



Environment Policy & Governance

LIFE PROJECTS 2011



LIFE+ Environment Policy & Governance 2011: Commission funds 113 innovation projects in 18 countries with €124.4 million

The European Commission has approved funding for 113 new environmental innovation projects in 18 countries under the LIFE+ Environment Policy & Governance programme 2011. These projects will demonstrate new methods and techniques for dealing with a wide diversity of Europe's environmental problems. The projects are led by 'beneficiaries', or project promoters, based in Belgium, Cyprus, the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Luxembourg, the Netherlands, Poland, Slovakia, Spain, Sweden and the United Kingdom. They represent a total investment of €258.4 million, of which the EU will provide some €124.4 million.

LIFE+ Environment Policy & Governance in 2011

The Environment Policy & Governance strand of LIFE+ supports pilot projects that contribute to the development of innovative policy ideas, technologies, methods and instruments. Of the 607 proposals received, the Commission selected 113 projects for funding from a wide range of public and private sector organisations. The winning projects, situated in 18 Member States, represent a total investment of €258.4 million, of which the EU will provide some €124.4 million.

Under this component, the Commission will contribute €31.4 million to 23 different projects that together will invest over €67.8 million in activities aimed specifically at tackling climate change. The selected projects are located in Belgium, the Czech Republic, Denmark, France, Greece, Italy, Luxembourg, Poland, Slovakia, Spain, Sweden and the United Kingdom. In addition, many other projects will also have an indirect impact on greenhouse gas emissions. Waste and water are two of the other main areas being supported, with 29 projects and 19 projects respectively.

Background

LIFE is the EU's financial instrument to support environment and nature conservation projects throughout the EU, and in certain non-EU countries. Since 1992, LIFE has co-financed some 3 700 projects, contributing ap-

proximately €2.8 billion to the protection of the environment. LIFE+ is the European financial instrument for the environment with a total budget of €2 143 billion for the period 2007-2013. During this period, the Commission is launching one call for LIFE+ project proposals per year.

LIFE+ Environment Policy & Governance is one of three thematic components under the LIFE programme. The other two components, LIFE+ Nature & Biodiversity and LIFE+ Information & Communication, focus respectively on improving the conservation status of endangered species and habitats, and on disseminating information and raising the profile of environmental issues, or providing training and awareness-raising for the prevention of forest fires.

More information on each LIFE+ project is available at: <http://ec.europa.eu/environment/life/project/Projects/index.cfm>

Contact details for the relevant national authorities can be found at: <http://ec.europa.eu/environment/life/contact/national-contact/index.htm>

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Location	Project number	Title of project
BELGIUM	LIFE11 ENV/BE/001038 BIOGASTIL	Integration of biogas production process into an existing biomethanisation plant
	LIFE11 ENV/BE/001039 C2CGYPSUM	From Cradle to Cradle: a Circular Economy for the European Gypsum Industry with the Demolition and Recycling Industry
	LIFE11 ENV/BE/001046 SILEX	Improving sustainability of construction materials using innovative Silicon based treatment
CYPRUS	LIFE11 ENV/CY/000859 QuaResE	Quarry Resource Efficiency Demonstration Project
CZECH REPUBLIC	LIFE11 ENV/CZ/000488 HOxyGas	Validation of an innovative automotive glass process: hot oxygen combustion and hot natural gas
DENMARK	LIFE11 ENV/DK/000889 Stream of Usserød	Intermunicipal cooperation on Water Management and Climate Change Adaptation for The Stream of Usserød
FINLAND	LIFE11 ENV/FI/000905 IMPERIA	Improving environmental assessment by adopting good practices and tools of multi-criteria decision analysis
	LIFE11 ENV/FI/000909 CITYWATER	Benchmarking water protection in cities
	LIFE11 ENV/FI/000911 Urban Oases - Keidas	Urban Oases: Shaping a Sustainable Future through Environmentally Functional Landscape Features
FRANCE	LIFE11 ENV/FR/000739 SUSTAIN-ICT	ICT for greener urban development
	LIFE11 ENV/FR/000740 Biovalsan	Demonstration of waste water's biogas total upgrading system to bioCH ₄ & bioCO ₂ and health risks acceptance
	LIFE11 ENV/FR/000742 BIOTTOPE	Biological tools to Optimise Treatment Technologies to remove micro Pollutants and Endocrine disrupters
	LIFE11 ENV/FR/000744 LOOP	Validation of a process of recovery and revalorisation of Rare Earth elements contained in wastes
	LIFE11 ENV/FR/000745 MAC EAU	Reducing Consumption of Drinking Water: Implementation and Evaluation of Integrated Measures in Gironde (France)
	LIFE11 ENV/FR/000746 SeineCityPark	Development of an urban green infrastructure in the Chanteloup loop
	LIFE11 ENV/FR/000748 Move4earth	Recycling demonstrator for revalorisation of technical textile wastes
	LIFE11 ENV/FR/000751 WASTE ON A DIET	Strategy to reduce waste, increase re-using and recycling, reduce incineration and storage, in a rural and urban area
	LIFE11 ENV/FR/000752 CDW-recycling	Innovative solution for the separation of construction and demolition waste
LIFE11 ENV/FR/000757 ZENITTHYS	Zero Energy In Telecom-TV Hybrid Station	

Location	Project number	Title of project
FRANCE	LIFE11 ENV/FR/000760 OPTIVALOR	Development of an innovative and integrated approach for plastic and bio- waste management and recycling
	LIFE11 ENV/FR/000762 WEEELIBS	Toward material recovery of WEEE plastics: a LIBS based device for sorting WEEE plastics during manual dismantling
GERMANY	LIFE11 ENV/DE/000340 DRIP	Demand Response in Industrial Production
	LIFE11 ENV/DE/000342 SuM	Sustainability Maker
	LIFE11 ENV/DE/000343 MARSS	Material Advanced Recovery Sustainable Systems
	LIFE11 ENV/DE/000495 CA	CLEAN AIR
	LIFE11 ENV/DE/001073 Abluftreinigungsverfahren	Novel purification technique for the treatment of waste air in the manufacturing process of paraformaldehyde
GREECE	LIFE11 ENV/GR/000938 MECM	Military Energy and Carbon Management
	LIFE11 ENV/GR/000942 oLIVE-CLIMA	Introduction of new olive crop management practices focused on climate change mitigation and adaptation
	LIFE11 ENV/GR/000949 Waste2Bio	Development and demonstration of an innovative method of converting waste into bioethanol
	LIFE11 ENV/GR/000950 Recycling@Home	Development and demonstration of an ecological, innovative system for in house waste recycling
	LIFE11 ENV/GR/000951 AgroStrat	Sustainable strategies for the improvement of seriously degraded agricultural areas: The example of <i>Pistachia vera L.</i>
	LIFE11 ENV/GR/000975 FLIRE	Floods and fire risk assessment and management
IRELAND	LIFE11 ENV/IE/000922 Burren Tourism	Burren Tourism for Conservation
ITALY	LIFE11 ENV/IT/000002 CLEAN-ROADS	CLEAN-ROADS: Addressing the environmental impact of salt use on the roads
	LIFE11 ENV/IT/000004 Lambro vivo	Actions for the improvement of water quality and habitats in the River Lambro valley
	LIFE11 ENV/IT/000015 PERHT	Parking green services for better environment in historic towns
	LIFE11 ENV/IT/000016 MuSAE	Municipalities' Subsidiarity for Actions on Energy
	LIFE11 ENV/IT/000035 WSTORE2	Reconciling agriculture with environment through a new water governance in coastal and saline areas
	LIFE11 ENV/IT/000036 Low resources Low energy	Ennobling mixture of waste for full low-energy replacement of exhaustible natural resources in building materials output
	LIFE11 ENV/IT/000075 BIOSUR	Rotating bioreactors for sustainable hydrogen sulphide removal

Location	Project number	Title of project
ITALY	LIFE11 ENV/IT/000095 CRESIM	Energy-efficient CFRP remanufacture from regenerated carbon fibres, using fast demoulding high pressure spray injection
	LIFE11 ENV/IT/000103 HEO	Highly Efficient Ovens through eco-friendly, energy efficient sol-gel enamelling process
	LIFE11 ENV/IT/000109 SOREME	Low cost sorbent for reducing mercury emissions
	LIFE11 ENV/IT/000110 W-LAP	Waste eliminating and water-free new revolutionary technology for surface treatment of marbles, stones and tiles
	LIFE11 ENV/IT/000113 BIOREM	Innovative System for the Biochemical Restoration and Monitoring of Degraded Soils
	LIFE11 ENV/IT/000119 BLUE AP	Bologna Local Urban Environment Adaptation Plan for a Resilient City
	LIFE11 ENV/IT/000156 ReQpro	A model to reclaim and reuse wastewater for quality crop production
	LIFE11 ENV/IT/000168 MAKING GOOD NATURA	Making Public Goods Provision the Core Business of Natura 2000
	LIFE11 ENV/IT/000184 LIGHT PET	Innovative process and soLutions to reduce the weLGht of PET containers and boost the diffusion of the green purchases
	LIFE11 ENV/IT/000215 RELIFORMED	Resilience to Climate change in Mediterranean Forests
	LIFE11 ENV/IT/000243 RII	LIFE Integrated Environmental Hydraulic Requalification of the creeks of the Pedemontana strip of Emilia-Romagna
	LIFE11 ENV/IT/000256 COSMOS-RICE	Colloidal Silica Medium, to Obtain Safe inert, from RICE husk ash
	LIFE11 ENV/IT/000275 ECOREMED	Implementation of Eco-Compatible Protocols for Agricultural Soil Remediation in Litorale Domizio-Agro Aversano NIPS
	LIFE11 ENV/IT/000277 PRISCA	Pilot project for scale re-use starting from bulky waste stream
LIFE11 ENV/IT/000295 CALEIDOS	Chemical Assessment according to Legislation Enhancing the In silico DOcumentation and Safe use	
LIFE11 ENV/IT/000302 IPNOA	Improved flux Prototypes for N ₂ O emission reduction from Agriculture	
LATVIA	LIFE11 ENV/LV/000376 ISRNM	Innovative Solutions for Railway Noise Management
LUXEMBOURG	LIFE11 ENV/LU/000854 Factory of the Future	Factory of the Future: Demonstration of the production of wood panels with near-zero environmental footprint
	LIFE11 ENV/LU/000855 PLD	Erection of a demonstrative de-oiling plant for recycling oily steelmaking sludge and mill scales
POLAND	LIFE11 ENV/PL/000442 MOREENERGY	MOBILE demonstration line for generation of Renewable ENERGY from micronised biomass
	LIFE11 ENV/PL/000444 OZERISE	Agricultural farms and smart grids integrated renewable energy sources

Location	Project number	Title of project
POLAND	LIFE11 ENV/PL/000445 EKOHEMPKON	Remediation of degraded land in the region of Lignite Mine Konin by cultivation of industrial hemp
	LIFE11 ENV/PL/000447 GeoPyrz	Demonstration of the innovative technology of the improvement of absorption of the geothermal deposit layer
	LIFE11 ENV/PL/000453 Spalarnia pirolityczna OS	Demonstration installation for thermal utilisation of sewage sludge by pyrolysis
	LIFE11 ENV/PL/000459 HESOFF	Evaluation of the health state of forests and an effect of phosphite treatments with the use of photovoltaic SLE UAV
SLOVAKIA	LIFE11 ENV/SK/001019 Hydro-climate recovery	Revitalisation of the climate in dried-out communities in Eastern Slovakia via hydro-climate recovery
	LIFE11 ENV/SK/001023 KRASCAVE	Introduction of sustainable groundwater use in the underground karst system of the Krásnohorská jaskya Cave
SPAIN	LIFE11 ENV/ES/000503 WATOP	New tertiary waste water treatment for organic micro-pollutants PPCPs (Pharmaceutical and Personal Care Products)
	LIFE11 ENV/ES/000505 BIOXISOIL	New approach on soil remediation by combination of biological and chemical oxidation processes
	LIFE11 ENV/ES/000506 RIVERPHY	Rehabilitation of a heavy metal contaminated riverbed by phytoextraction technique
	LIFE11 ENV/ES/000513 MASTALMOND	New biodegradable and eco-friendly almond shell based masterbatches for traditional sectors
	LIFE11 ENV/ES/000515 Teruel Balance+Positivo	Recovery of the natural periurban area "Las Arcillas": Sustainable "Environmental Balance"
	LIFE11 ENV/ES/000530 INDUFOOD	Reducing GHG Emissions in the Food Industry through Alternative Thermal Systems based on Induction Technology
	LIFE11 ENV/ES/000535 OPERATION CO2	"Operation CO ₂ ": Integrated agroforestry practices and nature conservation against climate change
	LIFE11 ENV/ES/000538 PLATAFORMA CENTRAL IBERUM	Sustainable urban development in "PLATAFORMA CENTRAL IBERUM"
	LIFE11 ENV/ES/000542 ENERING	Demonstrative industrial installation for the reduction of the greenhouse gas emissions in industrial parks
	LIFE11 ENV/ES/000547 I+DARTS	Innovative and Demonstrative Arsenic Remediation Technologies for Soils
	LIFE11 ENV/ES/000549 REACHnano	Development of a web based REACH Help Desk to support the chemical safety assessment of nanomaterials
LIFE11 ENV/ES/000552 BIOMOMI	BIO-MONitoring and Automatic Microbiological Contamination Control System of Industrial Hydraulic Circuits	
LIFE11 ENV/ES/000557 EDUCO	Collection system of used cooking oils in educative centres and biodiesel production tests with cavitation technology	

Location	Project number	Title of project
SPAIN	LIFE11 ENV/ES/000560 CERAMGLASS	Environmentally Friendly Processing of Ceramics and Glass
	LIFE11 ENV/ES/000562 IBERWASTE	Disposal and Valorisation of Iberian Pig Wastes from Slaughterhouses
	LIFE11 ENV/ES/000569 MINAQUA	Demonstration project for water saving in car wash premises using innovative detergents and soft treatment systems
	LIFE11 ENV/ES/000574 ECORAE	Demonstration of a re-use process of WEEE addressed to propose regulatory policies in accordance to EU law
	LIFE11 ENV/ES/000584 AIRUSE	Testing and Development of air quality mitigation measures in Southern Europe
	LIFE11 ENV/ES/000585 BIOLCA	Demonstration of a Tool for the Evaluation and Improvement of the Sustainability in the Transport Sector
	LIFE11 ENV/ES/000588 Wooldryscouring (WDS)	Eco-Efficient Dry Wool Scouring with total by-products recovery
	LIFE11 ENV/ES/000590 ROEM-plus	High resolution Approach for Management of Surface Water Eutrophication in Rural areas of the DUero River Basin
	LIFE11 ENV/ES/000593 H2ALRECYCLING	Prototype for Producing Hydrogen by means of Clean Water, Ammonia and Recycled Aluminium
	LIFE11 ENV/ES/000596 SIRENA	Simulation of the Release of Nanomaterials from Consumer Products for Environmental Exposure Assessment
	LIFE11 ENV/ES/000600 SEA-MATTER	Revalorisation of coastal algae wastes in textile nonwoven industry with applications in building noise isolation
	LIFE11 ENV/ES/000601 FoodWaste Treatment	Integrated Process for a Sustainable and Cost Effective Food Waste Treatment
	LIFE11 ENV/ES/000606 aWARE	Innovative hybrid MBR-(PAC-NF) systems to promote Water Reuse
	LIFE11 ENV/ES/000613 SaveCrops-LIFE	Polyvalent Biocide from Local Wastes
	LIFE11 ENV/ES/000615 IRRIGESTLIFE	Telemanagement Network using Free Controllers Connected to a GIS for an Optimised Irrigation in Vitoria-Gasteiz
	LIFE11 ENV/ES/000621 IES	Irrigation Expert Simulator
	LIFE11 ENV/ES/000622 The Autonomous Office	Model for a green energy autonomous office building
LIFE11 ENV/ES/000623 GREENROAD	Fostering GREEN Public Procurement in ROAD construction through the validation of high-performance asphalt eco-mixtures	
LIFE11 ENV/ES/000626 REMEMBRANE	Recovery of reverse osmosis membranes at its end of life	
LIFE11 ENV/ES/000639 VALORLACT	Full use of the whey produced by the dairy industry	

Location	Project number	Title of project
SPAIN	LIFE11 ENV/ES/000641 sigAGROasesor	Customised Advanced GIS Advisory Tools for the Sustainable Management of Extensive Crops
	LIFE11 ENV/ES/000646 ECOFLEXOBAG	Development and demonstration of Best Practices to Design and Produce Sustainable Commercial Bags
SWEDEN	LIFE11 ENV/SE/000837 NOISUN	NOise barriers with SUN energy production for district heating system
	LIFE11 ENV/SE/000838 SUNCOOL	Solar thermal collectors with a ZERO electricity heat pump & energy storage for sustainable heating and cooling
	LIFE11 ENV/SE/000839 BUCEFALOS	BLUe ConcEpt For A Low nutrient/carbOn System – regional aqua resource management
	LIFE11 ENV/SE/000841 BIAS	Baltic Sea Information on the Acoustic Soundscape
	LIFE11 ENV/SE/000842 RenewPACK	RenewPACK: Demonstration of an Innovative Renewable Barrier Material for Sustainable Food Packaging
THE NETHERLANDS	LIFE11 ENV/NL/000785 CENIRELTA	Cost-Effective Nitrogen REmoval from waste water by Low-Temperature Anammox
	LIFE11 ENV/NL/000788 Hydrochip	Hydrochip
	LIFE11 ENV/NL/000793 E-mobility 3 cities NL	Boosting Electromobility Amsterdam – Rotterdam – Utrecht
UNITED KINGDOM	LIFE11 ENV/UK/000389 UP&FORWARD COMS	Urban Participation and Focus on Reusing Waste and Recycling Development of Communications
	LIFE11 ENV/UK/000392 CSP	Celtic Seas Partnership (CSP) – stakeholder driven integrated management of the Celtic Seas Marine Region
	LIFE11 ENV/UK/000402 ACUMEN	Assessing, Capturing & Utilising Methane from Expired and Non-operational landfill

Integration of biogas production process into an existing bio-methanisation plant

Project background

The lack of developed techniques that fully exploit the environmental advantages of biomethanisation processes is evident. The AlcoBiofuel (ABF) bioethanol plant, located in Ghent, does not currently produce any wastewater but it consumes a large amount of fossil fuel. As a by-product, the bioethanol plant produces a protein-rich product, DDGS (dried distiller's grains with solubles), which is used as animal feed.

