

The slide features the UPSOIL logo in the top left corner. A green horizontal bar in the center contains the text "UPSOIL General Presentation". Below this, the UPSOIL logo is repeated. The event details are listed: "Date 2nd-July-2012", "Event: Rehabilitation of contaminated soil and sites", "Bucharest - Romania", and "- Nerea Otaegi -". The TecNALIA logo is at the bottom center. A small logo is in the bottom left corner, and a decorative orange and white brushstroke pattern is at the bottom.

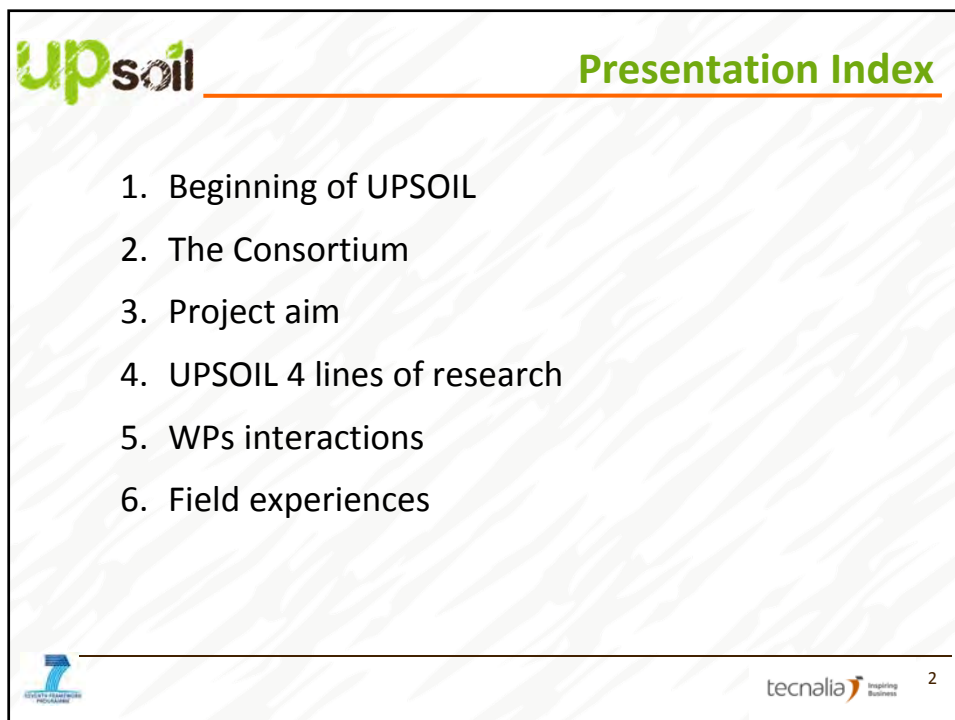
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UPSOIL General Presentation

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Date 2nd-July-2012
Event: Rehabilitation of contaminated soil and sites
Bucharest - Romania
- Nerea Otaegi -

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The slide features the UPSOIL logo in the top left corner. The title "Presentation Index" is in the top right corner. A numbered list of six items is in the center. The TecNALIA logo is in the bottom right corner, and a small logo is in the bottom left corner.

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Presentation Index

1. Beginning of UPSOIL
2. The Consortium
3. Project aim
4. UPSOIL 4 lines of research
5. WPs interactions
6. Field experiences

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1. Beginning of UPSOIL

- ✦ Funded by the EC, under the Seventh Framework programme (FP7), Collaborative funding scheme and theme 6 "Environment (Including climate change)" (Activity: FP7 ENV 2008.3.1.2.1. "Recovery of degraded soil resources") - year 2008.
- ✦ First proposal submitted in Feb 2008.
- ✦ Following 1,5 year of negotiation with the EC, UPSOIL started the 1st of Oct 2009.
- ✦ Kick-off meeting → Bilbao (Spain), on the 2nd- 3rd Nov 2009.
- ✦ UPSOIL will finish on the 30th of Sept 2012, 3 years after its beginning.
- ✦ Last final meeting and joined symposium → Barcelona (Spain), on the 24th-26th Sept.
- ✦ The total project budget 4,5M euros (3,3M contribution from EC)



