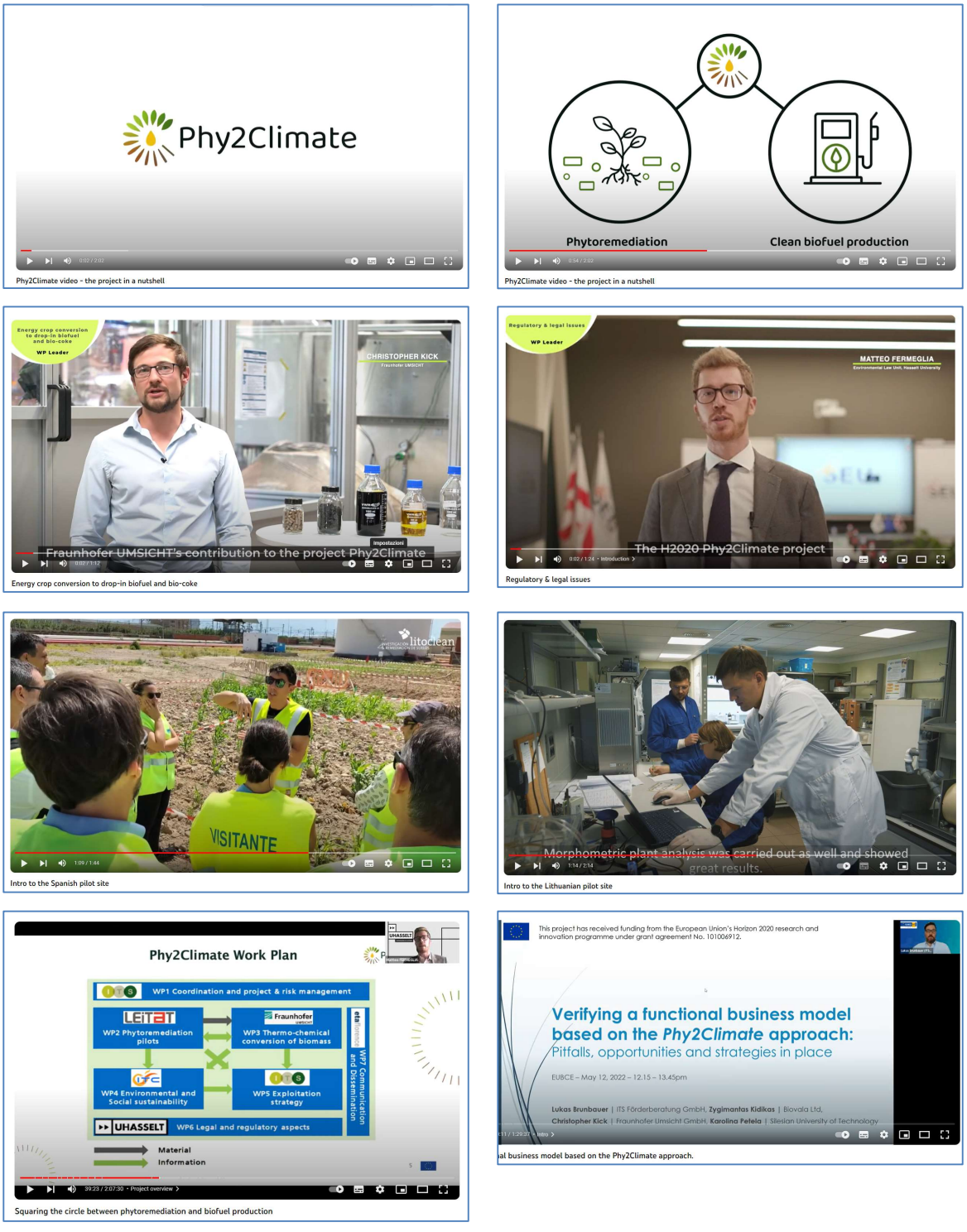
This report is strictly related and linked to the deliverables D7.1 - D7.3: Preliminary Communication & Dissemination Plan & periodic updates (First plan for communication, outreach and dissemination of the project results to different networks, stakeholders from public and private organisations and the scientific community), to the deliverable D7.5: Website and social media feeds online, and to the deliverable D7.6: 1st project workshop at the EUBCE (Organisation of a workshop, open to public and private stakeholders – policy and market experts, researchers – for the dissemination of the project results, held at the EUBCE 2022 as webinar).