Project objectives

The overall objective of the 'BIOGASTIL' project is to develop an innovative means of producing biogas by treating the thin stillage (part of the DDGS). The beneficiary will integrate a prototype biogas production unit into an existing biofuel production unit and prove that the technique can be applied by other bioethanol plants under similar process conditions. This dissemination effect is one of the project's main objectives.

Specific objectives include:

- Reduction of GHG emissions through technological innovation;
- Substitution of fossil fuels by renewable energy. The project will produce biogas, a renewable energy source, which will replace natural gas;
- Maximising energy efficiency and resource efficiency; and
- Continuous modernisation and optimisation in existing industrial facilities. The project aims to encourage the development of innovative renewable technologies and to introduce this method to other existing bioethanol plants.

Expected results

The injection of biogas into the beneficiary's combined heat and power (CHP) plant (installed August 2012) is expected to save 6.08 g CO₂eq/MJ ethanol (in comparison to the pre-BIOGASTIL period, using nominal production values). As well as the increase in efficiency of CHP by using biogas, the transformation of the liquid thin stillage into biogas saves a considerable amount of energy on evaporating and drying this fraction to recuperate the nutrients. This results in a reduction of around 9% of the energy used in the dryer.

LIFE11 ENV/BE/001038
BIOGASTIL



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

AlcoEnergy

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Name of contact person

Olivier VAN ROMPAEY

Duration of project:

31 months (01.06.2012 – 31.12.2014)

Total budget in euro:

10,753,149.00

EC contribution in euro with %:

2,965,336.00 (27.58%)

Theme: Climate change - Energy-Energy efficiency & Energy-Reduction of greenhouse gases emissions

Other expected results:

- BIOGASTIL alone will save 13 073 tonnes/yr of CO₂eq;
- CHP + BIOGASTIL will result in primary energy savings of up to 25%, from replacing a steam boiler with a more energy efficient CHP plant and the replacement of natural gas by biogas. This means a saving on primary energy for the production of heat and electricity of nearly 39 000 GJ/yr owing to BIOGASTIL alone. For CHP and BIOGASTIL together, the yearly savings on primary energy will be 398 015 GJ; and
- The project will produce biogas, with an energy content of 173 023 GJ/yr. The injection of this biogas into the CHP plant will strongly increase the efficient use of energy.

From Cradle to Cradle: a Circular Economy for the European Gypsum Industry with the Demolition and Recycling Industry

Project background

Gypsum is widely used in construction (e.g. more than 1600 million m²/yr of interior surfaces in Europe are covered with plasterboard) and some 100 000 people in the EU are dependent for employment on the gypsum and anhydrite industry.

The gypsum industry generates around 1% of total construction and demolition waste. Gypsum waste can be divided into three categories: Production waste; Waste resulting from construction sites; and Demolition waste.

Although gypsum products are indefinitely and fully recyclable, only a small percentage are recycled in Europe. The main barrier to recycling is the fact that buildings are currently demolished and not dismantled, hampering the recovery of gypsum waste. The drivers of recycling are stricter criteria for landfilling of gypsum waste; an ambitious EU target of 70% for the recycling of construction and demolition waste; and green public procurement.

Project objectives

The overall aim of the 'C2CGYPSUM' project is to achieve higher recycling rates of gypsum waste, thereby helping to achieve a resource efficient economy.

Specific objectives include:

- Diagnosis of buildings, to demonstrate the feasibility and advantages of deconstruction versus demolition;
- Processing gypsum demolition waste to prepare it for re-use;
- Qualifying gypsum waste (including an audit of the potentially recyclable materials);
- Incorporation of the processed gypsum into the manufacturing process, including an assessment of technical difficulties, options and solutions;
- Production of European criteria for recycled gypsum to establish the end of waste status, and the application for a Council regulation to confirm these criteria under Directive 2008/98/EC;
- If feasible, on the basis of the results, setting of a recycling target for gypsum waste;
- Reassessment of the percentage of recycled gypsum (5%) established in the Green Public Procurement Criteria for Wall Panels developed by the European Commission (http://ec.europa.eu/environment/gpp/second_set_en.htm); and
- Assessment throughout the project of the carbon footprint and the methods to mitigate it at the construction, transport, processing and manufacturing levels.

LIFE11 ENV/BE/001039
C2CGYPSUM



Beneficiary:

Type of beneficiary

Professional organisation

Name of beneficiary

Eurogypsum-Association Européenne des Industries du Plâtre

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Name of contact person

Christine MARLET

Duration of project:

36 months (01.01.2013 – 01.01.2016)

Total budget in euro:

3,566,250.00

EC contribution in euro with %:

1,783,123.00 (50.00%)

Theme: Industry-Production-Building / Waste-Construction & demolition waste

Expected results

- A European handbook of best practices for controlled deconstruction of gypsum systems;
- A European manual of best practices for auditing buildings;
- A European specification/qualifications for recycled gypsum;
- The application for a Council regulation establishing criteria for determining when gypsum waste ceases to be waste under Directive 2008/98/EC;
- A recycling target for gypsum waste;
- Adaption the Green Public Procurement Wall Panels Sheet to require that there is at least 5% recycled gypsum in the panel; and
- Assessment of the carbon footprint of gypsum waste recycling.

Improving sustainability of construction materials using innovative Silicon based treatment

Project background

Construction activities consume more raw materials than any other industrial sector and, as a result, also account for the largest share of greenhouse gas (GHG) emissions and produce the largest waste stream – some 25% of Europe's total waste production. Improving the durability of different construction materials, such as concrete and wood, would allow substantial benefits in terms of raw material use, related energy consumption, GHG emissions, and waste production.

Moisture ingress (entry) is responsible for the premature degradation of construction materials. Silicone-based water repellents provide a good technical basis to develop new water repellents that can increase the durability of wood and cement-based materials and the dimensional stability of wood. This could also reduce the humidity in (concrete) buildings, to improve the living and working environment, and to improve positive health benefits.

Project objectives

The overall objective of the 'SILEX' project is to extend the lifetime/usability of buildings made of wood and/or concrete, by applying silicon-based water repellents. In comparison with the current treatment processes, silicones also have a beneficial environmental profile. The project will address environmental problems specific to each material: use of biocides and fungicides for wood; release of volatile organic compounds (VOCs) for concrete and cement-based materials.

Specific project goals are:

- To demonstrate the effectiveness and market introduction of a new series of environmentally-friendly silicon-based water repellents for cement and wood-based construction materials;
- To reduce VOC emissions by 80-90% in comparison with concrete, silane-based impregnation treatments;
- To reduce the amount of biocides needed for the conservation of some wood species (pine, beech);
- To extend the usability of oak and beech by improving their dimensional stability (i.e. the aim is to reduce dimensional change by 50%); and
- A reduction in CO₂ emissions thanks to the increased lifetime of wood and concrete materials.

Expected results

The development of sustainable materials will lead to new green solutions for the construction industry. The main expected results are:



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

Dow Corning Europe S.A.

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Name of contact person

Jean-Paul LECOMTE

Duration of project:

48 months (01.06.2012 – 31.05.2016)

Total budget in euro:

2,208,738.00

EC contribution in euro with %:

1,043,234.00 (47.23%)

Theme: Air & Noise-Air pollutants / Environmental management-Cleaner technologies / Industry-Production-Building

- An increase in the durability/usability of EU-grown wood. Using the silicon-based product is expected to reduce the amount of biocide that must be applied to extend wood service life and to decrease wood dimensional instability upon moisture entry. For pine, the project expects to match the current service life of treated pine with a reduction in biocide use of at least 75%; for beech, the project expects to increase the service life from five years up to 25 years in comparison with untreated wood, and to improve dimensional stability by at least 50%; for oak, the project expects to reduce dimensional changes by 50% and reduce leaching of extractable under natural ageing in order to allow oak to be used in class III applications;
- A decrease of 80-90% in VOCs released upon hydrophobic impregnation of concrete; and
- A reduction in CO₂ emissions as a result of the increase in the lifetime of the treated materials (fewer CO₂ emissions for repairs and transport).

Quarry Resource Efficiency Demonstration Project

Project background

To create a more resource-efficient future, it is widely recognised that the reuse of by-products and waste is necessary. Mining and quarry waste is, globally, the largest category of waste. In Europe some 300 million tonnes of mining waste is produced each year (Eurostat, 2003).

The standard methods of managing quarry slurry are to dispose of it in landfill, to discharge it into ponds, to use it on quarry sites for the construction of tailing dams, or for land restoration. However, such management methods have several potentially negative environmental impacts: the slurry may be overly acidic or alkaline; it may contain toxic substances such as dissolved metals and/or soluble and insoluble complex organic compounds; and in general, large areas of land are required for its disposal.

However, this material could be used as a resource for other industries, in particular in the clay brick/tile and cement industries. These are among the most carbon-intensive industries in Cyprus, mainly as a result of the large amounts of fuel required to achieve the high temperatures needed, and the use of raw materials such as calcium carbonate (CaCO₃).

Project objectives

The 'QuaResE' project aims to demonstrate alternative methods for the production of bricks, ceramics and cement using waste quarry slurry as a raw material.

The project's main objectives include:

- Demonstrating the use of waste quarry slurry in the production of batches of red bricks. A total of 15 repetitions of the demonstration will take place, with each repetition involving the production of one batch of 3 000 bricks and using an estimated 60 tonnes of quarry slurry. Each demonstration will involve the use of different combinations of slurry and other raw materials in the brick mix;
- Demonstrating the use of waste quarry slurry in the production of batches of cement. A total of 15 repetitions of this demonstration action will take place, with each repetition involving the production of one batch of some 50 tonnes of cement. Each demonstration will involve the use of different quantities of waste quarry slurry with different combinations of other raw materials in the cement mix;
- Calculating the reduction in CO₂ emissions for each scenario; and
- Assessing how greater resource efficiency can improve waste management, reduce greenhouse gas emissions

LIFE11 ENV/CY/000859
QuaResE



Beneficiary:

Type of beneficiary

National authority

Name of beneficiary

Department of Environment, Ministry of Agriculture, Natural Resources & Environment.

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Name of contact person

Theodoulos MESIMERIS

Duration of project:

30 months (01.06.2012 - 30.11.2014)

Total budget in euro:

856,515.00

EC contribution in euro with %:

428,257.00 (50.00%)

Theme: Industry-Production-Mining - Quarrying

and the use of virgin raw materials, and, therefore, provide environmental and financial benefits for the industries concerned.

Expected results

- Financial, social and environmental assessments of the implementation of resource efficiency measures in the cement and clay brick/tile industries, and of the benefits arising from quarry-slurry waste management;
- The production of 15 batches of 3 000 bricks from quarry slurry;
- The production of 15 batches of c. 50 tonnes of cement from quarry slurry;
- The establishment of a Best Available Technique for the use of quarry slurry in the cement and clay brick/tile industries; and
- The publication of a resource-efficiency guide for the use of quarry slurry in the clay brick/tile and cement industries.

Validation of an innovative automotive glass process: hot oxygen combustion and hot natural gas

Project background

Glass is a key element in many industries. The average consumption of glass is estimated at 18 kg per person per year in Western Europe. Growth in the demand for flat glass has generally outpaced real GDP growth for the past 20 years. One of the key markets for flat glass is the automobile sector.

Unfortunately, the production of flat glass requires high levels of energy and entails the emission of pollutants such as greenhouse gases (GHG). Scope exists to develop a new type of furnace which remains capable of producing high quality glass for vehicles but in a more environmentally sensitive manner. Such a concept also offers opportunities for replication in other industrial sectors that use melting furnaces, such as the steel industry or the cement industry.

Project objectives

The 'HOxyGas' project aims to demonstrate a new type of production system for automotive flat glass that has a lower carbon footprint than comparable systems in terms of reduced fossil fuel consumption and reduced GHG emissions.

An innovative process is proposed to produce glass that uses only hot natural gas, oxygen, and a hot oxy-combustion technology. The process involves pre-heating the furnace (to very high temperatures) and the use of natural gas (450°C) as fuel and pure oxygen (550°C) as oxidiser.

Identifying a technology that is fully compatible with natural gas is expected to increase furnace energy efficiency and reduce emissions. A key aim of the project is to monitor, document and disseminate information about the new technology's environmental impact. This information is expected to help promote the replication of this new technology's environmental benefits in other companies.

Expected results

The new technology will decrease the use of oxidisers, fuel consumption and pollutant emissions in the manufacture of flat glass. Quantified outcomes will include:

- CO₂ emissions will be reduced by 5.5%. Reductions will come from three sources: 61.7% from the glass furnace itself; 28.9% from the raw materials; and 9.3% from oxygen production;

LIFE11 ENV/CZ/000488
HOxyGas



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

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Name of contact person

Jiri JANGL

Duration of project:

44 months (01.06.2012 - 31.01.2016)

Total budget in euro:

8,501,848.00

EC contribution in euro with %:

4,250,924.00 (50.00%)

Theme: Climate change - Energy-Energy saving and Reduction of greenhouse gases emissions / Industry-Production-Non-metallic minerals

- NO_x: specific emissions will be reduced by 79.2% as a result of using pure oxygen instead of air as oxidiser in the production process;
- SO_x: specific emissions will be reduced by 34.5%;
- Dust (particles): These harmful particles in fumes will be reduced by 67.7%;
- Since O₂ and N₂ are produced simultaneously in the new process, there will be a CO₂ saving. Furthermore, the use of hot instead of cold oxygen will induce a reduction of O₂ consumption of up to 10%. On-site production of O₂ and N₂ will offer advantages for this technology because the process does not depend on another site for its supply of these gases. This advantage provides greater autonomy of production and may help replication of the proposed technology; and
- The project expects an average yearly energy saving of 78 565 MWh for the pilot furnace, a 19.7% reduction in energy consumption.

Intermunicipal cooperation on Water Management and Climate Change Adaptation for The Stream of Usserød

Project background

The stream of Usserød in the northern part of Zealand, Denmark is receiving increasing amounts of water from rainwater and sewage systems as a consequence of climate change and the gradual expansion of urban areas in the municipalities of Rudersdal, Hørsholm and Fredensborg. The stream is 8 km long and flows from the Lake of Sjælsø in the west to the Strait of Øresund in the east.

In Denmark over the four summers from 2007-2010, more high-intensity rain storms were recorded than at any time in the past. Very strong individual rain events occurred, in addition to periods of heavy rain over a few days – the ‘renewable rain’ phenomenon. Both cases can lead to flooding, as was the case in Fredensborg Kommune in the summer of 2010, when more than 70 houses were directly affected.

Run-off from precipitation is generally expected to become more extreme in Denmark in the coming years, increasing the climate change challenge. It is therefore necessary to assess the entire water-cycle, to identify solutions for the years to come. Additionally, alternative thinking is necessary to find solutions and methods that embrace and include all three municipalities – as water does not respect municipality borders.

Project objectives

The project's key objective is climate change adaptation. The specific aims of the project are:

- To reduce risks of critical floods along the stream of Usserød;
- To reduce the risk of damage and associated economic, societal and human costs if floods are not avoided;
- To increase awareness of the stream and its resources among citizens, politicians and civil servants; and
- To create a basis for all parties to implement proactive, holistic actions around the development, operation and maintenance of the stream of Usserød, making it a unifying positive element for the municipalities affected.

Expected results

- Enhanced and more controlled monitoring of the stream of Usserød;
- Improved emergency preparedness before, during and after critical events;

LIFE11 ENV/DK/000889
Stream of Usserød



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

Fredensborg Municipality

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Name of contact person

Martin ULLERUP

Duration of project:

39 months (03.09.2012 - 30.11.2015)

Total budget in euro:

1,864,203.00

EC contribution in euro with %:

931,728.00 (49.98%)

Theme: Climate change - Energy-Adaptation to climate change / Risk management-Natural risks (Flood - Forest fire - Landslide)

- The creation of a Joint Emergency Plan;
- Fewer critical events around the stream of Usserød during heavy and torrential rain;
- Lower societal and human costs due to critical events; and
- Implementation of a joint climate change adaptation toolkit. This will consist of a joint hydraulic model, a hydraulic documentation tool, new water meters and a joint flood risk map.

Improving environmental assessment by adopting good practices and tools of multi-criteria decision analysis

Project background

Multi-criteria decision analysis (MCDA) has emerged as a formal methodology for fusing available technical information and stakeholder values to support decision-making in many fields. MCDA is a useful tool for supporting environmental impact assessment (EIA) and strategic environmental assessment (SEA) processes.