Area 6.3.1.2. Soil


ENV.2008.3.1.2.1. Recovery of degraded soil resources

Contamination is one of the most important threats to which European soils are exposed. The concern refers both to contamination of soil in itself and to the risk for other compartments, mainly water and food production, which affects ecosystems and human life. Remediation technologies are needed, effective both in decontaminating and in preserving soil quality and functions, including biodiversity, at affordable costs. Innovative technologies (including "new frontier" promising technologies) should be developed or improved, quantifying the natural rehabilitation potential of the soil, integrating existing knowledge on biological techniques with most promising *in situ* remediation treatments. The impact of remediation activities on soil functions should be specifically addressed. This action should address problems that clearly show a broad EU dimension or may be common to several Member States, with priority to be given to complex problems where cost-effectiveness is today the major obstacle. This action should foresee a substantial participation of industrial partners, with a relevant presence of SMEs. (Policy relevant topic)

Funding scheme: collaborative projects (small or medium-scale focused research projects)



Expected impact: According to the Thematic Strategy for Soil Protection, soil contamination is one of the main threats to which soils in the EU are confronted. The strategy asks Member States to ensure that contaminated sites are remediated. Project proposals should demonstrate to be able to achieve substantial improvement of the technologies for soil remediation in terms of sustainability (also in terms of GHG generation), persistence, and cost-effectiveness.




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2. The Consortium

Beneficiary Number	Beneficiary name	Beneficiary short name	Country	Date enter project	Date exit project
1 (Coordinator)	LABEIN-TECNALIA	LABEIN	Spain	Month 1	Month 36
2	VITO-MPT	VITO	Belgium	Month 1	Month 36
3	DELTAES-TNO	DELTAES	The Netherlands	Month 1	Month 36
4	6 RTD Institutions				nth 36
5	1 University				nth 36
6	7 SMEs				nth 36
7	1 Contractor				nth 36
10	WENTIVA	WENTIVA	Republic	Month 13	Month 36
11	POWIZ	POWIZ	Poland	Month 7	Month 36
12	EJLSKOV	EJLSKOV	Denmark	Month 1	Month 36
13	RDS	RDS	Spain	Month 22	Month 36
14	BIUTEC	BIUTEC	Austria	Month 7	Month 36
15	GEOCISA	GEOCISA	Spain	Month 7	Month 36


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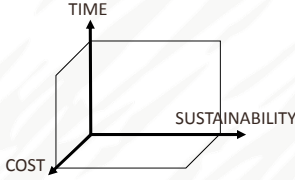
3. Project aim



*“UPSOIL is focused to remove current barriers in **chemical and biological remediation** techniques, by developing **new strategies** for **fast, cost-effective and integrated source-plume** treatment that result in both **allowable risk** levels and **maximal use** for the **natural soil rehabilitation potential** at a longer term”*


3 optimisation dimensions

- 1.COST:** the cost effectiveness of remediation should be significantly increased as compared to current practices,
- 2.TIME:** the technologies employed should allow fast release of sites for urban/industrial or ecological redevelopment,
- 3.SUSTAINABILITY:** the technologies employed should ensure that there are no pending (post-remediation) liability issues and that soil functions are maintained or restored.

