



10º Congreso Nacional del Medio Ambiente (Conama 10)

I+D+i en tecnologías ambientales: Qué es y cómo se financia.

UPSOIL “Sustainable soil upgrading by developing cost effective, biogeochemical approaches” & IRCOW “Innovative Strategies for High-Grade material Recovery from Construction and Demolition Waste”

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UPSOIL - Sustainable Soil Upgrading by Developing Cost-effective, Biogeochemical Remediation Approaches



Type of funding scheme:

Collaborative Project (small or medium-scale focused research)

Work program topic addressed:

FP7 ENV 2008.3.1.2.1. “Recovery of degraded soil resources”

Duration: 36 months

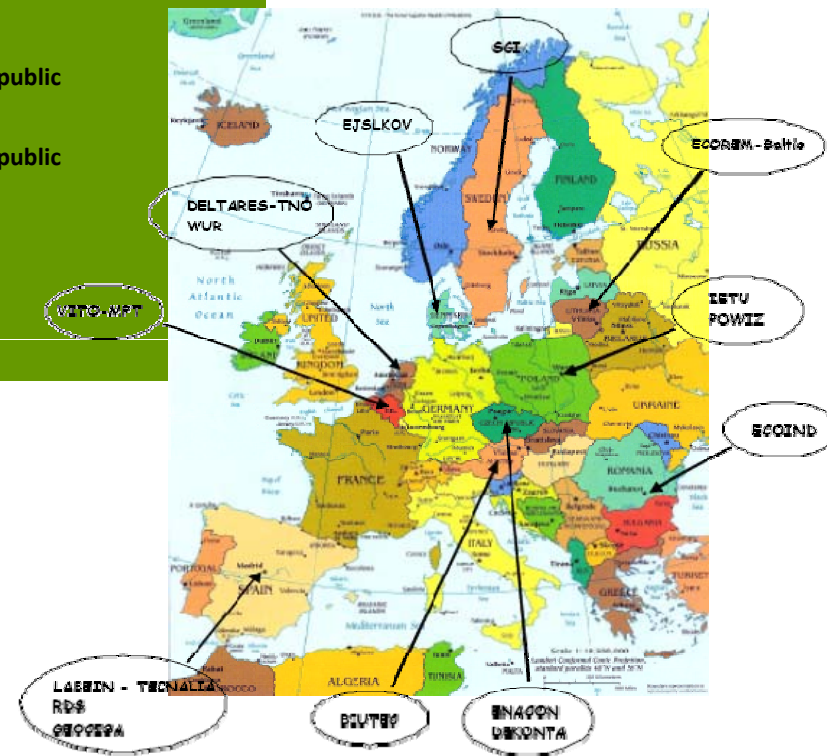
October 2009 – September 2012

Co-ordinator:

Mr. Jose Enrique Vadillo Pont (TECNALIA)

CONAMA - 23rd November 2010

Participant nº.	Participant	Country
1 (Coordinator)	Labein/Tecnalia	Spain
2	VITO-MPT	Belgium
3	Deltares	The Netherlands
4	WUR	The Netherlands
5	IETU	Poland
6	ECOIND	Romania
7	SGI	Sweden
8	ENACON	Czech Republic
9	ECOREM-Baltic	Lithuania
10	Dekonta	Czech Republic
11	POWIZ	Poland
12	Ejlskov	Denmark
13	RDS	Spain
14	Biutec	Austria
15	Geocisa	Spain



The concept of UPSOIL is that for the enhancement of cost-effective sustainable remediation of contaminated soil on a European scale, three optimisation dimensions need to be addressed:

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 <i>in-situ</i> (source and plume)	+	+	+
Frontier technologies (source and plume)	+	+	+



Objective and main lines of research

Project Objective:

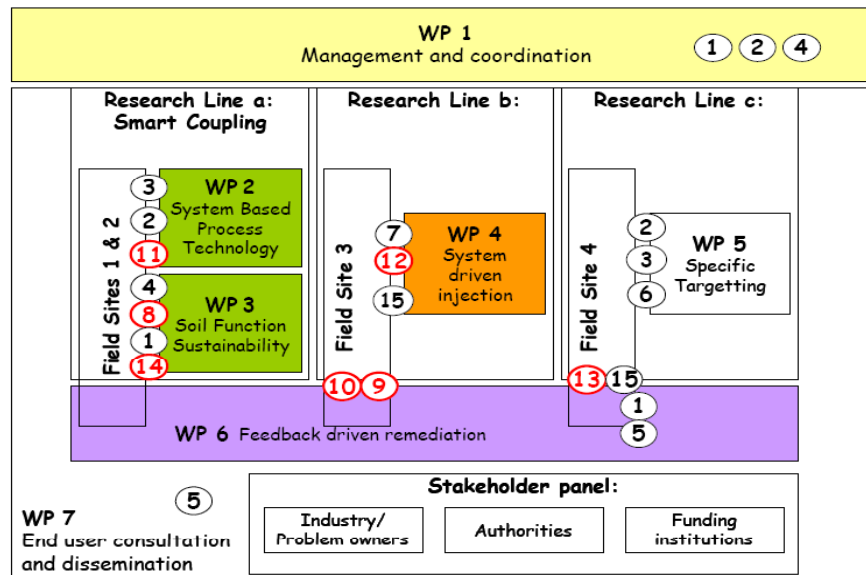
To develop robust technologies and approaches that optimize in-situ soil and groundwater remediation for cost, time and sustainability