Practices for evaluating the impact of alternative approaches to environmental planning are underdeveloped, and public participation produces information that is not used efficiently. As a result, it is necessary to demonstrate that the integration of the MCDA into EIA/SEA and efficient interaction between stakeholders have a crucial impact on the quality and effectiveness of EIA and SEA procedures. This LIFE project will thus cover an important area in environmental planning that has not been addressed to date.

Project objectives

The overall aim of the 'IMPERIA' project is to transfer good practices and methods from MCDA to the fields of EIA and SEA. The project also aims to increase collaboration and information exchange between EIA/SEA, MCDA and participatory planning professionals (authorities, planners, consultants and researchers all over Europe).

The project will demonstrate via three pilots, the ways in which MCDA can be used in EIA and SEA processes to improve the comprehensive evaluation of alternatives and facilitate a more explicit evaluation of impact significance. Project sub-objectives are:

- To develop systematic, transparent and participatory practices and procedures by integrating principles and practices of MCDA into the EIA and SEA processes;
- To develop new MCDA-based tools for integrated EIA and an MCDA-based questionnaire tool to gather public opinions online in a structured and efficient way; and
- To compile guidelines for the integrated and interactive use of MCDA principles and tools in EIA/SEA processes.

Expected results

The project will result in improved quality and transparency of, and participation in EIA and SEA. Its findings will be useful for the development of European strategies and policies for EIA and SEA, in particular in terms of how to increase the effectiveness of citizen and stakeholder participation and the cost-effectiveness of the EIA procedure. Outcomes are also expected to be highly applicable to environmental planning and natural resource management and policy-level decision making.

LIFE11 ENV/FI/000905
IMPERIA



Beneficiary:

Type of beneficiary

National authority

Name of beneficiary

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Name of contact person

Mika MARTTUNEN

Duration of project:

41 months (01.06.2012 - 31.10.2015)

Total budget in euro:

1,292,043.00

EC contribution in euro with %:

639,032.00 (49.46%)

Theme: Environmental management-Life Cycle Assessment-Management

For instance, they will be highly relevant to the "EU liaison" project, which aims at developing and providing tools to improve dialogue between scientists and policy-makers.

Other results will include:

- An MCDA-based tool and procedure to support stakeholder involvement in different phases of EIA and SEA;
- The creation of a generic questionnaire format for gathering stakeholder and public views and opinions, tailored to support the evaluation of alternatives and impact significance determination;
- A web tool for gathering public views and opinions relevant to the EIA process;
- The creation of the "YVAKO Web service": a web-platform for EIA, in both Finnish and English; and
- A training course for different actors in the EIA and SEA fields on the practices and tools developed by the project.

Benchmarking water protection in cities

Project background

The Baltic Sea is one of the most polluted, brackish water bodies in the world. The most serious threat is eutrophication caused by high nutrient loading from municipal wastewater, agriculture, scattered settlements, traffic (from nitrogen deposition), energy production and industry. The sea area of Helsinki consists of extensive bays, a fairly sparse archipelago and outlying islets and open sea areas. Seawater quality is affected by impurities in storm waters, diffuse loading, human activities and wastewater, which is fed to the outer archipelago through tunnels.

The environmental situation requires local level actors to improve their knowledge and acquire new skills and tools in order to be able to contribute to the protection of the sea. The 'CITYWATER' project will be based on the Baltic Sea Challenge Initiative, which will be used as a demonstration basis for the project implementation. The initiative links a network of more than 170 municipalities, companies, universities and associations.

Project objectives

The overall objective of the project is to implement and facilitate environmentally relevant and cost-effective voluntary water protection measures in cities and municipalities in the Baltic Sea Region in order to improve the state of coastal waters. General working procedures will be improved by increasing environmental communication and knowledge in cities and municipalities in the region in order to strengthen efforts to improve water quality.

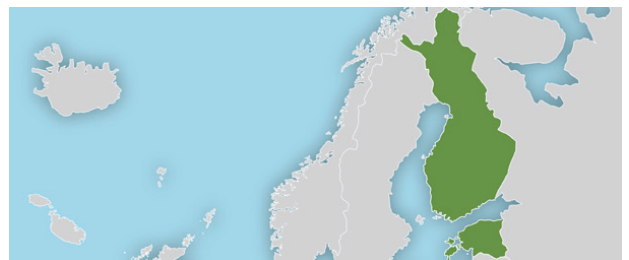
Voluntary water protection work will be promoted and facilitated using the principles of the Baltic Sea Challenge initiative, with the goal of improving the knowledge and communications on Baltic Sea protection of beneficiaries and stakeholders.

The project will also assess the environmental impact and cost-benefit ratio of different water protection measures and of different activities that cities and municipalities carry out with regards to the Baltic Sea. This is connected to the need to monitor the impact of project actions and to compile the results from the project with the help of a toolbox.

Expected results

- Three new investment plans and constructions for storm water handling - in Helsinki and Turku in Finland, and in Tallinn, Estonia;

LIFE11 ENV/FI/000909
CITYWATER



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

City of Helsinki

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Charlotta NUMMELIN

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

1,158,515.00

EC contribution in euro with %:

578,909.00 (49.97%)

Theme: Water-Water resources protection

- Tools for more effective environmental communication, with a special focus on voluntary water protection measures in Baltic Sea states and within local organisations, and on strengthening the network of actors;
- A ranking of the environmental impact and cost-benefit value of water protection measures implemented in cities and municipalities;
- The application of lessons learned from the environmental communication survey and the environmental impact and cost-benefit analyses in the Baltic Sea Challenge after the end of the project; and
- The Baltic Sea Challenge coordinators will disseminate and, if needed, further develop the results for both existing and new actors within the Baltic Sea Challenge network.

The results will also be disseminated to national authorities, research institutions, EU bodies, HELCOM and other regions (e.g. the Mediterranean and Black Sea regions) for use in their water protection work.

Urban Oases: Shaping a Sustainable Future through Environmentally Functional Landscape Features

Project background

Watersheds in urban environments are largely invisible and altered from their natural state. Widespread impervious surfaces, such as concrete and asphalt, and underground stormwater sewer networks have adversely altered watershed boundaries and led to the rapid flow of untreated stormwater and snowmelt water into receiving bodies of water. As a result of these artificial constructions, the ecosystems services provided by watersheds, such as water cleaning and regulation, are lost, with consequent harmful impacts on receiving waters.

Innovative landscape structures and designs are needed to improve urban watersheds, and it is important to go beyond current standards and to develop prototypes for accurate and comparable monitoring. Wetlands, including peatlands, are known to have an important environmental role in cleaning water, as well as acting as carbon sinks - particularly in regions with colder climates - because of their high primary production and slow degradation.

The Baltic Sea is one body of water that has been suffering from changes to urban watersheds. The beneficiary participates actively in the Baltic Sea Challenge, a voluntary initiative to protect the Baltic Sea from all stakeholder activities.

Project objectives

The 'Urban Oases' project aims to study how alternative constructions in urban watersheds can improve the functioning of natural systems and ecosystems services, thereby helping to reduce run-off of polluting substances to receiving waters. It hopes to contribute to reducing contamination, algal blooms and eutrophication in receiving rivers and lakes, and ultimately to improve the water quality of the Baltic Sea. The project will study pilots in order to assess the potential for innovative stormwater wetland types and snow management swale structures as pervious waterways in densely constructed urban environments. The project actions will include the designs of all the prototypes and the monitoring stations.

The beneficiary will assess the value of functional landscape elements in providing environmentally beneficial ecosystems services, covering impacts on:

- Water quantity (flood control);
- Water quality;
- Greenhouse gases (sink or source); and
- Biodiversity.

LIFE11 ENV/FI/000911
Urban Oases - Keidas



Beneficiary:

Type of beneficiary

University

Name of beneficiary

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Outi SALMINEN

Duration of project:

55 months (01.06.2012 - 31.12.2016)

Total budget in euro:

3,405,540.00

EC contribution in euro with %:

1,702,770.00 (50.00%)

Theme: Biodiversity issues-Urban biodiversity / Land-use & Planning-Spatial planning

Expected results

- Improved know-how on developing urban water ecosystems services through functional landscapes;
- Information about the costs of developing ecosystems services;
- Guidelines for two scale stormwater wetland types, as well as for structural stormwater and snow management swales for built-up urban areas, including refined soil mixtures, dimensioning and maintenance guidelines;
- Specific quality improvements in the management of water runoff in urban areas and the impact on ecosystems and receiving waters (the Baltic Sea);
- Improved biological diversity;
- Improved recreational value of water bodies;
- Increased collaboration on the implementation of functional and innovative urban landscape elements within the Baltic Sea region; and
- Results and lessons applicable to all urban areas within the EU.

ICT for greener urban development

Project background

In 1900, just 13% of the world population lived in urban areas. Now it is around 50% and likely to rise to 60% by 2030 according to United Nations predictions. These urban areas present a considerable environmental challenge in terms of energy and water consumption, greenhouse gas emissions and waste production.

The pressure on space for housing in these areas has led, since the 1960s, to the widespread use of social housing schemes. In social housing, heating accounts for some 28% of the consumed energy and water resources - mainly collective heating systems - with a further 22% resulting from the use of lifts. Urban residents also cause environmental problems through commuting from home to other locations, such as workplaces and shopping centres.

Project objectives

The 'SUSTAIN-ICT' project aims to provide energy-saving solutions to landlords and residents of urban areas using ICT systems that are designed to reduce energy use, decrease water consumption and reduce the carbon footprint from urban commuting.

The project aims to create a large, overall broadband IT system that allows the deployment of a range of ICT services through a portal called "the kiosk".

In the interests of reducing energy and water use in public housing, a number of flats will be equipped with the project's systems. These will include heating-regulation systems and sensors for measuring electricity and water consumption, temperature and humidity. By providing information that allows landlords and tenants to optimise their use of energy, the project aims to reduce energy consumption by 20%. On water-use, the project objective will be to increase landlord and tenant awareness and positively influence their behaviour. The objective is to reduce water consumption by 20%.

Reduction of the carbon footprint will be achieved both by the optimisation of heating systems and the implementation of a 'social mobility network' that provides car-sharing solutions and greater efficiency of travel using public transport networks. The specific objective of the mobility network is to convince 10% of the 3 300 inhabitants targeted to use the system. The beneficiary believes the project will be a pilot for the development of "smart green cities".

LIFE11 ENV/FR/000739
SUSTAIN-ICT



Beneficiary:

Type of beneficiary

NGO-Foundation

Name of beneficiary

Pôle Numérique

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Name of contact person

Sophie HOUZET

Duration of project:

40 months (01.07.2012 – 31.10.2015)

Total budget in euro:

1,450,278.00

EC contribution in euro with %:

725,139.00 (50.00%)

Theme: Climate change - Energy-Energy efficiency, Environmental management-Integrated management

Expected results

The project expects to achieve the following quantified savings:

- 1 674 GWh/yr of energy – 1.1 MWh/inhabitant/yr. This will consist of 1 581 GWh/yr saved by equipping 674 flats with ICT systems, and 93 MWh/yr saved in communal parts of the 20 buildings concerned;
- 11 321 m³/yr of water – 7.6 m³/inhabitant/yr. This will include a saving of 11 000 m³/yr in the 674 project flats, and a saving of 321 m³/yr in the communal parts of targeted buildings; and
- 343 tonnes/yr of CO₂ – 150 tonnes/yr saved from reduced energy consumption in the flats/communal buildings, and 193 tonnes of CO₂/yr from car-sharing and increased use of public transport.

Demonstration of waste water's biogas total upgrading system to bioCH₄ & bioCO₂ and health risks acceptance

Project background

Bio-energy, including biogas, can contribute to meeting the EU's ambitious 20/20/20 objectives. Bio-energy can also contribute to the implementation of the EU Directive on the promotion of the use of energy from renewable sources (2009/28/EC).

However, the development of biogas production varies greatly from one Member State to another. One area of interest is the production of biogas from wastewater treatment plants (WWTPs). Biogas generated by a WWTP contains three types of products: bio-methane (bio-CH₄), bio-carbon-dioxide (bio-CO₂) and a complex mix of minor elements (such as oxygen or nitrogen), biological elements (bacteria, viruses), and chemical molecules (e.g. aromatic hydrocarbons).

Unlike landfill biogas, WWTP biogas is perennial, by nature relatively rich in methane and is available close to existing industrial zones and fuel and gas distribution infrastructure. Some of the beneficiary's WWTPs already have digesters and produce biogas that is re-used internally, particularly in cogeneration.

Project objectives

The project aims to demonstrate how the biogas produced by a WWTP can be separated for re-use, to enhance the energy efficiency of the plant, reduce greenhouse gas emissions and develop circular economic chains.

The project will separate the bio-CH₄ and bio-CO₂ components from the rest of the complex biogas mixture generated by the beneficiary's treatment plant in Strasbourg. It will use cryogenic distillation technology, which it will optimise during the project implementation. It expects to demonstrate the technical reliability of the process with a nominal biogas input of 300-400 Nm³/hr.

The project aims to define control procedures for each component to assist European standardisation. It will establish a database of the hazardous substances, biological viruses and bacteria species.

The project expects to demonstrate the cost-effectiveness and environmental benefits of re-using each component:

- For bio-CH₄, a combustible gas, the aim is to feed it into the natural gas distribution network;
- For bio-CO₂, which can be a gas, liquid or solid (dry ice), potential applications are to be investigated; and

LIFE11 ENV/FR/000740
Biovalsan



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

Lyonnaise Des Eaux France

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Name of contact person

Arnaud ROSTAN

Duration of project:

43 months (01.06.2012 - 31.12.2015)

Total budget in euro:

4,761,089.00

EC contribution in euro with %:

2,380,543.00 (50.00%)

Theme: Water-Waste water treatment

- For the complex mixture, the project team intends to use it in internal sludge thermal treatment (combustion), because of its high calorific value, and to efficiently and reliably destroy the contaminants contained in the mixture.

Expected results

- Best operating conditions identified for optimum separation of biogas constituents using a cryogenic distillation unit;
- More than 75% of the raw biogas flow recovered for re-use;
- A demonstration of the feasibility of feeding recovered bio-CH₄ into the gas network, with 10 new parameters defined;
- Viable applications for bio-CO₂ identified;
- More than 60% of renewable energy and heat recovered from sludge combustion incorporated in the WWTP;
- Target energy production capacity of 20 Gwh/yr;
- Overall reduction in CO₂ emissions of 6 000 tonnes/yr; and
- The economic feasibility of the process demonstrated.

Biological tools to Optimise Treatment Technologies to remove micro Pollutants and Endocrine disrupters

Project background

Over the past 20 years, water suppliers have become increasingly interested in endocrine disrupting compounds (EDCs) and their negative environmental and health impacts. EDCs are a very large and diverse collection of chemical substances, which cause developmental disorders, such as sexual development problems, in aquatic organisms. They are considered substances of very high concern (SVHC) in the EU's regulations on chemicals and their safe use (REACH) and are regarded as main pollutants within the Water Framework Directive.

A large number of studies have investigated the removal of endocrine disrupters. However, little is known about how these processes change the composition and biological activity of EDCs and thus the impact on aquatic ecosystems and human health. No exhaustive list or regulatory thresholds have yet been defined for EDCs.

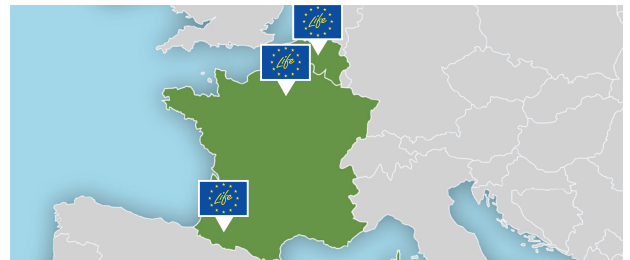
Project objectives

The 'BIOTTOPE' project aims to validate an innovative wastewater treatment system combining biological processes, biological monitoring and tailored physical-chemical technologies to generate effluents free from pollutants causing biological effects. Work on the project will be based at two test sites, at Pau in south-western France and in Brussels.

The project will implement, test and validate a new prototype water treatment technology at semi-industrial scale, based on activated carbon adsorption and on an accelerated settling step to remove micro-pollutants such as EDCs that are not removed by the conventional treatment systems. It aims to demonstrate the technical feasibility of new operational parameters and combination technologies without decreased performance in COD (chemical oxygen demand) and BOD5 (biochemical oxygen demand in five days) reduction.

Treatment efficiency will be monitored using small biological aquatic organisms - tadpoles or fish larvae. These will be genetically modified so that they are fluorescent when they are in contact with specific EDCs. This will enable the project to monitor and enhance the performance of the combined wastewater treatment systems. It should, for example, be able to identify the optimum range of hydraulic retention time for micro-pollutant elimination.

LIFE11 ENV/FR/000742
BIOTTOPE



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

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Luis CASTILLO

Duration of project:

31 months (01.06.2012 – 31.12.2014)

Total budget in euro:

2,387,166.00

EC contribution in euro with %:

1,193,583.00 (50.00%)

Theme: Water-Waste water treatment

Expected results

- Successful removal at semi-industrial scale of pollutants causing biological effects from wastewater, including: more than 50% of micro-pollutants; 90-100% of oestrogenic hormones and 50-100% of pharmaceuticals;
- Resulting effluent with minimal risk from pollutants causing biological effects;
- Reduction of COD and BOD5 rates by 95%; and
- Detailed and reliable information on the optimised design and running of the new treatment system.

