Interreg Sudoe

EUROPEAN UNION

PhytoSUDOE

European Regional Development Fund

RECOVERING CONTAMINATED SOILS THROUGH PHYTOMANAGEMENT IN SOUTHWEST EUROPE

PhytoSUDOE Newsletter #1

(December 2016)

El proyecto PhytoSUDOE (SOE1/P5/E0189) está financiado por el Fondo Europeo de Desarrollo Regional (Comisión Europea) a través del V programa Interreg Sudoe.

RECOVERING CONTAMINATED SOILS THROUGH PHYTOMANAGEMENT IN SOUTHWEST EUROPE

Welcome to the first newsletter of PhytoSUDOE project. This newsletter series provides you with updated information on our project progress, achievements and important forthcoming activities related to the phytomanagement of degraded and/or contaminated soils.

PhytoSUDOE ("Demonstration of the improvement in soil biodiversity, functionality and ecosystem services through phytomanagement in contaminated and degraded soils within the Interreg Sudoe area"; SOE1/P5/E0189) is a 28-month project (started on July 1, 2016) funded by the European Regional Development Fund (European Commission) through the V Interreg Sudoe Programme. Its main goal is the restoration of degraded environments by means of applying novel phytoremediation techniques ("phytomanagement") that promote biodiversity, enhance ecosystem functionality and enable the sustainable use of resources.

This first newsletter includes a brief introduction to the project. More details can be found on our website http://www.phytosudoe.eu which offers in-depth information about project results, publications related to the project, as well as PhytoSUDOE partners. You may also follow us in our Twitter and Facebook accounts.

Enjoy reading,

Dr. Petra Susan Kidd

Coordinator of the PhytoSUDOE project

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Introduction to PhytoSUDOE

Soil is considered as an essential and non-renewable resource, which performs vital functions in the biosphere (such as biomass and food production, storage and cycling of nutrients, C sequestration, water regulation, etc.). It plays a role as a habitat and gene pool, serves as a platform for human activities, landscape and heritage, and provides raw materials. Soil contamination due to the presence (in excessive concentrations) of chemical substance(s) related to anthropogenic sources and activities alters soil quality and functions, and can negatively affect water quality, biodiversity, food security or human health. Because of this, the need for conservation of soil biodiversity and soil protection is clear and the development of sustainable technologies for soil remediation is a priority objective within European and national legislation and Research programmes [e.g. the Soil Thematic Strategy, COM (2006) 231].

The PhytoSUDOE project aims to demonstrate the potential for gentle remediation options (GRO) for the sustainable management of contaminated or degraded areas across the Interreg Sudoe region (Portugal, Spain and southern France; with hundreds to thousands of identified contaminated sites). PhytoSUDOE will demonstrate that the implementation of appropriate phytomanagement can provide or restore vital ecosystem services from contaminated soils. Various GRO have been developed to (phyto)manage contaminated soils (Figure 1), with the aim of producing biomass (frequently non-food-crops), quenching contaminant linkages to humans, animals and ecosystems, and restoring ecosystem services.