UPSOIL project aims at optimizing biochemical treatment technologies for organic contaminants and does so by following 3 (three) main initiatives or research lines:

- **Research Line `a´. Smart coupling:** smart coupling of existing chemical and biological techniques,
- **Research Line `b´. System driven injection:** improving contaminant injection of the remedial agent
- **Research Line `c´. Specific targeting:** injection of specifically developed chemical oxidants to target them to the contaminant.

UPSOIL is structured according to following Work Packages:

- WP2 - Smart coupling: system based process technology
- WP3 - Smart coupling: sustainability
- WP4 - System driven injection
- WP5 - Specific targeting
- WP6 - Feedback driven remediation



WP1 - Management and coordination
 WP7 - End user consultation & Dissemination

Field Sites

Wegleniec (PL):

- LNAPL
- Mineral Oil / BTEX
- Metals

Antwerp (Be):

- LNAPL
- Mineral Oil / BTEX
- Metals

Andalucía (Sp):

- LNAPL
- DNAPL: CAH

Bruckl (Au):

- DNAPL: CAH



- ❖ Well-documented and tested in-situ **(bio)chemical remediation technologies**.
- ❖ **Field-application and involvement of various stakeholders** (authorities, problem owners, technology providers, financial supporters of redevelopments) will be used for dissemination of the results and tuning of the improved and newly developed technologies towards the combined stakeholder needs.
- ❖ **Increase in the costs-effectiveness**, and a significant **reduction in time required for soil remediation**, in support of the implementation by EU member states of their soil remediation programmes.
- ❖ It will allow taking **soil properties and functions** into account in the choice for the remediation approach, thereby greatly **enhancing soil sustainability** within Europe.
- ❖ The general remediation approach is based on **fast reduction in contaminant levels** allowing site redevelopment, **followed by slow further soil recovery** towards natural soil functions.

IRCOW – Innovative Strategies for High-Grade Material recovery from Construction and Demolition Waste

Type of funding scheme:

Collaborative Project (small or medium-scale focused research)

Work program topic addressed:

ENV.2010.3.1.3-1 “Innovative technologies and eco-design recommendations for reuse and recycling of Construction and Demolition (C&D) waste, with a special focus on technologies for onsite solutions”

Duration: 36 months

Co-ordinator:

Dr. Iñigo Javier Vegas (TECNALIA)

CONAMA - 23rd November 2010

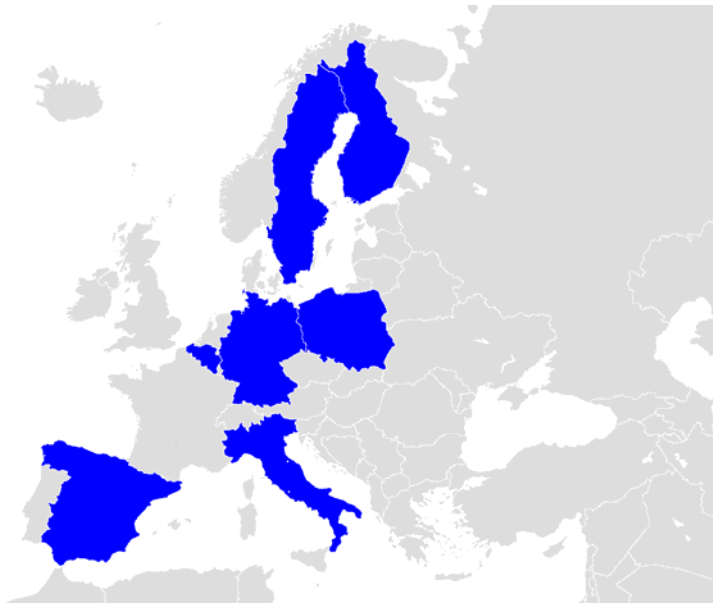
Project Objective:

The main goal of the IRCOW project is to develop and validate upgraded technological solutions to achieve an efficient material recovery from Construction and Demolition Waste by considering a life cycle perspective. Thus, the main objective can be broken down into the following ones:

- O1:** To create **innovative strategies** promoting the reuse of building components/products and preparing the new building solutions for reuse activities,
- O2:** To create **high quality recycling systems** by means of advanced solutions for C&DW sorting and processing,
- O3:** To design, test, **develop high grade construction products** elaborated with C&DW recycled materials: inorganic and organic ones,
- O4:** To validate new solutions developed at lab scale on **real construction sites**,
- O5:** To evaluate the **technical, economic, environmental and human health performance** of these solutions.