Validation of a process of recovery and revalorisation of Rare Earth elements contained in wastes

Project background

Rare Earth (RE) elements are a set of 17 chemical elements in the periodic table, specifically the 15 lanthanoids, plus scandium and yttrium. RE elements exhibit similar chemical properties and are found across the world, although only rarely in concentrated quantities that can be commercially exploited.

However, because of their lightness, these metals have numerous high-technology uses, in particular in the miniaturisation of electronics. RE elements are used in products ranging from mobile phones to military aircraft. In recent years they have become more and more important in green technologies, including in the reduction of energy consumption, the development of renewable energy and the control of air pollution. They can be found in cars, wind turbines, medical imaging equipment and energy-saving lamps.

RE metals are used in phosphorescent lights to help create a pleasing colour. However, the manufacture of these products generates 1 500 tonnes/yr of phosphorescent powder wastes in Europe, as well as the residual glass. The EU considers RE elements a “critical mineral raw material” for which some recycling activities are recommended. But mining, refining and recycling of RE metals have serious environmental consequences if not properly managed. The beneficiary operates the only industrial plant that can purify RE elements, which is located in La Rochelle, France.

Project objectives

The project aims to recover RE elements in waste instead of sending them to landfill. In particular, it aims to validate the full potential of innovative, environmentally-friendly recycling of the RE elements contained in phosphorescent powders waste.

Through work at its plants in Saint Fons and La Rochelle, the project aims to demonstrate that it is possible to recycle 1 500 tonnes/yr of phosphorescent powder wastes – equivalent to the current level of waste generated annually in Europe. The project will also seek to recover RE and recycle by-products, including glass. It aims to minimise the residual waste at the end of the process and have the lowest possible impact on the environment, particularly water and air.

In the second phase of the project, the beneficiary will test an industrial process for recycling up to 3 300

LIFE11 ENV/FR/000744
LOOP



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

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Name of contact person

Frédéric CARENCOTTE

Duration of project:

24 months (01.06.2012 – 31.05.2014)

Total budget in euro:

2,198,903.00

EC contribution in euro with %:

1,099,451.00 (50.00%)

Theme: Waste-Industrial waste / Waste-Waste recycling

tonnes/yr of phosphorescent powder, the forecast European waste production in 2020. Another aim of the project will be to study the recycling of other types of waste to prove the transferability of the process. A clear objective throughout will be to minimise the energy consumption of the entire process.

Expected results

- Successful treatment of at least 90% of treated RE metals, glass and phosphates from phosphorescent lights at a rate of 1 500 tonnes/yr;
- Recovery of 188 tonnes of RE as oxides (430 tonnes as nitrates) for re-use in low-energy consumption lamps;
- Recovery of 100-500 tonnes of glass;
- Recovery of 800 tonnes of phosphates;
- Reduction of eventual waste to less than 10% of weight, equivalent to 150 tonnes/yr; and
- Demonstration of the ability to reach a treatment capacity of 3 300 tonnes/yr.

Reducing Consumption of Drinking Water: Implementation and Evaluation of Integrated Measures in Gironde (France)

Project background

In the past century, worldwide water consumption has increased six-fold - more than double the rate of population growth, according to the EU joint research centre (JRC). In France, where this project is based, there is a shortage of water resources in two-thirds of the country.

Total water consumption in the Département of the Gironde is some 310 million m³/yr. At least half of this is extracted from deep aquifers - Miocene, Oligocene, Eocene, late Cretaceous. Changes in the aquifer levels have been monitored for many years and reveal severe over-exploitation. This situation represents a quantity and quality risk for groundwater resources, which provide 99% of the drinking water in the Gironde.

To counteract this, the beneficiary has implemented active water management since the 1990s. A water management scheme suggested that savings of up to 30 million m³/yr were needed, with half from reduced consumption and half from the use of alternative resources. Based on current demographics, this target increases by 50% to 45 million m³/yr.

Project objectives

The project's main objective is to preserve groundwater resources by reducing pumping in the region's most important aquifer. It aims to distribute water-saving equipment kits to households and public buildings and to gain a better understanding of the rationale for consumption by studying the impact this equipment has on consumption patterns.

The project will optimise the performance of drinking-water distribution networks. It will regulate the pressure in the distribution network in the Blayais area, since the higher the pressure, the higher the risk of leaks. A preliminary study will be carried out to identify sectors for the most efficient location of pressure modulators.

The project aims to inform and involve stakeholders, households and local authorities, and encourage them to change consumption patterns, thus preserving resources. It will install rainwater tanks to provide alternative supplies. It will also produce a guide for stakeholders involved in water resources management and include the issue of water management in land-use planning.

The project will collect data on water savings and establish consumption references according to sociological or

LIFE11 ENV/FR/000745
MAC EAU



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

Conseil Général de la Gironde

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Name of contact person

Nathalie BRICHE

Duration of project:

53 months (16.07.2012 – 31.12.2016)

Total budget in euro:

1,861,476.00

EC contribution in euro with %:

930,738.00 (50.00%)

Theme: Water-Water saving

socio-economic types, something never previously done at an individual level. Monitoring will provide decision-makers with information on the impact of project actions on aquifer levels and thus help to guide water management policies.

Expected results

- 80 000 water saving equipment kits distributed;
- Seventy rainwater tanks installed;
- Pressure of the drinking-water distribution network run by the Blayais water management office to be reduced by 30% (from 10 to 6 bars) on 25% of the network;
- Estimated water savings of 1.9 million m³/yr based on an average consumption of 120 m³ per household and an average saving of 20% per household;
- Definition of indicators to monitor the impact on aquifers;
- Compilation of a database; and
- Dissemination of a methodological guide at EU level.

Development of an urban green infrastructure in the Chanteloup loop

Project background

Urban areas often suffer from a lack of green spaces and from the fragmentation of natural habitats. This can have a significant impact on air, soil and water quality, as well as biodiversity. As ways are sought to address these problems, the use of natural areas in urban settings is becoming a key element in land development policy.

The Chanteloup loop is located in the north-west of the department of Yvelines, in the Ile-de-France region. It is defined by a large U-shaped meander of the Seine, which leaves an area of 2 384 ha of land surrounded on three sides by river. Most of the land in the 'loop' is uncultivated wasteland and has been identified for urbanisation. At present, several green areas are scattered around this territory with no connections between them.

Project objectives

The 'SeineCityPark' project aims to demonstrate how the socio-economic development of an urbanised territory of 1 700 ha can be combined with the improvement of local environmental conditions through the creation of green urban infrastructure. It hopes to be the first step of an ambitious programme of sustainable economic development in the Chanteloup loop.

The project will develop a management plan that will establish a basis for the sustainable socio-economic development of the area. It will seek to rehabilitate a neglected quarry and restore it as green open space by creating an ecological and recreational park of 113 ha, to be called Bords de Seine Park. It will create a 1.4 km strip or an ecological corridor between the park and the city.

The project will develop ecological infrastructure to link the Park to the Seine in the south and the rest of the green network in the north - the Hautil Massif. This will allow the free movement of land animals, birds, insects, amphibians and dragonflies across the urbanised territory. It will use natural clean-up techniques to tackle water and soil pollution and remove invasive aquatic and terrestrial plant species.

The works also aim to deliver a consistent ecological infrastructure which will play a key role in adapting to climate change, including flood control, in the Chanteloup loop. Finally, the project will seek to raise local public awareness of environmental issues in order to maximise

LIFE11 ENV/FR/000746
SeineCityPark



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

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Name of contact person

Isabelle CHATOUX

Duration of project:

60 months (01.08.2012 – 31.07.2017)

Total budget in euro:

3,462,716.00

EC contribution in euro with %:

1,728,666.00 (49.92%)

Theme: Biodiversity issues-Ecological coherence / Biodiversity issues-Invasive species / Land-use & Planning-Urban design (urban-rural) / Services & Trade-Sports & Recreation activities

the integration and success of the urban green infrastructure.

Expected results

- A development and management plan for the Chanteloup loop;
- Stabilisation of water and soil pollution in the Bords de Seine Park - with a significant decrease in pollution within five years of the project end;
- A significant decline in the presence of invasive plant species (e.g. Japanese knotweed), with full eradication within five years of the project end;
- New habitats and species in the park and increased biodiversity in urban sections;
- Increased mobility of insect and amphibian species via transitional areas connecting green zones; and
- A good practice example of green urban development.

Recycling demonstrator for revalorisation of technical textile wastes

Project background

More than 70% of all airbag cushions are made of polyamide fabrics coated with silicone. Polyamides are synthetic polymers – such as nylon – that are known for their extreme durability and strength.

In Europe, the airbag cushion industry generates some 9 000 tonnes/yr of waste. As a result of high recycling costs, such complex waste is either dumped in Europe or shipped to emerging countries where cheap labour facilitates the recovery, but in a non-sustainable way.

At the same time, consumer and producer demand for recycled polyamide plastics is growing in all European markets, including in the automotive industry: Consumers want more eco-designed products; whilst manufacturers recognise that recycled products are less dependent on fossil-based intermediaries.

Technical polyamide textiles, and in particular scraps generated by the production of airbag cushions, have been identified by the beneficiary as an attractive source for developing new recycling technologies and processes. R&D teams in the company have already developed a fully integrated process to recycle and re-use the silicone-coated polyamide fabrics to produce new materials, with no significant loss in material properties.

Project objectives

The 'Move4earth' project aims to validate a new process for recycling and re-using silicone-coated polyamide fabrics from airbag cushions at pre-industrial scale. It hopes to demonstrate its feasibility, including by achieving acceptable final product quality and unit productivity.

It plans to develop and operate a demonstrator, recycling 650 kg/hr of silicone-coated polyamide fabrics. It will test the emerging recycled materials to assess their mechanical properties in comparison with non-recycled materials. It thus hopes to reduce the quantity of waste going to landfill or shipped to emerging countries, and also to reduce the carbon footprint associated with demand for new raw materials from petrochemical sources.

The project will also work to explore possible and appropriate uses for the recycled silicone coating that will emerge as a by-product of the recycling of the polyamide fabric – representing 10% of the original waste product.

LIFE11 ENV/FR/000748
Move4earth



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

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Name of contact person

Richard BOURDON

Duration of project:

48 months (01.09.2012 – 31.08.2016)

Total budget in euro:

8,049,496.00

EC contribution in euro with %:

4,024,748.00 (50.00%)

Theme: Industry-Production-Textiles – Clothing / Waste-Industrial waste / Waste-Waste use

Finally, an ambitious objective of the project is to explore the possible transfer of this technology to other sources of waste, in particular other post-consumer technical textiles. It will work to validate the recycling potential of the demonstration process on six other sources of waste.

Expected results

- Successful operation of the demonstration process for recycling silicone-coated polyamide fabrics from airbag cushions (capacity 4 500 tonnes/yr);
- Recycled polyamide fabrics with similar mechanical properties to non-recycled fabrics;
- A 95% re-use rate for the materials – including new markets and uses for the recycled silicone;
- A significantly reduced carbon footprint as a result of a reduced demand for raw materials extracted from petrochemical sources and less transportation of waste;
- Less waste sent to landfill; and
- A demonstration of the same capacity and re-use rates for six other sources of waste.

Strategy to reduce waste, increase re-using and recycling, reduce incineration and storage, in a rural and urban area

Project background

Reduction in waste, the reuse and recycling of materials, and less use of landfill are key aims of EU policy. This requires some innovative solutions. At the beginning of 2012, Grand Besançon became the first conurbation with over 50 000 inhabitants to adopt a “pay-as-you-throw” scheme to finance waste treatment and encourage a reduction of residual household waste. The city has installed radio frequency identification (RFID) chips on residual waste bins and by 2014, residents will be charged according to quantity and weight sent for incineration.

However, 70% of the city's population lives in collective housing, where the cost of waste management is not billed directly to individual households. These areas have a high rate of turnover of residents as well as a significant social and cultural diversity, making traditional written communication tools ineffective. Production of residual household waste for incineration is highest in these households.

Rural areas in the region have their own difficulties, particularly an increase in the flow of waste through household waste recycling centres (HWRCs). There is an urgent need to optimise the running of these centres to improve the quality of sorting, as well as to increase quantities recycled.

Project objectives

The project aims to deploy solutions to facilitate full implementation of the pay-as-you-throw scheme. It aims to address the particular challenges of collective housing and rural areas to reduce quantities of waste and increase local treatment and recycling of organic waste.

The project will establish a team of six people to assess waste management practices at the entrances of each collective housing residential block. The team will suggest ways and tools by which the city council, landlords, and waste collection and composting organisations can improve their interventions to have the most positive impact on household waste management practices. The project will run “waste prevention” awareness campaigns for people living in collective housing. Composting facilities will be developed and made available for three years so that every inhabitant of collective housing can compost their organic waste.

To optimise the HWRCs in rural areas, a controlled-access system will be established. This will allow operatives to improve supervision of disposal and advice to users, thereby limiting the sorting mistakes that hinder recycling.

LIFE11 ENV/FR/000751
WASTE ON A DIET



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

Syndicat de Besançon et sa région pour le traitement des déchets

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Name of contact person

Christine SAUTENET

Duration of project:

36 months (01.07.2012 – 30.06.2015)

Total budget in euro:

3,555,621.00

EC contribution in euro with %:

1,777,810.00 (50.00%)

Theme: Waste-Municipal waste (including household & commercial)

A dismantling centre for bulky objects will be established to deal with waste from the whole network of sorting centres.

Expected results

- Improved management, sorting and disposal of household waste in collective housing;
- A reduction in residual household waste of 150 kg/inhabitant/yr to 35 000 metric tonnes in 2015, a drop of 25% in five years;
- A 55% waste recovery rate (for recycling and composting) at HWRCs – an increase of 17 percentage points in five years;
- The amount of waste from Besançon going to landfill to be halved within five years; and
- Cost increases to be limited to less than €15 per inhabitant – keeping total waste management costs under €90 per inhabitant.

Innovative solution for the separation of construction and demolition waste

Project background

Construction and demolition waste (CDW) is one of the heaviest and most voluminous of all waste types. In some Member States, much of the unrecovered waste is disposed of in landfills, creating environmental damage through air, water and soil pollution. If not separated at source, CDW may also contain small amounts of hazardous waste, which poses particular environmental risks and hampers recycling.

CDW recovery rates are currently only 30-35%, but should have at least doubled by 2020 if the targets of the Waste Framework Directive (2008/98/EC) are to be achieved. There is great potential for recycling and reusing CDW materials since some components have high resource value. However, present systems require the waste to be sorted manually, which is only effective with large particles.

Wet processes exist for the separation of smaller materials, but these generate sludge, polluted with fibres and sulphates, which requires expensive water treatment. The effectiveness of these processes is also limited because they fail to separate different products if their densities are too close - the processes do not differentiate between plaster, wood and plastics. Solutions using air - aerulic - systems also exist, but present the same problems as wet processes and result in high energy consumption.

Project objectives

The project aims to use innovative technologies to solve the problems currently limiting the recycling and reuse of CDW materials. It will establish a pilot plant that should be capable of sorting CDW pieces of 8-30 mm and of 30-80 mm at industrial scale.

The project first aims to design and set up sorting processes for the two fractions - 8-30 mm and 30-80 mm - of CDW. To achieve this, the project partner, Pellenc Selective Technologies, will adapt its optical and blowing technologies for industrial use. Pilot testing should enable the definition and validation of the optimal specifications.

In the second stage, the pilot projects will be integrated into industrial-scale waste sorting processes at the beneficiary's site at Nice-Saint Isidore. Further modification and optimisation will then take place and, if necessary, equipment will be added to the prototype. The new pro-

LIFE11 ENV/FR/000752
CDW-recycling



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

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Name of contact person

Jean-Charles BERARD

Duration of project:

25 months (03.09.2012 - 02.10.2014)

Total budget in euro:

2,087,699.00

EC contribution in euro with %:

1,043,849.00 (50.00%)

Theme: Waste-Construction & demolition waste

cess should effectively demonstrate that it is possible to recover large quantities of CDW, with a lower environmental impact than using traditional CDW management techniques.

Expected results

Effective demonstration of an innovative process of small-size-particle sorting for separation of CDW at industrial scale, achieving:

- An average sorting capacity of 5 tonnes/hr;
- Significantly reduced environmental impact compared with present solutions;
- Successful sorting of high-density (2-3 g/cm³) objects;
- 80-85% efficiency of plaster extraction from aggregates of particle sizes 8-30 mm - achieving the required standards for aggregates recovery;
- A 95% pure plaster, allowing its reuse or recycling; and
- Well-separated medium-sized (30-80 mm) materials such as plaster, plastic, wood and aggregates, which are all potentially recyclable or reusable.

Zero Energy In Telecom-TV Hybrid Station

Project background

The success of mobile communications using smart phones has added to a boom in demand for the deployment of more sophisticated and denser telecoms networks. Today, the largest radio frequency networks are designed for broadcasting both TV and radio services and for mobile communications. Digital technology has replaced analogue TV broadcasting networks and will be used in the future for more telecoms applications, as well as for new high-definition broadcasting services.

More and more transmitting stations are being installed in Europe's cities to meet this increasing demand. But the carbon footprint and environmental impact of such a rapid expansion of broadcast capability has not been at the forefront of thinking during the design and deployment of the new technologies. This will result in higher energy consumption, the creation of electromagnetic fields and visual pollution.

The project beneficiary has a history of innovation and self-funded investment in carbon footprint reduction. It has previously been heavily involved in a project run by a consortium of European partners to optimise power efficiency in mobile radio networks (OPERA-NET).