Phy2Climate videos available online (Youtube channel, website and promoted through LinkedIn and X), are listed as follows:

- Phy2Climate video - the project in a nutshell;
- Energy crop conversion to drop-in biofuel and bio-coke (partner interview);
- Regulatory & legal issues (partner interview);
- Intro to the Spanish pilot site (partner contribution);
- Intro to the Lithuanian pilot site (partner contribution);

- Squaring the circle between phytoremediation and biofuel production (1st project workshop as webinar at the EUBCE 2022);
- Verifying a functional business model based on the Phy2Climate approach: Pitfalls, opportunities and strategies in place (thematic project workshop as webinar at the EUBCE 2022).

Some pictures from all project videos online:



Phy2Climate videos available online.

2 INTRODUCTION

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 presents 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.

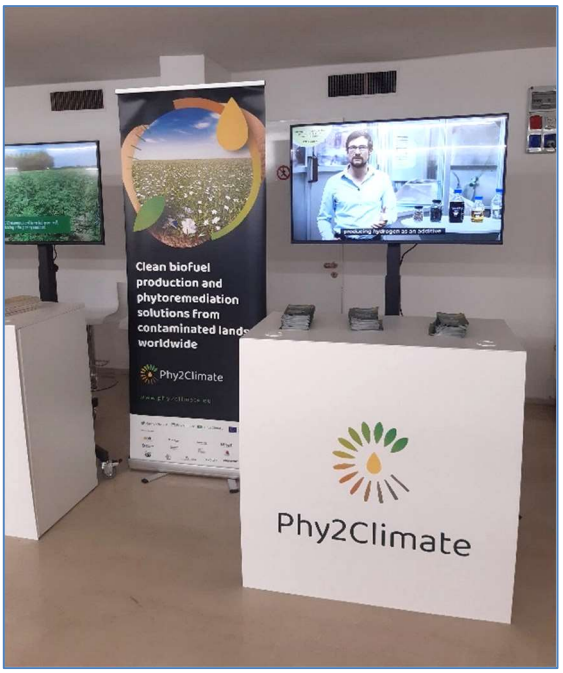
The project aims at validating five phytoremediation pilots in selected sites with the most common soil contaminants worldwide. These pilots aim to producing energy crops that will eventually feed a pilot biorefinery focused on the production of four types of clean drop-in biofuels for the road and shipping transport sectors at TRL-5.

In the course of the outreach activities the focus is set on the analysis and mapping of stakeholders’ value chain to identify the most relevant Phy2Climate stakeholders including remediation, contaminated site owners, transport, biorefinery and the metallurgical industry sector as well as to assess their position towards the project results to set up tailored engagement strategies. During this process connections with relevant stakeholders and end-users will be integrated throughout the project.

Videos and other digital contributions are prepared either for introducing the project and main activities (communication goal) or for showcasing specific outcomes and/or processes directly from the trials and pilot areas (dissemination goal), as long and short recording, interviews, etc., videos and digital products are and will also be important for easing the understanding of the Phy2Climate solution also to a non-technical audience.

This report will describe the first tranche of project videos available online, as well as how they are promoted, shown and utilised.

In addition to the online presence, all project videos were shown in a dedicated screen during the EUBCE 2023 at the Visibility Point for Phy2Climate project in the Exhibition Area of that event, as reported as follows:

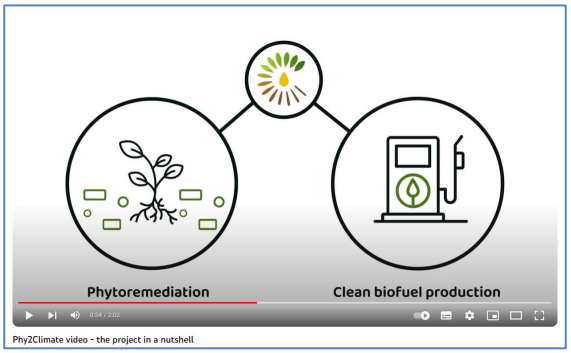


Phy2Climate project presented in the Exhibition Area, Visibility Point, EUBCE 2023, Bologna, Italy.