Technologies	Dimensions		
	cost	time	sustainability aspects
conventional:			
Excavation (source zone)	+	+	-
Pump-and-treat (plume)	+	+	-
in-situ:			
Bioremediation (plume)	+	-	+
Natural Attenuation (plume and source)	+	-	+
Chemical treatments (plume and source)	+	+	-
aimed for by UPSOIL:			
Smart coupling of in-situ (source and plume)	+	+	+
Frontier technologies (source and plume)	+	+	+







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4. UPSOIL 4 lines of research

UPSOIL project aims at optimizing biochemical treatment technologies for organic contaminants and does so by following 4 main initiatives:

- **Research Line `a` - Smart coupling:** smart coupling of existing chemical and biological techniques (WP2 & WP3)
- **Research Line `b` - System driven injection:** new technology that combines contaminant detection and injection of the remedial agent (currently subject to patent) (WP4)
- **Research Line `c` - Specific targeting:** injection of specifically developed chemical oxidants to target them to the right place (WP5)
- **Research Line `d` - Feed back remediation:** following real time monitoring (WP6)



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4. UPSOIL 4 lines of research

Research Line a - Smart coupling of existing technologies

Active remediation (WP2 leader: Deltares)
 1-step or 2-step proces:

- More aggressive method (Chem ox, chem reduction)
- Enhanced bioremediation - bioaugmentation

Passive remediation (WP3 leader: WU)

- Single shot adjustment of conditions
- Passive remediation (NA)

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4. UPSOIL 4 lines of research

Research Line b- Smart injection equipment

WP4 leader: SGI
 Aim: combined detection and remedial agent injection
 Tested on field (real conditions)

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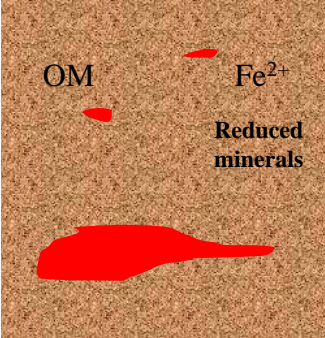
upsoil **4. UPSOIL 4 lines of research**



Research Line c – Specific targeting

WP5 leader: VITO
 Aim: development of modified (packed) oxidants/reductants to/for:

- ✔ More selective oxidation/reduction
- ✔ Higher cost and treatment duration efficiency
- ✔ Lower impact on soil matrix

Laboratory tests ongoing



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upsoil **4. UPSOIL 4 lines of research**

Research Line d – Real time monitoring

WP6 leader: TECNALIA
 Aim: to adapt the remediation strategy as new data becomes available in order to:

- increase treatment time/cost efficiency

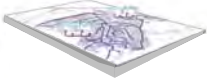
Tested on field.

IN SITU
BIOCHEMICAL
REMEDATION

➔

KEY PARAMETERS
REAL TIME
MONITORING

⬆






⬇

FEED BACK
INSTRUCTIONS

➔

NUMERICAL
MODELLING TOOL



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5. WPs interactions


✦ From the beginning (Month 1) all WPs have run in parallel.

✦ Fact consolidated by existing interactions between all WPs:

- Use of same material for different tasks in different WPs,
- Use of different technologies from different WPs in the same field test,
- Use of a particular WP know-how for other WP technical purposes.

From/to	WP2	WP3	WP4	WP5	WP6
WP2	WP2 & WP3 research approach Polish & Austrian site		More detailed information about potentially ongoing degradation processes in the Flemish field	Samples Polish site to test targeting particles (Deltares & Ecolind). OM analytical methods for wax characterization (Deltares)	Kinetic parameters for model & other data
WP3					
WP4	Flemish site samples (VITO)	Links with Flemish site (WU)	WP4 research approach Belgian site	Test targeting particles with samplers Flemish site (VITO) Use of 'new injection machine' for field trial?	Belgian field case Soil samples for additional analyses
WP5		Spanish (MAPL) site (HM)		WP5 research approach Spanish site	Spanish field case Kinetic parameters & other data
WP6			Monitoring results	Monitoring results	WP6 research approach No field site



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6. Field experiences



What is the aim of field sites within UPSOIL?


- Aquifer & groundwater material for lab scale studies
- Data for numerical modeling, risk assessment
- Field implementation at pilot scale
 - Comparison lab & field results
 - Testing real case scenarios added difficulties
- ~~Full scale application to remediate the site~~

SITES:

- Poland
- ~~Lithuania~~
- Belgium
- Austria
- Spain
- Czech Republic



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Other dissemination materials
available upon request

Thank you!



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