Project objectives

The 'ZENITTHYS' project aims to develop and demonstrate an innovative 'green' hybrid telecoms-broadcast transmitting station concept, which capitalises on the recent advances in electronic devices, signal processing and renewable technologies.

The beneficiary plans to implement several beneficial elements including:

- Introduction of innovative technologies - for example in the transmitter unit;
- Application of innovative methods and concepts in the adaptation of the network topology - the layout patterns of interconnections;
- Modification of equipment to enable a significant reduction in the number of transmission antennae;
- Use of wireless connections; and
- Integration of renewable energies.

The project aims to drastically reduce the carbon footprint of the telecoms-broadcast transmission stations by:

- Reducing energy consumption;
- Using renewable energy sources - notably solar and wind power; and

LIFE11 ENV/FR/000757
ZENITTHYS



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

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Name of contact person

J erome DAVID

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

2,554,461.00

EC contribution in euro with %:

1,277,230.00 (50.00%)

Theme: Climate change - Energy-Energy supply

- Reducing the number of relay stations in cities, and associated maintenance requirements.

It will also aim to achieve other environmental gains through the reduction of electromagnetic and visual pollution. All of these results should be achieved without jeopardising the capacity or quality of the telecoms and broadcast networks.

Expected results

- A 40% reduction in power consumption compared with a traditional transmitter;
- Sourcing of renewable energy - solar or wind - to provide for 30-100% of the station site's total energy consumption needs - equivalent to 1.7-5.7 Mwh/yr;
- CO₂ emissions of the hybrid station of less than 0.36 tonnes/yr;
- A 50% reduction in the number of antennae in cities; and
- A 10 000% reduction of the strength of the electromagnetic field - from the current European average of 60 volts per metre (V/m) to an average of 0.6 V/m.

Development of an innovative and integrated approach for plastic and bio- waste management and recycling

Project background

According to the European Commission report on the 'Thematic Strategy on the Prevention and Recycling of Waste' (2011), each EU citizen produces an average of 524 kg/yr of waste. Through specific directives, the EU is encouraging the prevention, recovery and re-use of waste. In particular, compulsory recycling targets have been set for all packaging. However, there are no specific requirements for recycling non-packaging plastic and bio-waste (organic waste), although they represent more than 33% of European household waste. Recovery rates are also lower for these types of waste than for other waste streams: the plastic recycling rate in Europe is 15-30%; and nearly 40% of the 118-138 million tonnes/yr of biowaste produced in the EU is dumped as landfill.

Project objectives

The 'OPTIVALOR' project aims to develop and test at full-scale, new methods of waste management in order to significantly increase the separate collection of plastic and bio-waste, by removing obstacles hampering the development of such collection.

The project will promote:

- An innovative method of bio-waste collection that would limit logistics costs and control unpleasant odours;
- The use of innovative processes to separate different types of plastic, as well as plastic regeneration (and recycling);
- An integrated approach to waste management organisation, which specifically aims to take into account the sociological dimension of waste sorting done by households, through the characterisation of waste at the beginning and at the end of the process. This dual approach will help to make correlations between the results in order to adapt or modify sorting instructions; and
- An innovative partnership, since the project includes a local authority responsible for planning waste management, and two local SMEs, which will adapt their processes to improve their complementary nature and lead to optimal use of waste.

The ultimate goal of the project is to reduce the incineration and the burying of plastic and bio-waste, as well as to optimise its recovery. To this end, the new methods of waste collection and recovery will be tested on the general public – plastics recovery will be tested in an area with a population of 100 000 people; and bio-

LIFE11 ENV/FR/000760
OPTIVALOR



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

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Name of contact person

Daniel REUTENAUER

Duration of project:

35 months (01.07.2012 – 01.06.2015)

Total budget in euro:

3,659,309.00

EC contribution in euro with %:

1,829,654.00 (50.00%)

Theme: Waste-Municipal waste (including household & commercial)

waste recovery in two areas (one rural, one urban), each with a population of 10 000.

Expected results

The projects expects to:

- Increase fivefold the weight of plastic collected separately for recycling, extending the sorting guidelines to all kinds of plastic. The quantity of plastic recovered, currently 5 kg/person/yr, would increase to some 27 kg/person/yr;
- Increase the recycling rate for all plastics from some 10% to 33% by fine sorting of different types of plastic, therefore improving the added value of the secondary raw materials;
- Collect 50 kg/person/yr of bio-waste;
- Collect 5 kg/person/yr of bulky plastic waste in waste reception centres; and
- Maximise the overall recovery of household waste, increasing the rate of uptake of household plastic and bio-waste for a recovery of 77 kg/person/yr.

Toward material recovery of WEEE plastics: a LIBS based device for sorting WEEE plastics during manual dismantling

Project background

The amount of waste electrical and electronic equipment (WEEE) generated in Europe increases by 2.5-2.7% a year, reaching 10 million tonnes in 2008. This type of waste presents major environmental risks when sent to landfill because of the numerous hazardous substances it usually contains. The European Commission has attempted to address the problem by introducing two directives to foster efficient and proper disposal of this type of waste across Europe. One sets minimum collection and recovery rates for WEEE (2002/96/EC on WEEE), the other sets maximum limits for content of hazardous substances in waste (2002/95/EC on Restriction of Hazardous Substances - RoHS).

The collection target of 4kg/person/yr has been reached in almost all EU Member States, but material recovery targets have proved more challenging. Efficient disposal of small electrical and electronic items continues to be particularly troublesome. All countries recognise that clean separation and, more importantly, final recovery of the plastic portion of these items - almost exclusively thermoplastics - is paramount to achieving the agreed recovery rate. However, no suitable and economically viable disposal route other than incineration has yet been identified.

Project objectives

The 'WEEELIBS' project aims to use laser technology (LIBS) to analyse waste electrical and electronic equipment (WEEE) and to enable it to be sorted and separated so that suitable materials can be reclaimed for recycling. A demonstration plant will be set up to validate the efficiency of the system.

The project will set out to show that laser technology - spectral analysis following laser-generated plasma excitation - is an excellent technique for separating materials in those small electronic parts; thin wire and thin-plating materials, where existing techniques are not effective. Initially, WEEE will be manually dismantled initially according to appropriate industrial conditions. The system developed by the project will then separate the plastic materials according to their charge.

The project aims to show that plastics from WEEE can be separated into homogeneous polymer parts, thereby allowing them to be used as valuable feedstock chemicals for fuels or new materials. The possibility of identifying and isolating hazardous substances contained in the polymers during the WEEELIBS process will ensure

LIFE11 ENV/FR/000762
WEEELIBS



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

Frederic PELASCINI

Duration of project:

31 months (04.06.2012 - 30.12.2014)

Total budget in euro:

1,039,140.00

EC contribution in euro with %:

519,570.00 (50.00%)

Theme: Waste-Waste from Electrical & Electronic Equipment (WEEE)

that materials resulting from these recycled wastes will comply with the RoHS Directive and REACH.

An evaluation of the costs of the new process will consider additional labour costs involved and the added value from the sale of the sorted polymers.

Expected results

- Creation of a WEEELIBS demonstrator with an estimated sorting capacity of 500 tonnes/operator/yr;
- Demonstration that it is possible to separate the polymers present in WEEE in industrial conditions according to their charge;
- Four demonstrations will result in 200 tonnes of WEEE being processed and in the isolation of 40 tonnes of sorted polymers;
- All RoHS substances - Pb, Hg, Cd, Cr(VI) and brominated compounds - will be identified; and
- The project will produce a cost evaluation of the new process.

Demand Response in Industrial Production

Project background

Electricity generation and electricity grids are facing an important challenge. On the one hand, scarce fossil resources as well as CO₂ emission targets mean that an increasing share of energy generation must come from renewable energy sources (RES). On the other hand, the largely decentralised and highly intermittent electricity generated by RES changes the traditional patterns of energy consumption and generation. To meet increasing energy demand, grid operation must be stable and efficient. The expansion of RES requires new means of load management. Whereas conventional energy fuels can be converted whenever needed, RES cannot. Wind and solar power generation depend on external conditions and their supply is not directly controllable. Demand Response (DR) aims to adjust the electricity demand to the grid requirements at a given point of time. It is an important pillar in the context of Smart Grid concepts for achieving the EU's 20/20/20 goals.

Project objectives

The overall objective of the project is to reduce CO₂ emissions by facilitating the integration of RES and contributing to energy efficiency in the electricity grid by taking advantage of the potential of large commercial and industrial customers to be flexible in their energy consumption. The specific objectives are:

- To evaluate (technically, ecologically and economically) the potential flexibility in terms of energy consumption of industrial customers;
- To demonstrate the potential (economic) benefits for the customer of more flexible energy consumption;
- To demonstrate the potential benefits that the customer's flexibility entails for energy retailers, as well as electricity network operators (transmission and distribution), e.g. network stability at peak feed-in of RES;
- To define the certification prerequisites of the proposed processes and develop a business model in order to facilitate market acceptance of DR services and products; and
- To disseminate information about the advantages and risks of this project's methodology to other industries and spread the concept at national and international levels.

Expected results

The project will demonstrate the benefits of the participation of large industrial customers in the electricity market. Those benefits will imply that the customer's energy demand will be optimised from an economic point

LIFE11 ENV/DE/000340
DRIP



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

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Name of contact person

Thomas THEISEN

Duration of project:

24 months (01.06.2012 - 31.05.2014)

Total budget in euro:

969,286.00

EC contribution in euro with %:

484,642.00 (50.00%)

Theme: Climate change - Energy-Energy supply

of view leading to an increase in the energy efficiency of the electricity grid. By reducing energy use during peak hours and shifting it to times when less energy is being consumed and/or the demand can mainly be covered by RES generated energy, economic advantages will trigger a reduction in CO₂ emissions.

Specific results will include:

- Demonstrating the benefits of active involvement of industrial customers in electricity markets;
- An evaluation of the (technical, environmental and financial) potential of DR and its impact on network stability;
- Estimated energy savings of 202 TWh/yr could be realised by DR programmes in the EU; €50 billion could be saved by investments relating to peak generation capacity;
- Drafting of a business model and (market and policy) implementation roadmap for DR; and
- Definition of the certification prerequisites of the proposed processes.

Sustainability Maker

Project background

Some 30% of the world's population consumes approximately 70% of total resources. In Europe, the major negative environmental impacts of consumption occur in three areas: (1) housing and household energy consumption; (2) mobility and tourism; and (3) food and agriculture. The European Union has established policies and strategies towards sustainability and eco-efficiency. These can also be adopted by and viewed as more sustainable role models for other nations and regions. There are also promising sustainable technologies available, but their implementation does not match rapid population growth. Many stakeholders are already contributing to solving problems such as climate change, the loss of biodiversity, water and food scarcity, poverty, health issues and social crises. However, they face many hurdles, notably a lack of power, knowledge, coordination and funding.

Project objectives

The 'Sustainability Maker' project proposes to use the enabling opportunities of new media and other innovative 'bottom up' strategies to resolve urgent sustainability problems and to implement European environmental and social policy. Its overall goal is to create an online platform and network - the 'Sustainability Maker' - whose aim will be to become a powerful initiative towards the resolution of sustainability-related problems. Offering a collaborative approach to finding creative solutions, the 'open innovation' platform will combine a website and mobile application, to be supported by annual conventions (physical meetings). The project will bring together people who have identified sustainability-related problems with those who are to develop, or who have already developed, solutions. In addition, the project will help to devise funding solutions for such initiatives.

Other project goals include:

- Helping implement EU environmental and social policy and strategies more widely and more quickly;
- Harnessing more effectively the creativity and innovation potential of many different actors;
- Reducing the time to market and costs of innovation for sustainability;
- Enabling SMEs and other smaller organisations to participate in open innovation and people-sourcing activities;
- Establishing new funding mechanisms and new business models;
- Experimenting with different models for trust and transparency, motivation and rewards, distribution of intellec-

LIFE11 ENV/DE/000342

SuM



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

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Ursula TISCHNER

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

1,221,503.00

EC contribution in euro with %:

610,751.00 (50.00%)

Theme: Environmental management-Integrated management

tual property rights etc., in an open innovation platform as a means of finding the best way to guarantee high level involvement and satisfaction of all stakeholders; and

- Preparing the full-scale implementation of the open innovation platform after successful completion of the project.

Expected results

- A 'Sustainability Maker' platform;
- A prototype 'Sustainability Maker' mobile phone application prototype;
- A 'Sustainability Maker' network, initially of over 58 000 actors in Italy, Poland, Hungary, Denmark and Germany;
- A minimum of eight 'Sustainability Maker' challenges – formulated in collaboration with companies, communities, municipalities, educational institutions, consumers and others; and
- An innovative 'Sustainability Maker' financing instrument.

Material Advanced Recovery Sustainable Systems

Project background

The EU Landfill Directive identifies untreated municipal solid waste (MSW) in landfills as one of the main sources of the greenhouse gas, methane (CH₄). In the early 1990s, Germany chose expensive high-tech incineration as a solution. Other countries have now the option to adopt more sustainable and environmentally friendly treatment technologies.

Results from field tests with mechanical-biological treatment (MBT) and plastic recycling indicate that Material Advanced Recovery Sustainable Systems (MARSS) could be a material recovery process that is robust, economic and quick to implement.

Project objectives

The main objective of the 'MARSS' project is to build a demonstration plant in Trier (Germany) to prove that there is an effective way to separate and reuse the organic fraction (up to 60%) of MSW as a renewable energy fuel. MARSS will extend an existing low-tech MBT plant into an innovative processing and recycling plant to produce biomass fuel.

Other objectives include:

- Separating the organic fraction and, by means of several treatment steps, turning it into a renewable energy fuel;
- Separating ferrous and non-ferrous metals and other fractions including batteries;
- Demonstrating sustainable recovery of materials and the production of carbon neutral heat and fuel;
- Assessing the correct system calibration to achieve marketable biomass fuel;
- Assessing material and energy flows (mass balance, environmental impact assessment, lifecycle assessment, CO₂/energy balances, etc.); and
- Assessing the potential application the technology in Italy (especially in Naples), Spain, Greece, the UK, the Czech Republic and Serbia.

Expected results

A demonstration plant will be built, with a capacity input of 10 tonnes/hr (4 000 tonnes/yr) for processing a bypass stream from the main MBT plant output material. The project expects to achieve a 30-40% mass Refined Renewable Biomass Fuel (RRBF) output from the raw MSW.

LIFE11 ENV/DE/000343
MARSS



Beneficiary:

Type of beneficiary

University

Name of beneficiary

Rheinisch-Westfaelische Technische Hochschule Aachen

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Name of contact person

Thomas PRETZ

Duration of project:

36 months (01.09.2012 - 31.08.2015)

Total budget in euro:

4,154,933.00

EC contribution in euro with %:

2,073,727.00 (49.91%)

Theme: Waste-Municipal waste (including household & commercial)

Other expected quantifiable results include:

- The demonstration plant will remove the majority (65%) of the organic content of MSW and turn it into fuel;
- The reduced organic content of the remaining waste will comply with the requirements of the Landfill Directive;
- An input capacity of 10 tonnes/hr of dried MSW for 4 hr/day and 100 days/yr;
- Production of 5 tonnes/hr (or 2 000 tonnes/yr) of RRBF;
- Recovery of the following quantities of metals and other components: ferrous metals – 140 kg/hr; non-ferrous metals – 60 kg/hr; batteries – 5% of the recovered ferrous metal scrap fraction; and: 0.033 tonnes CO₂eq/tonne MSW;
- Avoidance of landfilling of organic substances: 0.5 tonnes CO₂eq/tonne MSW (12 000 tonnes MSW = 6 000 tonnes CO₂eq);
- Energy from RRBF: 0.3 tonnes CO₂eq/tonne MSW; and
- Total greenhouse gas emissions savings from the MARSS Test Plant: 10 000 tonnes CO₂eq.

CLEAN AIR

Project background

The European Air Quality Directive (2008/50/EC) (henceforth AQD) replaces five previous acts on ambient air quality and cleaner air for Europe in an attempt to improve the efficiency of individual laws, and to achieve more clarity and simplification in terms of improved implementation by Member States. The directive combines provisions for assessing and monitoring air quality by means of limit values for sulphur dioxide, nitrogen dioxide and nitrogen oxides, particulate matters and airborne lead. It also includes limit values for benzene, carbon monoxide and ozone, and has provision for agreements on the exchange of information and data from networks and individual stations measuring air pollution within Member States.

Despite this legislative framework, continuing violations of air pollution limits remain a problem that must be tackled.

Project objectives

The main objectives of the 'VCD Clean Air' project are:

- To bring the specific knowledge of NGOs and administrations to the European level to support the monitoring of the AQD;
- To build an effective network of local and regional administrations and experts from environmental and consumer protection NGOs working on best practice models to reduce air pollutants from the transport sector in cities;
- To give NGOs the competence, through capacity building to use justice as an instrument for supporting the implementation of the AQD. This will force administrations to really use effective instruments for the reduction of emissions;
- To promote practical measures in the most important fields of activities of air quality and transport by implementation, documentation and dissemination of best practice; and
- To raise European citizens' awareness about the objectives of the AQD and the positive impacts on the environment and quality of life.