3 VIDEO ON THE PROJECT

The video “Phy2Climate video - the project in a nutshell”, in motion graphic, introduces to general scope of the project, focusing on the rationale for the project and the project concept.

Some pictures from the video “Phy2Climate video - the project in a nutshell”:



Phy2Climate project video pictures.

4 PARTNERS INTERVIEWS

These videos shortly present partners activities in different project Work Packages.

Christopher Kick, Fraunhofer UMSICHT, WP Leader

“Energy crop conversion to drop-in biofuel and bio-coke”

A biorefinery at pilot scale will be designed, constructed, commissioned and operated at relevant environment (TRL 5). The feedstock for the pilot biorefinery will be the energy crops delivered from all 5 phytoremediation pilots. Downstream processing will ensure the production of clean drop-in biofuels and bio-coke.

Fraunhofer UMSICHT´s contribution to the project is the conversion of the biomass used for the phytoremediation at the pilot sites by using a thermochemical conversion technology called the thermo-catalytic reforming process (short TCR®).

The products of this process namely bio coke, bio oil, an aqueous phase and gas will be individually upgraded.

The suitability of the bio coke as a substitute for conventional petroleum-based coke in the copper smelting process will be assessed. During the phytoremediation process, the heavy metals accumulate in the biomass. After the TCR® conversion carried out by Fraunhofer UMSICHT in Sulzbach-Rosenberg almost all the heavy metals will be concentrated in the bio coke.

Some pictures from the video “Energy crop conversion to drop-in biofuel and bio-coke”:

"Energy crop conversion to drop-in biofuel and bio-coke" video interview pictures.

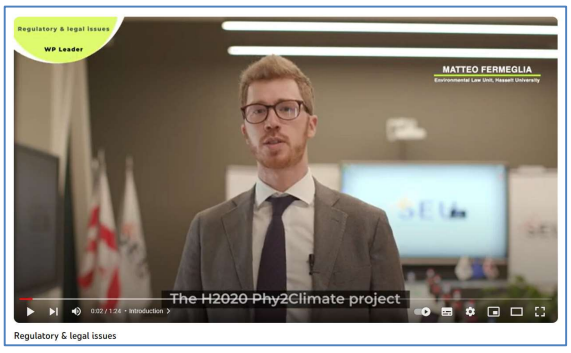
Matteo Fermeglia, Environmental Law Unit - Hasselt University, WP Leader

"Phytoremediation and recovery of materials: regulatory & legal issues and opportunities in the legal system of the EU and of other selected countries"

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.

In the European Union, we have hundred thousands of contaminated sites by whatever kind of contaminants, heavy metals for example. So what you do with phytoremediation is essentially you put plants in the contaminated land to extract the contaminants. And once you have these contaminated plants out of the phytoremediation technique, you would just convert it into advanced biofuels, so that you can produce sustainable fuels for aviation transport, for heavy-duty vehicles, and so on. So you see that the circularity of this approach is very much meaningful and prominent in terms of delivering the Green Deal objectives.

Some pictures from the video "Regulatory & legal issues":



"Regulatory & legal issues" video interview pictures.