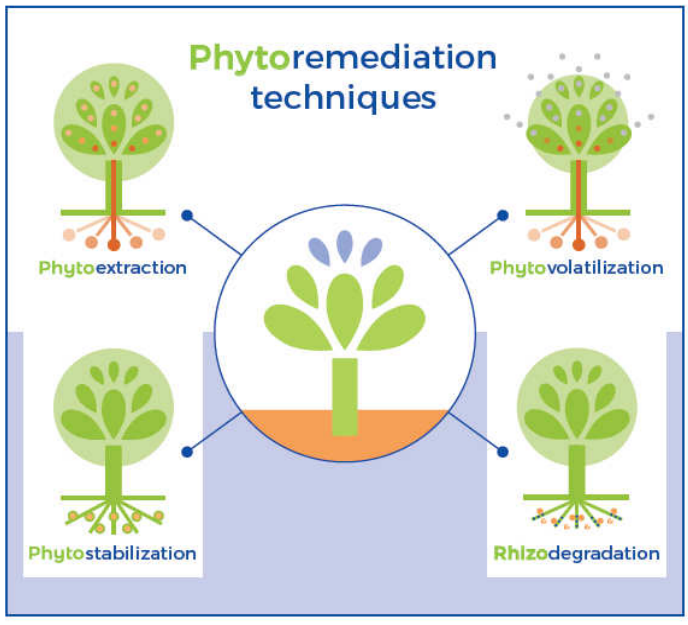

Figure 1

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Phytomanagement of contaminated soils provides a series of advantages to conventional remediation measures (generally based on civil engineering techniques): they are less invasive, more cost-effective, more sustainable, and they can provide or restore vital ecosystem services. By implementing phytomanagement techniques we aim to restore the functionality and provision of ecosystem services (such as biodiversity or carbon sequestration) from currently contaminated or degraded natural sites located in peri-urban and natural areas.

However, the lack of field evidence demonstrating the provision of these vital ecosystem services has resulted in phytomanagement options being under-utilized as practical remediation strategies in the European contaminated land sector. PhytoSUDOE will demonstrate the environmental, economic and social benefits generated during and following phytomanagement and to encourage a wider use of these techniques by land use regulators and owners as an effective risk management strategy within the Sudoe territory and other European regions. This can only be achieved by establishing a transnational network of contaminated sites (located in protected and non-protected areas but all of important ecological interest and potential to provide ecosystem services) under phytomanagement across the Sudoe region.

In this regard, interventions will take place in a network of 11 contaminated and/or degraded sites (S1-S11; right box) in Spain, Portugal and France. While in situ interventions will be carried out in the first nine sites (S1-S9; Figure 2), in S10 and S11 soil samples will be treated under laboratory conditions.

PhytoSUDOE site network (S1-S11); plot type, main contaminant source, (responsible partner/s):

S1: St Médard d'Eyrans (Gironde, FR), brownfield, Cu/PAHs (INRA).
S2: Parc aux Angéliques (Gironde, FR), urban brownfield, metal(loid)s/PAHs/aliphatic hydrocarbons (INRA).
S3: Borralha (Montalegre, PT), mining area, Ag/W/Cu/Pb (UCP-CRP, LNEG)
S4: São Domingos (Mértola, PT), mine tailings, Sb/As/Cu/Pb/Zn/Au (FCTUC, UAVR)
S5: Ariñez (Vitoria-Gasteiz, Basque Country, SP), periurban bronwfield, As/Pb/PCBs/PAHs/acetone/hydrocarbons (UPV, NEIKER, CEA)
S6: Jundiz (Vitoria-Gasteiz, Basque Country, SP), periurban brownfield, trace metals (UPV, NEIKER, CEA)
S7: Piedrafita (Galicia, SP), mine tailings, Cd/Zn/Pb (CSIC, USC)
S8: Touro (Galicia, SP), mine tailings, Cu (CSIC, USC)
S9: St Sebastien d'Aigrefeuille (FR, Gard), mine tailings, Pb/Zn/Cd/As (INRA)
S10: Penedono (Viseu, PT), mine tailings, As/Au/Cu (UAVR)
S11: Marrancos (Vila Verde, PT), mine tailings, Au/Ag/As (UAVR)

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Figure 2. Pictures of sites S1-S9 (left-to-right and top-to-bottom).

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PhytoSUDOE news

Website launch (phytosudoe.eu)

The PhytoSUDOE webpage, the project´s main communication channel, was officially launched the 22nd of December.

Moreover, PhytoSUDOE has also launched its social channels:

Twitter: @PhytoSUDOE
Facebook: www.facebook.com/PhytoSUDOE

The www.phytosudoe.eu webpage (Figure 3) includes an updated project's progress section along with an introduction to phytoremediation techniques and further details on PhytoSUDOE experimental sites (where interventions will be carried out).