Expected results

- The project will provide contributions to the AQD revision process from NGOs from at least seven European countries; it will hold international NGO-workshops, feeding into the revision process in 2013; and will advise on limit values for ultrafine particles and/or for black carbon;
- At least 100 local authorities and regional administrations will receive guidelines on air quality legislation;

LIFE11 ENV/DE/000495

CA



Beneficiary:

Type of beneficiary

NGO-Foundation

Name of beneficiary

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Name of contact person

Heiko BALSMEYER

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

3,378,250.00

EC contribution in euro with %:

1,686,635.00 (49.93%)

Theme: Air & Noise-Air pollutants

- A network of representatives of at least 100 institutions and 80 environmental/consumer protection NGOs will be established;
- Some 100 organisations will participate in capacity-building workshops;
- The project will directly contribute to the improved implementation of the AQD through: retrofit of 100 buses; establishment of shore-side power supply for ships in 10 port cities; retrofitting 20 ships with a diesel particle filter; persuading at least six cities to join the Action Alliance of European Biking Cities; informing at least 50 driving schools, 100 companies and 1 000 individuals about eco-driving; and conducting a survey on environmental zones and other air quality measures in 105 municipalities in seven EU Member States; and
- As a result of various targeted dissemination activities, at least 25 million European citizens will be better informed about the AQD and its importance for the environment and quality of life.

Novel purification technique for the treatment of waste air in the manufacturing process of paraformaldehyde

Project background

The INEOS Paraform (paraformaldehyde) plant currently emits some 38 000 m³/h of waste air (containing methanol, ammonia, formaldehyde and malodorous substances). Emissions from the plant total at least 70-80 tonnes/yr, exceeding Germany's legal limits under the "Clean Air Act" ("TA-Luft"). However, tests carried out by the beneficiary, in a laboratory and pilot plant, show that emission levels could be considerably reduced by the implementation of a new, more efficient plasma catalytic waste air treatment.

Project objectives

The "Abluftreinigungsverfahren" project aims to use the new plasma catalytic waste air treatment technique on a large-scale for the first time. In the longer term, it is hoped that the technique can be used as the basis of a re-evaluation of the emission standards and limit values in comparable production units, using the same, or similar, materials and processes.

By using the new technique in its paraformaldehyde plant, the beneficiary aims to eliminate some 60-70 tonnes/yr of emissions of ammonia, formaldehyde, methanol and malodorous substances (non-methane volatile organic compounds - NMVOCs). The result will be compliance with stricter waste air limit values for these compounds – a reduction in dust and of low level ozone and, therefore, improved health protection for people living nearby, as well as improved protection for ecosystems.

Specific project objectives are:

- A reduction in the release of malodorous emissions such as NMVOCs, the precursors to ozone depletion. This should lead to a reduction in local and regional problems and should reduce low-level ozone concentrations and hence help protect against any potential health risk or nuisance;
- A reduction in ammonia emissions from the production process. This will lessen the formation of secondary particles, consisting of ammonium and nitrate compounds; and therefore lower the respiratory dust emission concentrations. Another positive effect will be to ease the strain on ecosystems, by lowering acidic and eutrophic nitrogenous contaminant emissions into the air, soil and water; and
- An improvement in energy usage in comparison with other waste air treatment processes.

LIFE11 ENV/DE/001073
Abluftreinigungsverfahren



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

INEOS Paraform GmbH & Co KG

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Name of contact person

Horst SCHMOLT

Duration of project:

25 months (01.06.2012 - 30.06.2014)

Total budget in euro:

770,116.00

EC contribution in euro with %:

364,790.00 (47.37%)

Theme: Air & Noise-Air pollutants / Industry-Production-Chemicals

Expected results

The project expects to achieve the following results:

- Compliance with the limits foreseen by the Clean Air Act, namely formaldehyde and methanol to less than 20 mg/m³, ammonia to 30 mg/m³ or less; and
- Constant monitoring of one emission point using an FID (field measurement, or portable) measuring device. The estimated emissions of 70-80 tonnes/yr of NMVOCs, including the malodorous compounds, should be destroyed and burned without producing new noxious substances such as ozone or nitrogen oxides.

In the longer term, the beneficiary plans another investment that will increase the plant's capacity from 30 000 to 35 000 tonnes/yr.

Military Energy and Carbon Management

Project background

The Greek defence ministry is one of the largest public bodies in Greece. Its military installations are major consumers of energy and, therefore, offer great potential for energy saving, which could lead to a significant reduction in Greece's greenhouse gas (GHG) emissions. Although military installations and the organisations under the jurisdiction of the defence ministry generally perform their activities in accordance with the principles set out in the defence ministry's environmental policy, there has not been a specific and recognisable framework for integrating energy efficiency into their management practices. Therefore, there is a need for a single, harmonised standard across the defence ministry, with a logical and consistent methodology for identifying energy saving opportunities and implementing energy efficiency improvements.

Project objectives

In line with national goals for reducing energy consumption and GHG emissions, the 'MECM' project will implement an Energy Management System (EnMS) in three main military facilities: the naval station at Souda Bay, the Larissa airbase, and the Triantafilidi army camp in Xanthi.

The objectives of the project are:

- To improve the environmental and energy performance of Greek military services and installations, through the development and monitoring of an Energy Management System, and based on the newly introduced ISO 50001:2011. Particular attention will be paid to defining a system that will take into account the special characteristics of military installations and their specific needs;
- To promote energy-management best practices and reinforce good energy-management behaviour within the Greek defence ministry;
- To offer guidance on measuring, benchmarking, documenting and reporting energy intensity improvements and their expected impact on GHG emission reductions;
- To provide a framework for promoting energy efficiency throughout the defence ministry supply chain;
- To contribute to the promotion of sustainable development principles within the military, and help facilities to evaluate and prioritise the implementation of new energy-efficient technologies;
- To explore ways to improve the energy and environmental performance of military services; and
- To demonstrate the potential contribution of military services to green business and sustainable develop-

LIFE11 ENV/GR/000938
MECM



Beneficiary:

Type of beneficiary

National authority

Name of beneficiary

Hellenic Ministry of Defence

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Name of contact person

Ilias MANOLIS

Duration of project:

31 months (01.10.2012 - 30.04.2015)

Total budget in euro:

1,105,218.00

EC contribution in euro with %:

552,609.00 (50.00 %)

Theme: Climate change - Energy-Energy saving & Energy-Reduction of greenhouse gases emissions / Services & Trade-Public administration

ment within Greece and abroad (other EU armed services, public bodies in general, citizens that live near the three facilities, NGOs).

Expected results

- Maximisation of energy conservation and the rational use of energy at Greek military installations;
- Minimisation of the direct and indirect environmental impacts of military facilities;
- Guidance documents and case studies for improving the energy performance and the environmental management of Greek military services and installations;
- Sustainable development and good practice examples for different types of military facility;
- An increase in the Greek military's environmental awareness; and
- An EnMS for military services and installations that has been tested and validated and is also transferable.

Introduction of new olive crop management practices focused on climate change mitigation and adaptation

Project background

Human activities contribute to increasing the level of greenhouse gases (GHG) in the atmosphere by creating new sources of emissions or by removing natural sinks. Agriculture is generally considered to be a source of GHGs, but appropriate farming practices that enhance the capability of plants to capture GHGs and remove them from the atmosphere could change this situation so that farmland becomes a carbon sink.

Project objectives

The main aim of the 'oLIVE-CLIMA' project is to trial the introduction of new cultivation practices for tree crops in order to find a cost-effective means of mitigating and adapting to climate change. The project will focus specifically on olive-producing areas in Greece, investigating the potential of these areas to increase carbon sequestration by soils, and to reduce GHG emissions. It will work with farmers from three farmers' organisations that reflect the different socio-economic situations currently prevalent in Greece; from more traditional farming, to innovative environmentally sensitive farming.

Specific objectives of the project include:

- Identifying farming practices that lead to increased carbon dioxide (CO₂) uptake by plants;
- Reversing the trends of soil organic matter loss, soil erosion and desertification by implementing measures that increase the rate of organic matter build-up;
- Taking measures to reduce GHG emissions and other environmental impacts during crop production, including reducing dependence on inorganic fertilisers;
- Providing farmers with methodologies that will enhance biodiversity, reduce CO₂ emissions from soil, and that are suitable for organic agriculture;
- Demonstrating to farmers that environmentally benign agriculture can be more efficient, can lead to product differentiation and – in the case of olive-oil production – can result in self-sustaining crops;
- Developing a set of easily measurable indicators that can be used to link farming practices to quantifiable carbon storage in the soil;
- Providing farmers and consumers with a clear and robust system for communicating environmental performance during food production e.g. Eco-Management and Audit Scheme (EMAS) statements; and
- Promoting the incorporation of the project's results into national environmental and agricultural policy and legislation.

LIFE11 ENV/GR/000942
oLIVE-CLIMA



Beneficiary:

Type of beneficiary

Development agency

Name of beneficiary

Development Agency of Eastern Thessaloniki's Local Authorities - ANATOLIKI S.A.

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Name of contact person

Sokratis FAMELOS

Duration of project:

36 months (01.10.2012 - 31.09.2017)

Total budget in euro:

3,644,873.00

EC contribution in euro with %:

1,822,436.00 (50.00%)

Theme: Climate change - Energy-Reduction of greenhouse gases emissions / Industry-Production-Agriculture - Fisheries

Expected results

- Development of cultivation methods that will make inorganic nitrogen fertilisation unnecessary;
- Reduced resource depletion and GHG emissions in the production phase;
- Lower production costs;
- Improved levels of nutrients in the soil;
- Increased genetic diversity and the enhancement of tools available for organic farming;
- Better management of waste wood derived from pruning, and of oil-mill wastewater;
- A soil carbon dynamics model, adapted and calibrated to local conditions, that will demonstrate that farming practices can be linked to increases or decreases in the carbon content of soil. This could, potentially, be used as a basis for the expansion of the EU's emissions trading scheme (ETS) to agriculture; and
- Increased awareness among farmers of their contribution to climate-change mitigation and adaptation.

Development and demonstration of an innovative method of converting waste into bioethanol

Project background

The management of municipal solid waste (MSW) in Europe remains a challenge. Landfilling is still the predominant method for managing MSW in most European countries, resulting in the unnecessary waste of materials and energy, environmental pollution, and negative effects on health, quality of life and the economies of EU Member States. Of the total amount of MSW produced in the EU every year, approximately 40-60% is biowaste. The remainder is recyclable waste such as paper, metals and packaging.

Biowaste, which has a high water content (65-98%), decomposes easily, causing many environmental and economic problems. The main environmental threat is the production of methane, a powerful greenhouse gas (GHG), 25 times more potent than carbon dioxide (CO₂). If the treatment of biowaste was maximised, associated GHG emissions, estimated at some 10 million tonnes of CO₂ equivalent in 2020, could be significantly reduced. Methods such as landfilling, incineration, composting and anaerobic digestion provide a limited solution to this problem.

Project objectives

The main objective of the 'Waste2Bio' project is to develop a method of producing bioethanol from biowaste via bioconversion.

Specific objectives include:

- To design, develop, test, optimise and evaluate an innovative pilot-scale plant for the production of bioethanol from biowaste via bioconversion that will replace fossil fuels. This pilot plant will be able to convert more than 70% of the biowaste feed into second-generation bioethanol;
- To significantly reduce the amount of household biowaste going to landfill, whilst reducing emissions to air, water and soil;
- To provide a template for the implementation of this innovative bioconversion technology in other municipalities in Greece and elsewhere in the EU, following an evaluation of the process's environmental, economic and technical viability; and
- To identify key issues and indicators in relation to meeting the targets set out in relevant EU directives, such as the Landfill Directive (1999/31/EEC), the Directive on the Promotion of Renewable Electricity (2001/77/EC), and the Biofuels Directive (2003/30/

LIFE11 ENV/GR/000949

Waste2Bio



Beneficiary:

Type of beneficiary

University

Name of beneficiary

National Technical University of Athens

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Name of contact person

Maria LOIZIDOU

Duration of project:

31 months (01.09.2012 - 31.03.2015)

Total budget in euro:

1,490,350.00

EC contribution in euro with %:

745,175.00 (50.00 %)

Theme: Waste-Waste use

EC), thus demonstrating in concrete terms how EU legislation governing waste management and biofuel production can be implemented.

Expected results

- A fully operational, pilot-scale, biowaste to bioethanol plant;
- Greater awareness and knowledge among stakeholders and the general public in Greece and the EU about the sustainable management of biowaste;
- Greater awareness of the use of biowaste for the production of biofuels and the potential to reduce the unsustainable reliance on energy crops;
- Publication of a report on the economic feasibility, and the environmental and social benefits of the pilot plant; and
- An analysis of how the proposed waste-management scheme could be implemented at full scale, with comparisons to current methods of managing biowaste.

Development and demonstration of an ecological, innovative system for in house waste recycling

Project background

The management of Municipal Solid Waste (MSW) remains a challenge in Greece. The challenge is particularly acute in the Attica region, which has more than 4 million inhabitants. Landfill is still the predominant means of disposal of MSW. In 2009, 81.1% of all MSW was sent to landfill and only 18.9% was recycled, even though, according to 2007 data, at least 46% of MSW consists of recyclable materials. This falls well short of the goals of the EU Waste Framework Directive (2008/98/EC), which states that by 2020, the re-use and recycling of certain recyclable waste materials (paper, metals, plastic and glass from households) must be increased to a minimum of 50% by weight.

Greece aims to maximise material recovery through the widespread implementation of recycling programmes, with separation at source using specific kerbside bins, and further separation and treatment of waste streams at Material Recovery Facilities (MRF). However, in order to achieve the targets set by national and European legislation, municipalities and their residents must work towards greater separation, not only of recyclable waste from mixed waste, but also different types of recyclable waste. This will contribute to the supply of clean recyclable materials, without impurities from other waste. However, given the limited space available both in houses in Attica, and at kerbsides, where waste containers are placed, a system that would allow separation at source of recyclable materials, whilst minimising their volume, would allow easier and longer storage, and would facilitate at-home separation of different recyclable streams.

Project objectives

The 'Recycling@Home' project will promote the sustainable management of MSW and natural resources by fostering recycling and reuse at home. An innovative, prototype system for the separate collection and minimisation of the volume of recyclable household waste, and the production of clean recovered materials of high quality that can be reintroduced in the market, will be developed and tested. The proposed technology is expected to minimise the storage and transportation of recyclable waste, thus reducing greenhouse gas emissions and reducing the environmental risks related to unsustainable waste management practices. The recycling unit will be flexible and user-friendly and will be adaptable to municipal waste management schemes in Greece and other European countries.

LIFE11 ENV/GR/000950
Recycling@Home



Beneficiary:

Type of beneficiary

Development agency

Name of beneficiary

Municipal Development Company of Amaroussion

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Name of contact person

Christiana ARMENIAKOU

Duration of project:

30 months (01.09.2012 - 28.02.2015)

Total budget in euro:

1,121,792.00

EC contribution in euro with %:

560,896.00 (50.00%)

Theme: Waste-Municipal waste (including household & commercial) & Waste recycling

The prototype home recycling system will be tested in 100 households in two municipalities in the Attica region.

Expected results

- An increase in the recycling rate, with a target of greater than 85% recovery of household during the project period;
- A reduction in the quantity of waste disposed of in landfill, and of greenhouse gas emissions associated with landfilling;
- A reduction in the volume of waste transported, and a subsequent reduction in fossil fuel use and thus CO₂ emissions from waste transportation;
- A reduction in the use of natural resources, also resulting in a reduction in fossil fuel use and CO₂ emissions from the manufacturing of products; and
- A fully operational pilot home recycling system, accompanied by the relevant design, testing and optimisation reports.

Sustainable strategies for the improvement of seriously degraded agricultural areas: The example of *Pistachia vera* L.

Project background

Greece is Europe's number one producer of pistachios and the sixth largest producer worldwide, with a production volume of some 9 500 tonnes/yr. The variety of pistachio produced on the island of Aegina is the most famous in Greece, and has been awarded Protected Designation of Origin (PDO) status. However, little is known about the management of the waste generated during the cultivation and processing of pistachios in Greece and elsewhere. Evidence suggests that liquid waste is spread on the cultivated land, or disposed in water courses, whilst solid waste is either deposited untreated on the soil or left to be naturally composted. Even though the solid waste is very rich in organic matter (65-75%) and could be an excellent soil additive, it also contains high levels of other nutrients, as well as toxic substances, which could damage soils and water bodies. Analysis of soil samples from pistachio cultivation areas reveals a progressive degradation of the soil over the last five-to-seven years.

Project objectives

The 'AgroStrat' project will develop and demonstrate an integrated approach for the sustainable management of intensively cultivated areas in the Mediterranean, such as the pistachio producing areas on the island of Aegina. This approach will include the formulation of a sustainable management and monitoring plan at local/regional level, and the re-use of pistachio waste.

Specific objectives include:

- To identify and characterise practices that contribute to soil degradation;
- To define appropriate soil quality indicators;
- To develop a software tool so that farmers and farmer networks can monitor soil quality;
- To examine how pistachio waste could be processed to produce compost and low-cost activated carbon for the treatment of wastewater containing organic and inorganic contaminants; and
- To develop a GIS-based Land Information System (GIS-LIS) and land suitability maps that enable the controlled and sustainable application of treated pistachio waste.