Carlos Herrarte Marrón, LITOCLEAN

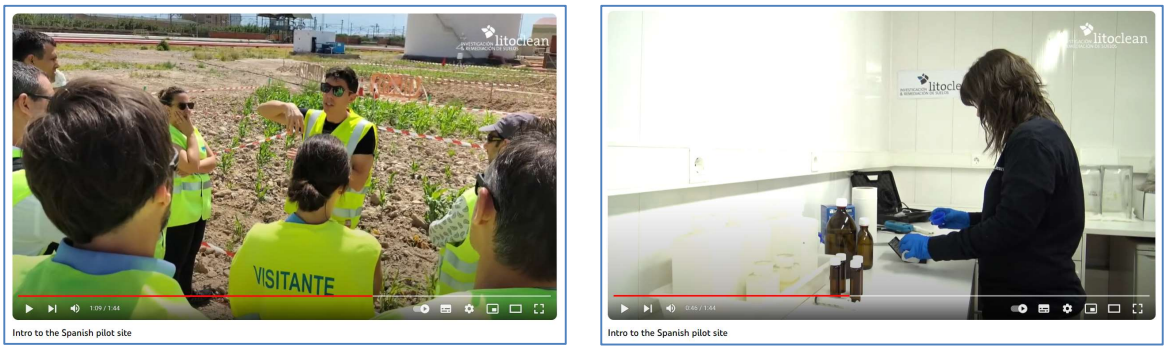
"Design and implementation of phytoremediation pilots" – "Intro to the Spanish pilot site"

BIOVALA

"Design and implementation of phytoremediation pilots" – "Intro to the Lithuanian pilot site"

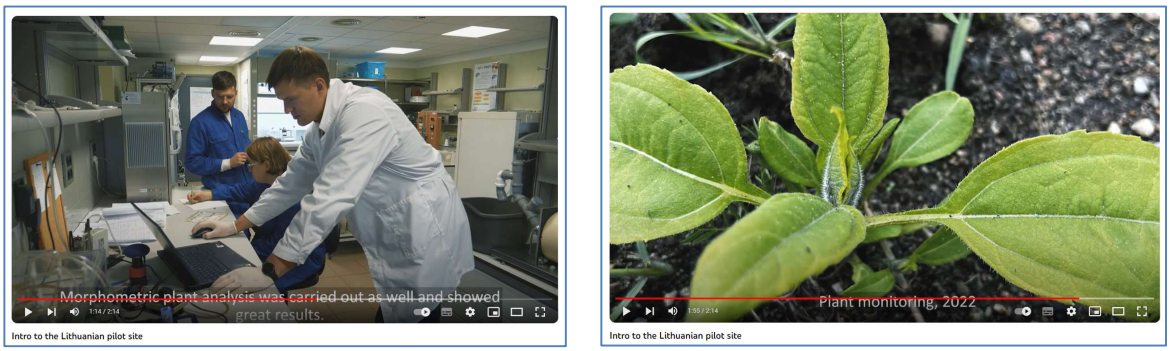
All activities related to phytoremediation in the project in all pilot sites: experimental planning, site preparation, implementation of the phytoremediation studies, monitoring, energy crop harvesting and pre-treatment and finally decommissioning of the pilot site.

Some pictures from the video "Intro to the Spanish pilot site":



"Intro to the Spanish pilot site" video interview pictures.

Some pictures from the video "Intro to the Lithuanian pilot site":



"Intro to the Lithuanian pilot site" video pictures.

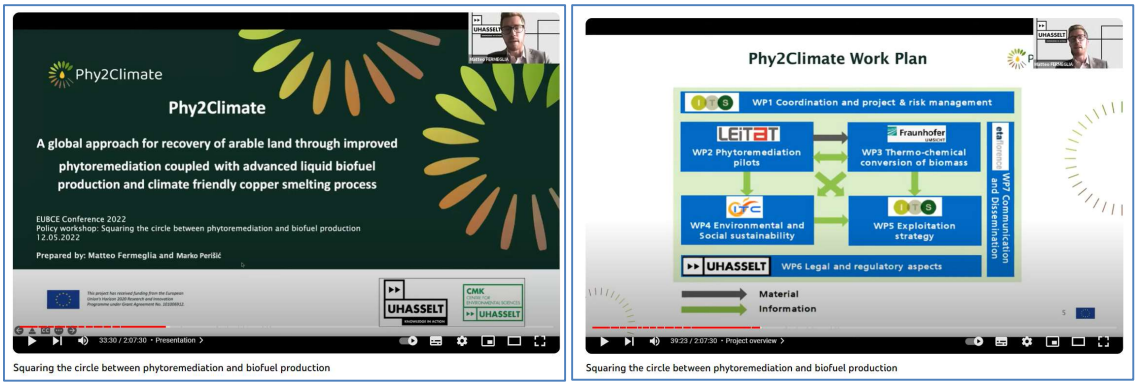
5 PROJECT WEBINARS

"Squaring the circle between phytoremediation and biofuel production":

Presented at EUBCE 2022, a joint event in which three H2020 projects, GOLD, Phy2Climate and CERESiS, presented their projects and discussed the regulatory and policy framework at the intersection of nature-based contaminated land/soil management and biofuels areas and highlighted existing gaps and blind spots, with a view to develop proposals to overcome such gaps.

