Approach to Phytotechnology Regulatory and Market Trends in Europe. Future perspectives.

Alberto Vega[1], Sofia I.A. Pereira[1], Helena Moreira[1], Paula Ávila[2], Adelaide Ferreira[2], Paula M.L. Castro[1]

[1] Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Rua Arquiteto Lobão Vital, 172, 4200-374 Porto
[2] LNEG - National Laboratory of Energy and Geology

sapereira@porto.ucp.pt[1]; hgmoreira@porto.ucp.pt[1]; avega@porto.ucp.pt[1]; paula.avila@lneg.pt[2]; plcastro@porto.ucp.pt[1]

CATÓLICA
CBQF · CENTRE FOR BIOTECHNOLOGY AND FINE CHEMISTRY ASSOCIATE LABORATORY
PORTO

INTRODUCTION

Phytoremediation is an emerging technology based on the use of different plants with certain characteristics aimed to contain, transform, inactivate or remove diferent kinds of environment pollutants. Low cost and minimally invasive solutions are needed to deal with massive scale remediation efforts that would be impossible at high prices per unit of polluted substrate using the formal techniques of remediation. The appearance of new regulatory policies and the improvement of the technology are mandatory factors for the development of a solid market for phytotechnology activities.

SCOPE

This work is harbored by PhytoSUDOE project that aims the management of degrading environments and their restoration through the application phytotechnologies that promote biodiversity, enhance ecosystem functionality and enable the sustainable use of resources. A transnational network contaminated sites distributed through Portugal, Spain and France was established to demonstrate the sustainability of phytomanagement options for degraded sites.

GOALS

- Evaluate the current situation of the regulations in terms of soil pollution
- Analize the market trends in Europe

REMEDIATION MARKET DINAMISM

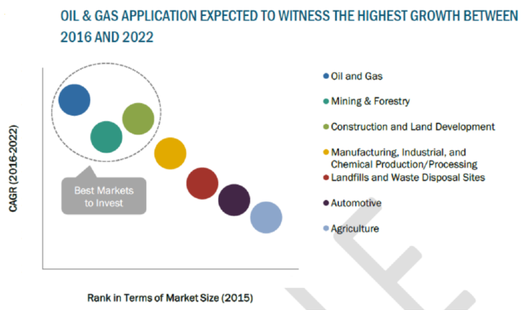
LEGISLATIVE TIMELINE

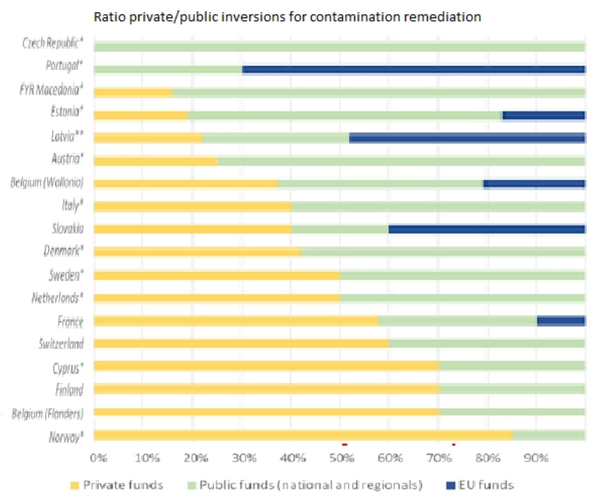
Fragmented legislative framework between the countries in Europe in terms of polluted soil regulations:

- Germany: Bundes-Bodenschutzgesetz, 1998.
- France: MTES national methodology on contaminated land, 19 April 2017
- Spain: Real Decreto Legislativo 2008
- Portugal: Decreto-Lei n.º 178/2006
- Denmark: Contaminated Soil Act No. 370 of June 2, 1999
- Italy: Regulation No. 118 - 12 March 2002; "Regulations regarding the Quality of Surface Waters and Groundwaters“

In absence of comprehensive soil legislation, soil is not subject to a coherent set of rules in the EU. Protection and sustainable use of soil is scattered in different Community policies contributing in various degrees to soil protection.

MARKET

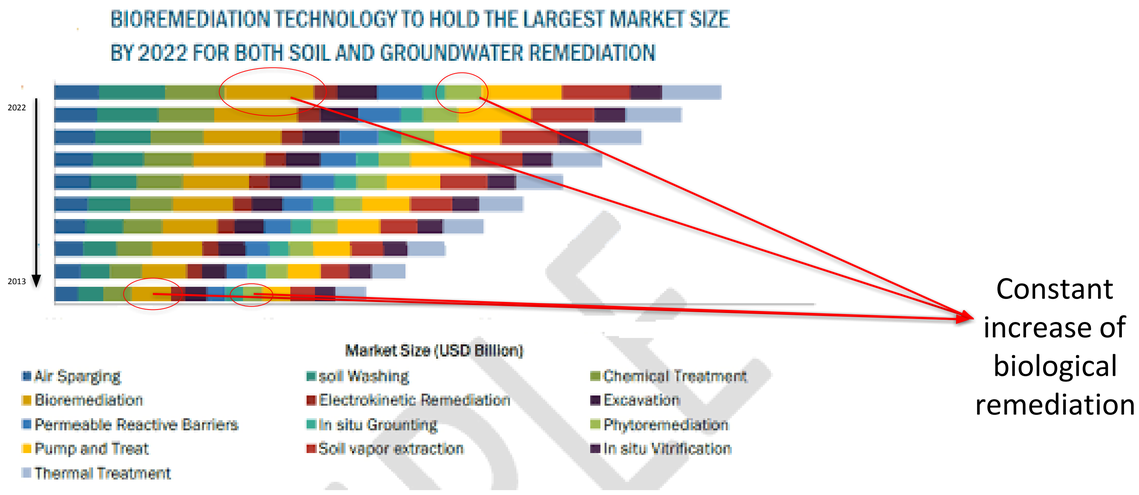




122.8 USD Billion in 2022

FUNDS AND FUTURE PROSPECT

MARKET



Constant increase of biological remediation

CURRENT SITUATION

In Europe, the major financial support for phytoremediation emphasized basic and explorative research.

Stronger involvement of small and médium-sized enterprises as partners in the projects.

Phytoremediation research is mostly aimed at heavy metals, despite the fact that soil and groundwater contamination with organic pollutants forms serious problems indeed.

Industrial funding for phytoremediation research has been very limited in Europe, but this is changing.

DISCUSSION

- No coherent set of rules defining liability, responsibilities, thresholds and monitoring in UE.
- Governance can act as catalyzer towards innovation and maturing of soil market.
- An integrated approach combining land remediation with post-process biomass to energy conversion it`s necessary for economical availability.
- Government funds and market of phytotechnologies will increase due to the improvement of technology

Acknowledgements

This work was supported by the project PhytoSUDOE SOE1/P5/E0189, funded by Fundo Europeu de Desenvolvimento Regional (FEDER) under Programa INTERREG. We would also like to thank th scientific collaboration under the FCT project UID/Multi/50016/2013.
A. Vega had the support of a PhytoSUDOE grant. H. Moreira had the support of FCT grant SFRH/BPD/105152/2014.

FCT Fundação para a Ciência e a Tecnologia
UNIÃO EUROPEIA Fundo Social Europeu
REPÚBLICA PORTUGUESA
Interreg Sudoe