Expected results

- Assessment of the environmental status of the pilot area before and after the implementation of restoration activities;
- A set of indicators that can be used to detect relevant soil and water degradation and contamination;

LIFE11 ENV/GR/000951

AgroStrat



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

Maria DOULA

Duration of project:

48 months (01.10.2012 - 30.09.2016)

Total budget in euro:

1,019,009.00

EC contribution in euro with %:

509,504.00 (50.00%)

Theme: Environmental management-Integrated management / Industry-Production-Agriculture - Fisheries

- Characterisation of the composition of pistachio waste and its suitability for agricultural use;
- An instrument to be used by farmers in the field to measure soil pH, moisture and electrical conductivity, including guidelines for its use and maintenance;
- Defined optimum procedures for the production and application of pistachio compost;
- Pilot-scale production of activated carbon from pistachio waste and its use to decontaminate wastewater;
- An integrated management plan for the sustainable cultivation of *Pistachia vera* L. (the variety grown on Aegina) in the Mediterranean area;
- A GIS-based Land Information System and monitoring software for farmers and project managers;
- A set of indicators for monitoring the socio-economic impact of the pilot project; and
- Thematic geo-environmental maps of the pilot area and other areas in Greece and/or the wider Mediterranean region where *Pistachia vera* L. is intensively cultivated.

Floods and fire risk assessment and management

Project background

Floods and forest fires can be among the most devastating natural disasters, causing severe socio-economic impacts, including loss of life, the destruction of private and public property and the disruption of economic activities and cultural heritage.

Floods and fires also contribute to the degradation of Europe's ecosystems services. This ecological degradation becomes even more severe when events have overlapping effects. For example, a flood event becomes more probable and is likely to be more catastrophic when occurring in an area where forest cover has been devastated by wildfire.

Efficient risk assessment and effective management of floods and forest fires are national priorities for most Mediterranean countries, where peri-urban areas are particular vulnerable to the combined effects of these natural hazards. Floods and forest fire risks have traditionally been assessed separately, with separate systems for collecting information and modelling risks. In Greece, in particular, flood and forest fire management in recent decades has mainly focused on suppression, which has not brought about the desired results.

Project objectives

The aim of the 'FLIRE' project is to introduce a combined, effective and robust risk-assessment and management system for both flash floods and forest fires, using state-of-the-art tools, technologies and methods, and taking into account prevention, adaptation and interaction issues.

The project's main objectives are:

- To develop a Weather Information Management Tool (WIMT) that will receive short-term weather forecasting information and dynamically take account of local conditions to classify the risk of floods and fires;
- To develop a near real-time flood risk assessment and management tool, which will include a catchment modelling component, an urban modelling component and an Early Warning System (EWS). This tool will receive flood risk information from the WIMT and activate, if necessary, the corresponding EWS;
- To develop a near real-time forest fire risk assessment and management tool, which will include a fire modelling component and an EWS. It will receive forest fire risk information and, if necessary, activate the corresponding EWS;
- To develop a planning tool for flood risk assessment and management, based on the catchment modelling

LIFE11 ENV/GR/000975
FLIRE



Beneficiary:

Type of beneficiary

University

Name of beneficiary

National Technical University of Athens

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Name of contact person

Maria MIMIKOU

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

1,616,084.00

EC contribution in euro with %:

808,041.00 (50.00%)

Theme: Risk management-Natural risks (Flood - Forest fire - Landslide)

and urban modelling components of the flood management tool; and

- To integrate these components into a common decision-support system for integrated flood and forest fire management.

Expected results

- A report on the current environmental status of the study area, including information on locations vulnerable to floods and forest fires;
- Flood and forest fire hazard and risk maps for the study area;
- Forest fire and flood risk-management tools that will operate under near real-time conditions and will inform local authorities, stakeholders and the general public of the risk of imminent fires and floods;
- A planning tool for flood risk assessment and management in peri-urban environments; and
- An integrated Decision Support System for combined flood and forest-fire risk management.

Burren Tourism for Conservation

LIFE11 ENV/IE/000922

Burren Tourism



Project background

The Burren area of the Republic of Ireland is an internationally renowned karst limestone area that supports a rich and diverse range of flora and fauna, archaeological monuments and traditional cultural practices. The pressures of tourism (congestion and the use of resources) on the area, however, are considerable. Its seasonal nature presents a particular challenge: 90% of tourism occurs in just three summer months. This concentration of tourists has serious implications for the environmental carrying capacity of the Burren. Some parts of western Ireland, such as the coastal fringe to the west and north of the Burren, attract a high number of visitors, whilst the main touring route from Corrofin to Ballyvaughan is also vulnerable. Yet, whilst the Cliffs of Moher (one of the highest sea cliffs in Europe) attracts up to one million visitors a year, only 20 km away, the Black Head Loop Walk (also a desirable tourism location) attracts fewer than 3 000 visitors annually.

Project objectives

The 'Burren Tourism' project aims to strengthen the integration of tourism and natural heritage, and to reconcile tourism development with conservation of biodiversity. It aims to secure environmental protection and sustainable visitor management through the creation of an innovative methodology that is of value to local communities. It will demonstrate pilot actions that test the use of tourism for conservation in the Burren.

In European terms, the objective is to improve the environmental performance of SMEs and promote strategic integrated planning approaches for improving the use of land. The project will thus work with tourism SMEs in conservation actions, with the aim of contributing to EU biodiversity objectives through the integration of tourism and biodiversity. The project will support the EU's promotion of sustainable, responsible and high-quality tourism. The project will also stimulate a heritage community within its local partnership and enrich the heritage of the area. Finally, it will support the European landscape convention through the tourism conservation actions carried out on the fragile landscape of the area.

Expected results

The project expects to achieve the following:

- To heighten and strengthen the extent of integration of tourism and conservation;

Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

Clare County Council

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Name of contact person

Carol GLEESON

Duration of project:

60 months (01.06.2012 - 31.05.2017)

Total budget in euro:

2,217,745.00

EC contribution in euro with %:

1,108,872.00 (50.00%)

Theme: Land-use & Planning-Sensitive & protected areas management / Services & Trade -Tourism - Accomodation

- To enable some 100 companies to have a greater capability for tourism conservation; and
- To improve the status of four monuments and three natural sites.

CLEAN-ROADS: Addressing the environmental impact of salt use on the roads

Project background

The excessive use of chemical de-icers for winter road maintenance can lead to environmental damage and jeopardise the protection of natural ecosystems close to busy roads. Several studies have demonstrated already that road salt has a negative impact on the surrounding environment, with short and long term damage to aquatic systems, vegetation, air quality, wildlife and human health, as well as to the road infrastructure and vehicles. Today, the salting of roads in wintertime is carried out in a subjective manner, without the use of quantitative data. This can lead to an overestimation of the amount of salt required and thus a waste of resources.

The target area (Bolzano province, northern Italy) was selected as particularly suitable because of its high chemical usage (mainly of salt - sodium chloride) for de-icing of roads in wintertime. Since there is heavy traffic on major routes in this frontier region, even at night, the decision on whether to salt or not can be difficult to make: and the overestimation of quantities of salt also impacts on road safety levels.

Project objectives

The overall objective of the 'CLEAN-ROADS' project is to reduce the environmental problems related to the widespread use of de-icing/anti ice chemicals (mainly salt) for winter road maintenance in Bolzano. Specific project objectives include:

- Quantifying, at a local level, the negative environmental impact of the use of de-icing salt on the roads and surrounding natural ecosystems;
- Providing for a more efficient use of salt during winter road maintenance operations through the introduction of a pilot, low energy road weather information system (RWIS), enabling access to real-time data on road conditions and short-term weather forecasts;
- Informing drivers locally, by disseminating road-weather information through 'info-mobility' channels; and
- Implementing dedicated awareness-raising actions aimed at increasing the level of responsibility of drivers in organising and planning their trips in wintertime.

Expected results

The main quantified expected results include:

- A 30% reduction in road salt use in the project area;
- A 10-20% reduction in chloride concentrations in the local ecosystem, specifically in nearby aquatic systems;

LIFE11 ENV/IT/000002
CLEAN-ROADS



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

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Name of contact person

Stefano DE VIGILI

Duration of project:

40 months (01.06.2012 - 01.10.2015)

Total budget in euro:

1,374,300.00

EC contribution in euro with %:

687,150.00 (50.00 %)

Theme: Land-use & Planning-Transport planning - Traffic monitoring

- A 15-30% reduction in the number of road salting treatments required for each stretch of road;
- A 15-30% decrease in the total number of kilometres travelled by winter road maintenance vehicles;
- A 10-20% reduction in air pollution levels;
- A 20-30% reduction in the number of traffic accidents;
- A 15-20% reduction in average travel times; and
- A 5-10% reduction in traffic volumes and a 30-40% decrease in traffic congestion caused by bad weather.

Actions for the improvement of water quality and habitats in the River Lambro valley

Project background

The Lambro river is an important water basin located in the Lombardy region of northern Italy. It has been seriously affected by industry-related pollution, in particular following an ecological disaster that occurred in February 2010, when, as a result of criminal sabotage, 2 600 m³ of oil spilled into the river. The malfunction of the sewage network and episodes of illegal discharge of pollutants into the river have added to critical conditions in the water basin. The river's middle course, around Merone, is particularly polluted. The fish community is almost absent, macrobenthos (organisms living on or in the bottom of bodies of water) are scarce, and the Extended Biotic Index (i.e. measure of water quality) is generally low. There is a need for a reduction in water risk and pollution, as well as habitat restoration and information and awareness-raising amongst the local population in order to stop the overall degradation of the river ecosystem.

Project objectives

The project's main objectives are:

- To develop a joint strategy for practical actions to address water risk/pollution problems and a model for future interventions in the Lambro river basin. This agreement will ensure the maximum level of involvement of all stakeholders;
- To improve the quality of surface water;
- To improve the habitat of the river and river basin areas; and
- To increase the biological connectivity between surrounding nature areas to help preserve and increase the natural habitats and species.

Specific actions to improve surface water quality will include:

- The creation of filter ecosystems, based on water phytoremediation techniques that would be used, in the first instance, for treating water coming out of purifiers located in Merone and Nibionno;
- The removal of pollution sources in the three minor 'affluent' watercourses in Inverigo;
- The creation of filter ecosystems in the three minor affluent watercourses in Inverigo; and
- The creation of a permanent wet area between Inverigo and Nibionno.

Expected results

- The involvement of more than 200 technicians, civil servants, cultural and environmental specialists and a significant number of members of the general public in the decision-making processes;

LIFE11 ENV/IT/000004

Lambro vivo



Beneficiary:

Type of beneficiary

Park-Reserve authority

Name of beneficiary

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Name of contact person

Daniele GIUFFRÉ

Duration of project:

43 months (01.06.2012 - 31.12.2015)

Total budget in euro:

1,531,171.00

EC contribution in euro with %:

566,686.00 (37.01 %)

Theme: Habitats-Freshwater / Water-Water quality improvement

- Quality improvements in the effluent from the Merone and Nibionno treatment plants, including reducing total nitrogen and phosphorus levels by some 25-30%; and more closely matching the effluent temperature to the temperature of the water in the receptor;
- Quality improvements in the water of the three affluent watercourses in the Inverigo territory. Including: a 20% decrease in total nitrogen and phosphorus levels; and an increase in dissolved oxygen and subsequent decrease of biochemical oxygen demand (BOD) and chemical oxygen demand (COD) by some 20%;
- Increased biodiversity in the habitats of the target river section; and
- The establishment of new environments characterised by different plant systems, typical of transition bands (reeds, shrubs and trees), enabling the establishment of new habitats for possible colonisation by other fauna and flora.

Parking green services for better environment in historic towns

Project background

Most small/mid-sized historic towns, such as Treviso, face similar challenges in relation to mobility and the transport of people and goods in their urban centres. These include energy consumption, environmental impact, noise and other issues. Such factors negatively affect citizens' health and damage heritage sites and cultural assets (e.g. degradation of houses and monuments). Low levels of public transport use and higher freight distribution costs also have a negative effect on trade in urban centres, which in turn impacts on social cohesion and the dynamism of these areas. However, experiences in various EU Member States show that a number of organisational, operational and technological measures can be used to address such issues.

Project objectives

The 'PERHT' project aims to transform parking facilities in the pilot area into "hubs for green urban mobility", which will enable the following strategic objectives to be achieved:

- Reduced impact of car traffic through improved management of parking services and the implementation of flexible parking schemes;
- Efficient integration of parking services with public transport and other collective mobility services;
- Encouragement of citizens and visitors to shift from cars to alternative and sustainable (individual and collective) mobility services;
- Reduced impact of commercial traffic by providing dedicated parking facilities for last-mile operations, and by better integrating city logistics into the overall urban mobility management scheme; and
- Promoting the take-up of electric mobility for both people and goods.

These measures will lead to energy savings, improvements in the urban environment and a better quality of life in the town centre.

Expected results

- New park and ride services, with bicycle sharing facilities and stations. This is expected to lead to emissions reductions in Treviso urban centre of at least 60 tonnes/yr of CO₂ equivalent, and an energy consumption reduction of 23 tonnes/yr of oil equivalent (toe);
- A flexible collective mobility scheme, based on shared taxi services, leading to an emissions reduction of 2 tonnes/yr of CO₂ equivalent, and an energy consumption reduction of 1.075 toe/yr;

LIFE11 ENV/IT/000015

PERHT



Beneficiary:

Type of beneficiary

Public enterprise

Name of beneficiary

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Name of contact person

Marco DALL'AGNOL

Duration of project:

36 months (01.07.2012 - 01.07.2015)

Total budget in euro:

1,413,621.00

EC contribution in euro with %:

706,810.00 (50.00%)

Theme: Land-use & Planning-Transport planning - Traffic monitoring

- A reduction in urban commercial traffic through the adoption of policies favouring the use of electric vehicles and optimised freight loads, leading to a CO₂ emissions reduction of at least 8% (50 tonnes/yr CO₂ equivalent) and an energy consumption reduction of 0.22 toe/yr;
- The introduction of recharging stations, services and other incentives (e.g. priority parking) to promote the use of electric vehicles;
- Travel updates and information on the mobility schemes via pervasive ICT services, including a web portal, mobile apps and information kiosks/screens; and
- Demonstration of a new concept for integrated and coordinated eco-mobility service operation in small/mid-sized historical towns.

Municipalities' Subsidiarity for Actions on Energy

Project background

The EU Renewable Energy Sources Directive (RES Directive, 2009/28/EC) requires all Member States to generate a certain percentage of their final gross consumption of energy from renewable sources. Regions and municipalities are key partners in planning and implementing the necessary energy strategies to achieve this objective, in particular in relation to introducing incentives and sanctions that take into account the particular circumstances of their areas.

Municipalities are both energy consumers and administrative authorities, with regulatory and planning responsibilities. They will, therefore, be important actors in achieving the objectives of energy efficiency, energy saving, the development of renewables (RES Directive) and greenhouse gas emission reductions.

In Italy, 65% of citizens live in cities with fewer than 50 000 inhabitants. In most cases, these smaller cities do not have the capabilities or means to cope with the demands of energy and climate policy. Tools and methodologies must be provided so that short-term action can be taken at a local level.

Project objectives

The objectives of the 'MuSAE' project are as follows:

- To provide small municipalities with a simplified and shared energy-environment planning tool. This will have a positive impact on the development of renewable sources (solar thermal and photovoltaic, wind power, hydro power, biomasses, geothermal, etc.) and on the reduction of energy consumption, with the associated environmental benefits;
- To raise awareness among municipal officials of the specific character of their area in terms of energy consumption, energy sources and the market penetration of renewable energy;
- To raise awareness among citizens, local businesses and other stakeholders of the need for a sustainable energy system. Municipalities will implement strategies to promote energy efficiency, available technologies, and the environmental and economic benefits and possible incentives or tax benefits, thus increasing understanding of good practice among the general public and businesses operating in the territory.

LIFE11 ENV/IT/000016
MuSAE



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

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Name of contact person

Gabriele Alessandro DE MICHELI

Duration of project:

29 months (01.06.2012 - 31.10.2014)

Total budget in euro:

883,330.00

EC contribution in euro with %:

368,967.00 (41.77 %)

Theme: Climate change - Energy-Energy saving

Expected results

- Four Participatory Forums in the four municipalities covered by the project, enabling information sharing via networking;
- A database of laws and standards, which acts as a tool to enable the successful transfer of experience;
- An energy helpdesk designed for citizens, local businesses and other stakeholders;
- A greenhouse gas inventory, including: scenarios to support political choices; a profile of an Energy Plan Manager, and the related training path; and guidelines for energy-environment planning in small and large municipalities; and
- A quality plan.

Reconciling agriculture with environment through a new water governance in coastal and saline areas

Project background

Vallevecchia is one of the most important coastal Natura 2000 sites in the Veneto region. It covers some 900 ha and includes several priority habitats. As a low-lying coastal area (elevation of 5 metres below sea level), it experiences problems related to sea level rise, which increases the area's vulnerability to storms and wave surges.

The EU Water Framework Directive (2000/60/EC) specifies that "an effective and coherent water policy must take account of the vulnerability of aquatic ecosystems located near the coast and estuaries or in gulfs or relatively closed seas". Coastal vulnerability largely depends on the combined effect of the natural system and socio-economic interests. Thus, the coastal system may be harmed by the future non-sustainability of each of its subsystems. Specific solutions must therefore consider every system component. Water availability, quality and management can be viewed as the main threats to a physical, ecological or socio-economic subsystem's survival.

Project objectives

The 'WATERSTORE' project will demonstrate the effectiveness of an innovative process designed to maximise and optimise the use of groundwater in rural coastal areas. The project will analyse the different subsystems in coastal areas, including Natura 2000 sites, agricultural areas and areas used for tourism and recreational purposes. The process will enable the efficient management of available freshwater, diverting it to different locations based on the water's quality (particularly the degree of salinity) and the priorities established by stakeholders.