It is currently available in English and Spanish.

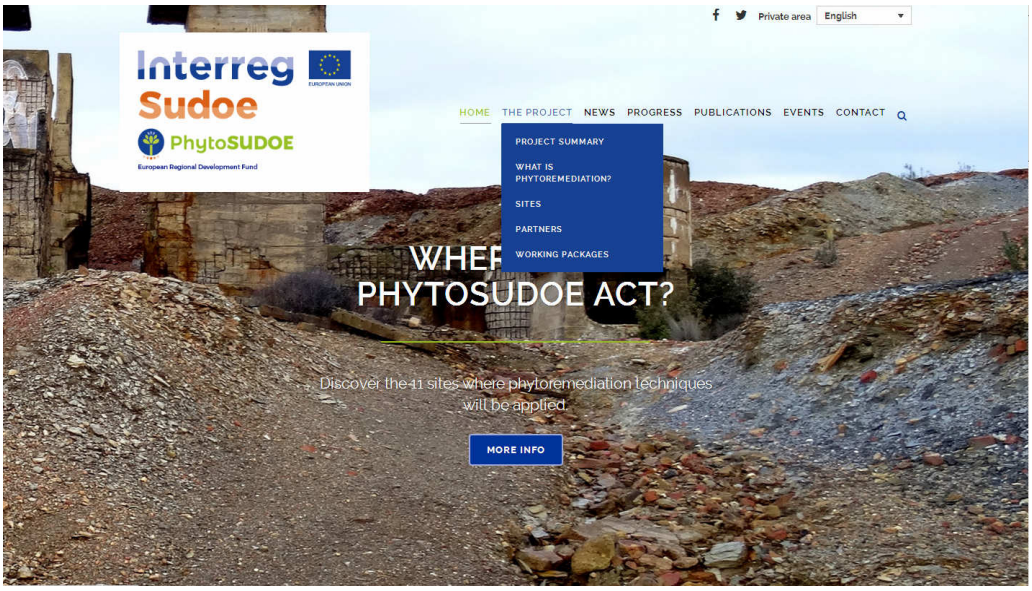

Figure 3. Webpage's Home section.

40 alumni attended the 1st PhytoSUDOE summer course

As part of the teaching and training activities of the consortium, PhytoSUDOE will yearly organize a summer course in matters related with the phytomanagement of degraded soils.

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In this regard, in 2016, the summer course entitled “New trends in degraded soils restoration: technosoils and phytoremediation” was organized by CEA (with the collaboration of the rest of PhytoSUDOE partners) and the University of the Basque Country (UPV/EHU) took place the 14th and 15th of July in Vitoria-Gasteiz with the attendance of 40 alumni (Figure 4).

Figure 4

While the morning sessions were devoted to the lectures, field visits were performed during the two afternoon sessions: the restoration of the Laminoria quarry (Figure 5) and two restoration initiatives (Gardelegi landfill’s technosoils and the restoration of the Jundiz industrial area with bio-stabilized material and energy crops) of the Vitoria-Gasteiz city council, respectively.

Course’s program (1st edition) can be accessed at:

https://www.uik.eus/es/nuevas-tendencias-en-restauracion-de-suelos-degradados-tecnosuelos-y-fitorremediacion

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Figure 5

The second edition is currently under preparation and updated information (including application details) will be posted in the project's webpage (under the sections `News´ and `Events´).

Kids´ workshops in Galicia

In the framework of the Spanish Science Week (7-11 November, 2016), our colleagues of IIAG-CSIC organized a series of workshops in order to introduce soil remediation properties of plants to primary school kids. A total of 75 students (in small groups of ~ 6 kids; Figure 6) were taught how to identify hyper-accumulator species and about the potential applications of such plants (phytoextraction, phytomining…). The PhytoSUDOE project concept was also communicated by means of a poster (Figure 7).