Matteo Fermeglia and Marko Perisic, Hasselt University, Belgium, were speaker and panellist presenting and representing Phy2Climate project.

Some pictures from the video "Squaring the circle between phytoremediation and biofuel production":



"Squaring the circle between phytoremediation and biofuel production" video pictures.

"Verifying a functional business model based on the Phy2Climate approach: Pitfalls, opportunities and strategies in place":

This webinar is related to the Work Package "Exploitation and Business Potential". As the European project Phy2Climate is combining the remediation of contaminated soil through plants and the processing and use of resulting biomass as bio-combustibles, the aim of the workshop was to verify Phy2Climate's approach from a practical and economical point of view.

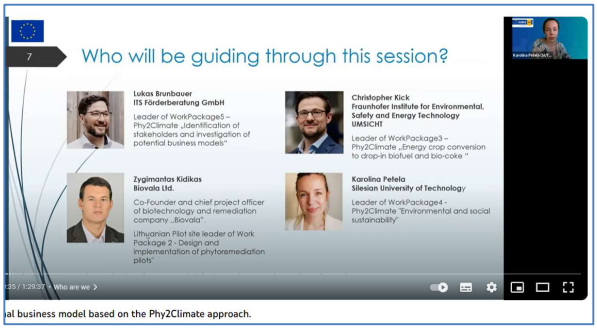
It is the implicit goal to identify potential obstacles as well as opportunities that may affect the feasibility of following through this approach. Participants of the workshop were conveyed the projects findings from a process and economic point of view and invited to share their expertise to improve the realization and pursuit of the Phy2Climate

overall goal of combining phytoremediation and the production of biofuels and bio-char in a beneficial manner.

Presented at EUBCE 2022, project partners introduced the status quo of the Phy2Climate process and implications regarding the economic value of the steps of the Phy2Climate approach through expert inputs, according to this agenda:

- Status quo - Process and value chain
  by Lukas Brunbauer, ITS Förderberatung GmbH
- Practical view on remediation specifically phytoremediation
  by Zygimantas Kidikas, Biovala Ltd.
- Practical view on the TCR-process: Biomass conversion and biofuel production
  by Christopher Kick, Fraunhofer Umsicht GmbH
- The social perspective – acceptance and relevance
  by Karolina Petela, Silesian University of Technology

Some pictures from the video “Verifying a functional business model based on the Phy2Climate approach: Pitfalls, opportunities and strategies in place”:



“Verifying a functional business model based on the Phy2Climate approach: Pitfalls, opportunities and strategies in place” video pictures.

There is another webinar, “Phytoremediation with energy crops for biofuel production”, organised for the 15th of March 2023.

In this webinar EU H2020 projects – GOLD, Phy2Climate, CERESiS – present real research data from phytoremediation field trials. These three H2020 projects have identified the same global problems, climate change and land scarcity, as the centre of their research objectives, and are aiming to find a solution by bridging the gap between remediation of contaminated land and the production of clean energy.

The first step in bridging the gap is by determining the best energy crops to grow on contaminated soil, that will not only facilitate the remediation of the soils but will also

provide the highest yield of feedstock for producing liquid biofuels. All three projects have now completed at least one year of field trials, on low iLUC lands, all around the world. In this webinar we will hear how successful the phytoremediation part of the research has been.