Partnership

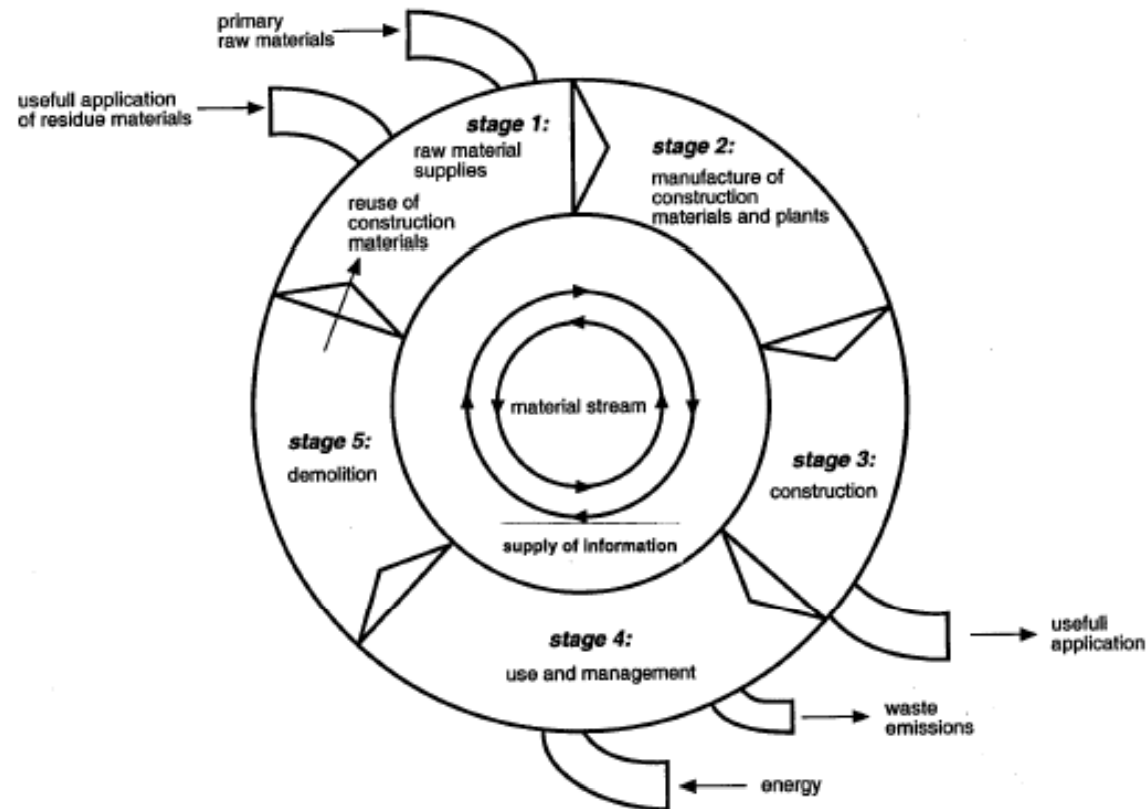
The **IRCOW** consortium consists of **13 partners**, from **7 European Union countries**; namely, Spain, Sweden, Belgium, Italy, Poland, Germany and Finland.



No	Name	Short name	Country
1	FUNDACION TECNALIA RESEARCH & INNOVATION	TECNALIA	Spain
2	VLAAMSE INSTELLING VOOR TECHNOLOGISCH ONDERZOEK N.V.	VITO	Belgium
3	IVL SVENSKA MILJÖINSTITUTET AB	IVL	Sweden
4	INSTYTUT EKOLOGII TERENOW PRZEMYSLOWONYCH	IETU	Poland
5	ACCIONA INFRAESTRUCTURAS S.A.	ACCIONA	Spain
6	D'APPOLONIA SPA	CAPP	Italy
7	TITECH GMBH	TiTech	Germany
8	DERRIBOS PETRALANDA SL	DP	Spain
9	INGENIEURBUERO TRINIUS GMBH	TRI	Germany
10	Conenor Oy	Conenor	Finland
11	ATON-HT SPOLKA AKCYJNA	ATON	Poland
12	ERIJSE MINERALS & RECYCLING BVBA	BMR bvba	Belgium
13	JACOBS NV	Jacobs	Belgium

Partnership

The consortium has been designed not only for covering the value chain of the project, but also taking into account the **complete supply chain towards C&DW reuse and recycling**



Work packages

To accomplish the above mentioned objectives, the IRCOW project is structured into **seven work packages (WP)** and **5 in-field case studies**.

Three of the work packages focus on the development, at lab-scale, of new management schemes, separation technologies and products that are needed to significantly increase the reuse and recycling rates of C&W waste in the EU. Solutions validated at lab-scale (WP2, WP3 and WP4) will be demonstrated under real conditions (WP5). The outcomes of WP2, WP3, WP4 and WP5 will be **assessed and validated** from an economic and environmental point of view, by using Life Cycle Assessment tools (WP6).