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Figure 6

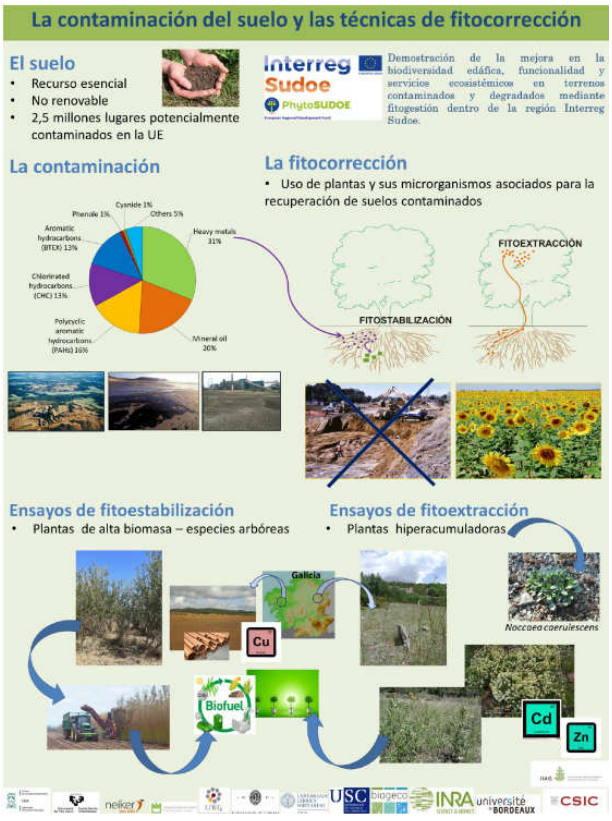

Figure 7

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PhytoSUDOE publications

More details about PhytoSUDOE´s publications (including downloadable documents if available) can be found under the `Publications´ section of the website.

Communications to conferences

Vilela J., Albaina A., Vila A. and Zuazagoitia I. (2016) "PhytoSUDOE: Demostración de la mejora en la biodiversidad edáfica, funcionalidad y servicios ecosistémicos en terrenos contaminados y degradados mediante fitogestión dentro de la región Interreg Sudoe (SOE1/P5/E0189)". Poster communication to the 13th Spanish Environmental Congress (CONAMA 2016) hold in Madrid on 28 November-1 December.

Forthcoming events

Further (updated) details about events organized by the PhytoSUDOE consortium can be found under the `Events´ section of the webpage.

1st PhytoSUDOE workshop

A series of workshops with stakeholders (from public administration and research institutes to private companies) in the field of soil restoration and phytomanagement will be organized within the frame of PhytoSUDOE project. The first edition (spring 2017; last week of April) will be hosted by INRA (UMR BIOGECO) in Bordeaux.

Specific dates and venue are still to be defined. As soon as this information is available it will be posted in the website.

2nd PhytoSUDOE summer course

The second edition of the PhytoSUDOE summer course will be organized by CEA in collaboration with the University of Basque Country (UPV/EHU) in the city of Vitoria-Gasteiz.

Specific program, dates and venue are still to be defined. As soon as this information is available it will be posted in the website. Application form will be available at the UPV/EHU summer courses´ webpage (https://www.uik.eus/en).

The PhytoSUDOE consortium

Agencia Estatal Consejo Superior de Investigaciones Cientificas, IIAG-CSIC (coordinator), Spain

Universidad de Santiago de Compostela, USC, Spain

NEIKER-Instituto Vasco de Investigación y Desarrollo Agrario, S.A., NEIKER, Spain

Institut National de la Recherche Agronomique, INRA, France

Universidade de Coimbra, FCTUC, Portugal

Centro de Estudios Ambientales de Vitoria-Gasteiz, CEA, Spain

Universidade Católica Portuguesa, UCP-CRP, Portugal

Universidad del País Vasco/Euskal Herriko Unibertsitatea, UPV/EHU, Spain

Universidade de Aveiro, UAVR, Portugal

Laboratório Nacional de Energia e Geologia IP, LNEG, Portugal

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Contact and further information

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