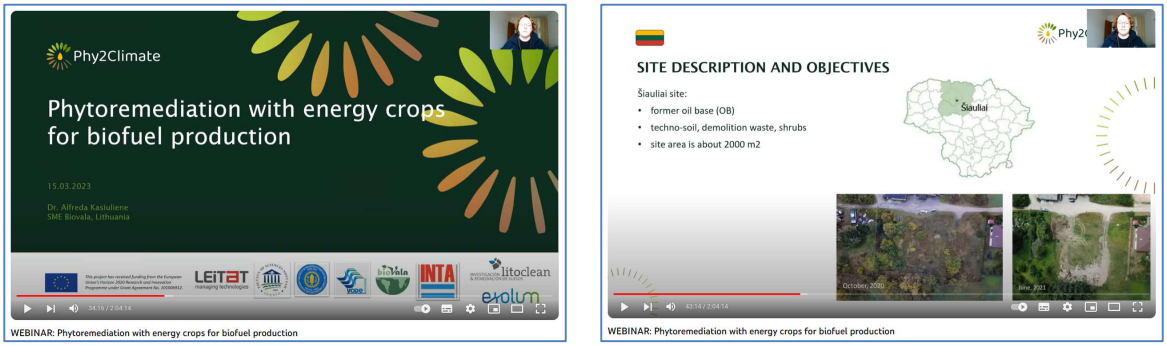
The agenda of the webinar is as follows:

Research overview

Presentations of phytoremediation data:

- GOLD: 7 sites – Greece, France, Poland, China, Italy – Eleni G. Papazoglou, Agricultural University of Athens
- Phy2Climate: 4 sites – Spain, Serbia, Lithuania, Argentina – Alfreda Kasiulienė, Biovala
- CERESiS: 8 sites – Brazil, UK, Ukraine, Italy – Richard Lord, University of Strathclyde

Round table discussion – chaired by: Markus Puschenreiter, Institute for Soil Research (IBF)



"Phytoremediation with energy crops for biofuel production" video pictures.

6 CONCLUSIONS

The project website, www.phy2climate.eu, has been created and edited by ETA due to its experience in project web page design and maintenance. The project website is updated and maintained throughout the whole duration of the project. It includes information about the project and the partners, background information about processes, technology and products, news and publishable documents on the project, as well as videos on the project.

The website is also functioning as a dissemination tool for posting information on upcoming events, workshops and open days, guaranteeing access to project results by a wide audience.

Webpages, called “Resources” and “Updates”, are reserved to collect and make available all the materials that will be produced in the future during the project implementation (e.g. posters and leaflet/s; videos; news alerts and press releases; newsletters; etc.).

News and videos are shared through specific social media channels.

Social media refer to social networks and practices that are used to share opinions and information, promote discussion, and build relationships. They use a variety of content formats, including text, pictures, audio and video.

An informative first set of YouTube videos designed to increase public awareness of and media exposure to the project has been created and implemented into the pages of the website. For that reason, a dedicated YouTube channel has been created, showing e.g. interviews with project partners, videos on project events. Some interviews were recorded and collected during the first part of the project, providing an overview of main activities to be implemented in the different work packages during the project duration.

Other videos will be produced during the project activities. These will also target the general public, with the specific goal to inspire the next generation of young engineers and experts. The public outreach is also being achieved through other project-dedicated social media such as X (Twitter) and LinkedIn. Their profiles and pages have already been created. Social media channels will be always accessible through the website, for easing digital interconnections.

7 ACKNOWLEDGEMENTS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101006912.

This project has used a standard methodology already developed in the GOLD project (Grant Agreement number 101006873) and Phy2Climate project (Grant Agreement number 101006912), following EU recommendations. Ad hoc modifications were added to comply with the Grant Agreement conditions for Phy2Climate (Grant Agreement number 101006912).

8 BIBLIOGRAPHY / REFERENCES

- Deliverable D7.1: Preliminary Communication & Dissemination Plan & periodic updates n° 1;
- Deliverable D7.2: Preliminary Communication & Dissemination Plan & periodic updates n° 2;
- Deliverable D7.4: Project Visual Identity and templates;
- Deliverable D7.5: Website and social media feeds online;
- Deliverable D7.6: 1st project workshop at the EUBCE;
- https://commission.europa.eu/index_en;
- https://www.eubce.com/.
- GOLD Project H2020, Youtube channel.