Specific objectives include:

- Developing a new water management methodology, including the modification of the hydraulic system in Vallevecchia;
- Implementing an automated management system that distributes water based on its quantitative and qualitative characteristics, and the priorities identified by stakeholders;
- Introducing multifunctional agriculture and water-saving criteria in the crop system adopted by the farms in the Vallevecchia basin, with the aim of adapting local agriculture to the new water management methods. The protection of water from nitrates will also be taken into consideration;
- Writing specific software for the monitoring of agronomic, environmental and economic parameters, so that the new system can be evaluated; and

LIFE11 ENV/IT/000035
WSTORE2



Beneficiary:

Type of beneficiary

Development agency

Name of beneficiary

Veneto Agricoltura

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Name of contact person

Lorenzo FURLAN

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

1,372,421.00

EC contribution in euro with %:

686,210.00 (50.00 %)

Theme: Habitats-Coastal / Industry-Production-Agriculture – Fisheries / Water-Water management & supply

- Encouraging take up of similar approaches in other areas with similar characteristics to Vallevecchia.

Expected results

- The demonstration of an innovative process for storing and managing rainwater, with a capacity of some 160,000 m³;
- An improvement in the management of Vallevecchia's drainage basin, taking into account its high nature value (Natura 2000 network), as well as agricultural, tourist and recreational areas;
- An increase in agricultural income in the area from €150-300 per hectare to approximately €400 per hectare;
- Dissemination of the methodology to stakeholders in similar situations in Europe; and
- The publication of guidelines and a "Best Management Practices Manual for Integrated Multifunctional Cropping Systems" in coastal areas.

Ennobling mixture of waste for full low-energy replacement of exhaustible natural resources in building materials output

Project background

Ceramic tile production consumes large quantities of non-renewable materials, including sand, feldspars, alumina, zirconia, mullite and clay. Substantial amounts of water are also used, particular in the milling of raw materials and in the finishing of the fired tiles (cutting, polishing). To produce 1 000 m² of tiles, 8-18 m³ of water is needed for milling, 7-15 m³ to prepare the enamels to glaze the tile surfaces, and 800 m³ for cutting, grinding and polishing.

Tile production also generates waste, especially in the form of exhausted lime (some 15 kg per 1 000 m² of tiles). Most exhausted lime is sent to landfill. The tile industry also produces glass waste, derived from glass-ceramics or ceramic materials. The complete recycling of glass waste is hindered by the extreme variability of the glass composition, and by the extremely high content of refractory ceramic or glass-ceramic materials.

Project objectives

The objectives of the 'Low resources Low energy' project are:

- To drastically reduce the use of non-renewable resources by manufacturing a new family of ceramic-tile-like wall and floor coverings;
- To implement a process capable of recycling waste, such as exhausted lime, which is difficult to re-use because of its heterogeneous composition;
- To convert waste into coverings using an innovative waterless recycling practice for glass-based waste, lime and natural stone cuttings. Lime is a glass modifier, and can be used as part of a process to enable the firing of the new tiles in kilns at lower temperatures; and
- To reduce water and energy consumption in the manufacturing of wall and floor covering. Lower energy consumption will also mean reduced carbon dioxide emissions.

Expected results

- A reduction in the use of non-renewable raw materials by up to 82% by weight, in comparison with conventional ceramic tiles;
- Demonstration of the conversion of glass-based waste, exhausted lime and natural stone cuttings into low-temperature fired wall and floor coverings, with a production volume of up to 500 m²/day;

LIFE11 ENV/IT/000036
Low resources Low energy



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

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Name of contact person

Corrado MANELLI

Duration of project:

24 months (01.07.2012 - 30.06.2014)

Total budget in euro:

1,921,366.00

EC contribution in euro with %:

960,683.00 (50.00%)

Theme: Industry-Production-Non-metallic minerals

- Reduced energy consumption during firing of the coverings: currently 1.16 kWh is required to fire 1 kg of stoneware at 1250°C. The new process will require less than 0.8 kWh/kg, as a result of the lower firing temperature. This amounts to a reduction of more than 30% in energy consumption, as well as significant CO₂ emissions reductions;
- The replacement of natural or synthetic raw materials (such as silica, alumina, mullite and kaolin) with waste glass and sandstone or marble cuttings;
- The complete recyclability of the product at its end of life, with the possibility of re-milling and reintroduction into the same manufacturing process, depending on the glazes used; and
- Lower manufacturing costs, because production of the coverings will involve low-cost recycled materials, faster milling, more rapid drying and firing, and energy and material savings.

Rotating bioreactors for sustainable hydrogen sulphide removal

Project background

People living in industrial tannery districts, especially those living close to wastewater treatment plants, have traditionally experienced air quality and odour problems, caused by emissions of hydrogen sulphide (H₂S) and other sulphur reduced-compounds. The Santa Croce sull'Arno tannery district in Tuscany produces more than 80% of all Italian footwear and leather goods. The tannery district currently requires very large amounts of chemicals and energy to control sulphide emissions and odours. The industrial wastewater is characterised by a very high organic load (COD>15 000 mg/l), typically with large amounts of natural and synthetic tannins.

Project objectives

The 'BIOSUR' project aims to demonstrate the economic and environmental sustainability, and technical applicability, of an innovative technology for the removal of hydrogen sulphide from gaseous streams. The technical feasibility will be demonstrated through the design, set up and operation of a pre-industrial scale prototype of a bio-trickling filter. The novelty of the technology is the coupling of the bio-trickling filter with rotating supports. The prototype will be applied, for on-site validation, to real gaseous streams in a large tannery wastewater treatment plant. The innovative moving bed bio-trickling filter (MBBTF) will also, in the long-term, enable the control and removal of biomass – a major problem for conventional bio-trickling filters.

Specific objectives are:

- To identify opportunities for the dissemination of promising innovative technologies and promote the application of the scientifically-verified technology. In this respect, the project will support the application of a promising biotechnology for H₂S removal and will enhance interest towards innovative wastewater treatment processes among both private industries and the public sector;
- To contribute to reducing EU greenhouse gas emissions by 2020; and
- To involve public administrations in the dissemination of innovative technologies, in one of Europe's biggest tannery districts, covering some 400 tanneries.

Expected results

- The demonstration of the applicability and efficiency of innovative technology. In particular, the long-term sustainable removal of at least 150 g/h H₂S/m³ of the MBBF;
- Reduction of the H₂S concentration in the effluent to less than 1 ppm, with at least 96% removal;

LIFE11 ENV/IT/000075
BIOSUR



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

Consorzio Cuioidepur Spa

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Name of contact person

Gualtierio MORI

Duration of project:

42 months (01.07.2012 - 31.12.2015)

Total budget in euro:

1,277,355.00

EC contribution in euro with %:

637,655.00 (49.92%)

Theme: Industry-Production-Leather & Footwear / Water-Waste water treatment

- Large-scale dissemination of the project results to the public sector, research establishments and industry in the EU. The dissemination of the results will be enhanced by the quality of the project partnership, which will include up to 400 tanneries;
- A complete evaluation of the technical, environmental and economic viability of the full-scale application of the system. Specifically, the work will demonstrate how the process can be transferred to the whole tannery sector and to other public service managers throughout Europe, facilitating the implementation of EU environmental policy; and
- Publication of an operational guidebook on the implementation of the innovative approach to gas treatment through the applied technology.

Energy-efficient CFRP remanufacture from regenerated carbon fibres, using fast demoulding high pressure spray injection

Project background

Carbon fibre reinforced polymer (CFRP, or CF for carbon fibre) composites are increasingly used in several applications for their unique combination of low weight, strength and rigidity. The current market demand of some 38,000 tonnes/yr is expected to double by 2014. Using CFRP composites in structural parts to replace metals has many advantages, such as weight reductions of more than 40% and estimated greenhouse gas emission reductions of 20%. However, production of the composites is more expensive than fibreglass or plastic. In particular, high energy intensity is a major constraint. The composites are also considered difficult to recycle and reuse.

Project objectives

The 'CRESIM' project will demonstrate an innovative pilot process for the production of CFRP composites from recycled carbon fibre. The innovative solution will combine a series of technologies that have been already tested in a pre-industrial prototype plant, and will bridge the gap to full market uptake. The project aims to show how lightweight materials can be used in a wide range of applications, including civil engineering, sports equipment, biomedicine and high-end audio components and musical instruments, whilst achieving considerable environmental benefits for society.

Expected results

- The design and construction of a pre-industrial prototype process line that is able to produce CFRP composites from recycled carbon fibre, retaining 80-90% of the recycled material's mechanical and structural characteristics;
- To facilitate the recycling of up to 90% of carbon fibre from manufacturing plant waste;
- To ensure energy efficiency in the process, with a reduction of up to 80% of energy consumption per kg of product;
- To define 20 typologies of product that can be produced by the process;
- To obtain a reduction in production times and costs, thus demonstrating applicability in high-volume series products (such as automotive parts);
- To showcase the results in order to convince at least six manufacturers to perform re-impregnation tests on at least 180 samples;
- To define at least four formulations with different chemistry, and adaptations of the manufacturing

LIFE11 ENV/IT/000095
CRESIM



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

AFROS Spa (CANNON holding)

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Name of contact person

Maurizio CORTI

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

2,035,040.00

EC contribution in euro with %:

1,017,520.00 (50.00%)

Theme: Environmental management-Cleaner technologies / Waste-Waste recycling

- process that could foster market replication in the EU and worldwide; and
- To conclude at least one agreement with a recycled carbon fibre supplier for the provision of recycled carbon fibre and the establishment of a recycling chain.

Highly Efficient Ovens through eco-friendly, energy efficient sol-gel enamelling process

Project background

The household appliance sector accounts for 28.2% of EU electricity consumption (2007 figures). In the European economic area, household electricity consumption is some 4 100 kilowatt hours (KWh) per year, of which 100-200 KWh is consumed by electric ovens. Electric ovens are among the least energy-efficient household appliances, with an efficiency of about 10-12% relative to the input power. Some 11.5 million electric ovens are sold each year in the EU (2008 figures). Production of the ovens is also marked by high energy consumption, in particular because of the enamelling process for oven interiors. Moreover, the enamels often contain toxic substances, such as nickel and cobalt. A reduction in energy consumption in both the production and use of electric ovens would result in significant energy savings in the EU.

Project objectives

The long-term objective of the 'HEO' project is to address the issues of energy-efficiency, over-dependence on fossil fuels, greenhouse-gas emissions, the use of chemicals and the production of waste.

The project's specific objectives are:

- To demonstrate the feasibility of an innovative enamelling technology for electric ovens, by upscaling for the first time a pre-industrial pilot line, which will be tested and monitored;
- To demonstrate the feasibility of an innovative oven design, which will reduce oven energy consumption by some 30% relative to state-of-the-art electric ovens;
- To eradicate completely, by the introduction of the new HEO technology, the use of nickel, a toxic substance, and cobalt, a carcinogen, which are contained in traditional enamels; and
- To increase the share of high efficiency ovens in the Italian market to at least 2% per year.

Expected results

- Establishment of a tested, validated and efficient working pilot line that will generate energy savings of 50% in comparison with current state-of-the-art enamel plants;
- Successful development of silica-zirconium coatings for oven interiors, and production of 50-100 prototype ovens;
- Prototype ovens that use 30% less energy than current models, as a result of improved design and coatings;

LIFE11 ENV/IT/000103
HEO



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

Whirlpool Europe s.r.l.

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Name of contact person

Teresa Vitale

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

1,813,661.00

EC contribution in euro with %:

854,880.00 (47.14 %)

Theme: Environmental management-Cleaner technologies / Industry-Production-Engines - Machinery - Vehicles

- Production of ovens with highly resistant interiors that require less cleaning with chemicals than current state-of-the-art enamel ovens;
- A successful lifecycle analysis (LCA) of the technology and process will be conducted at both preliminary and operational stages of the project; and
- A full market analysis will be carried out.

If all electric ovens sold in the EU were manufactured using the novel HEO technology, an energy saving of some 28 GWh/yr could be expected. This is equivalent to a saving in CO₂ emissions of approximately 14 000 tonnes/yr.

Low cost sorbent for reducing mercury emissions

Project background

Each year, more than 2 000 tonnes of mercury is released into the air and thus the global environment. Some 340 tonnes/yr of this comes from Europe. Mercury is released to the environment as methyl mercury (MeHg), a bioaccumulative neurotoxin. Recent research has also linked methyl mercury with possible harmful effects on the cardiovascular, immune and reproductive systems. Elemental mercury is insoluble in water and cannot be captured effectively by wet scrubbers, so it must be captured using solid sorbents. Sulphur-impregnated activated carbon is the best mercury sorbent currently available, but it is very expensive (€7-12/kg) and so most organisations use cheaper but less effective non-impregnated activated carbon (€3-6.50/kg). A recent European Commission-funded project, "Single state production from waste tyres of the best existing sorbent for the removal of mercury from gas stream: sulphur impregnated carbon - MERCSORB", studied the production of sulphur-impregnated activated carbon from waste tyres.

Project objectives

The 'SOREME' project will demonstrate the use of an innovative sorbent for the removal of mercury from gas streams from different industrial production cycles. The sorbent will be produced from sulphur-impregnated activated carbon (S-AC) derived from waste tyres.

The project's specific objectives are:

- To demonstrate the use of a high quality S-AC sorbent, produced at lower cost than non-impregnated activated carbon;
- To demonstrate the complete industrial functioning of a plant for continuous production of the SOREME sorbent;
- To reduce mercury emissions from different industrial production cycles below current levels;
- To use the semi-industrial pilot plant for the demonstration of the effectiveness of the SOREME sorbent for filtering out mercury emissions at a semi-industrial scale. This will allow the carrying out of numerous trials with lower mercury emissions than current industrial production; and
- To reduce European social and health costs by more than €485 million annually while delivering €80 million per year in end-user savings.

LIFE11 ENV/IT/000109
SOREME



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

Chemical Institute of organometallic compounds of CNR (ICCOMCNR)

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Name of contact person

Emilia BRAMANTI

Duration of project:

24 months (01.01.2013 - 31.12.2014)

Total budget in euro:

1,551,040.00

EC contribution in euro with %:

730,694.00 (47.11 %)

Theme: Risk management-Industrial risks - Hazardous substances

Expected results

The project will:

- Demonstrate that industrial plants could reduce mercury emissions by 90% through the use of the S-AC sorbent;
- Show that sorbent manufacturing costs can be reduced to less than €1/kg, including material, capital and energy costs, and excluding potential income from fees for tyre disposal;
- Demonstrate the flexibility of use of the SOREME sorbent in different industrial production cycles, and demonstrate its innovative operating conditions; and
- Demonstrate the innovative reaction kinetics of mercury absorption and the higher quality of the S-AC product compared with non-impregnated activated carbon, meaning that S-AC can be used at lower volumes because it absorbs more (10%) mercury than other processes.

Waste eliminating and water-free new revolutionary technology for surface treatment of marbles, stones and tiles

Project background

The ceramic tile industry, and in particular ceramic-tile finishing operations, use an extremely high volume of water. Some 72% of EU tile production is porcelain stoneware, which is typically subjected to high water-use finishing operations. Some 800 litres of water are needed to polish 1 square metre of tiling.

Finishing operations also generate sludge from levigation, or the grinding of an insoluble substance into powder whilst wet. Wastewater makes up 30% by weight of the levigation sludge. Because ceramic tile manufacturing is concentrated in specific areas, these areas are potentially highly affected by water extraction and the requirement to deal with wastewater. In Italy, for example, 90% of tile production takes place between the towns of Modena and Reggio Emilia, which are 30 km apart.

The waste levigation sludge is temporarily stored in open-air storage systems at the ceramics plants, or can be disposed of at considerable expense. At present, this waste cannot be recycled back into the ceramic tile manufacturing process, because of the chemical, physical, mineralogical and thermal incompatibility of its main components.

Project objectives

The main objectives of the 'W-LAP' project are to drastically reduce (more than threefold) water consumption in tile finishing, and to minimise levigation sludge production.

The main specific objectives are:

- To demonstrate that through the controlled application of a polymer-based layer on tile surfaces it is possible to achieve the same aesthetic result as produced by ceramic tile surface grinding and polishing, whilst simultaneously sealing the tiles;
- To obtain tile surfaces that are easier to clean and are less prone to bacterial proliferation;
- To reduce the quantity of water and surfactants necessary for the cleaning and maintenance of tiles, during indoor and outdoor use;
- To save energy, as the process of additive polishing will require less use of grinding and polishing wheels and discs, and there will be no requirement for final drying of the product;
- To demonstrate that the tools used to apply the polymer-based layer will be easier to maintain, giving an increase in productivity and a reduction in waste production; and

LIFE11 ENV/IT/000110
W-LAP



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

Ceramica Fondovalle SpA

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Name of contact person

Vito Antonio REMIGIO

Duration of project:

24 months (01.07.2012 - 30.06.2014)

Total budget in euro:

1,939,642.00

EC contribution in euro with %:

969,821.00 (50.00 %)

Theme: Environmental management-Cleaner technologies / Industry-Production-Non-metallic minerals

- To set up a demonstration line able to process 100 m²/day of tiling.

Expected results

- Reduction of water consumed during the surface finishing of ceramic tiles;
- The current waste output of up to 0.6 kg of levigation sludge/m² of finished materials will be reduced to zero without affecting tile weight;
- A 25% reduction in energy consumption during manufacturing;
- Manufacture of a high-quality, easy-to-clean product with optimum aesthetic properties and reduced weight;
- No over-spraying of water or polymeric precursors;
- Tiles that require less ongoing cleaning, thereby reducing water and chemical use; and
- A reduction in the number of broken tiles during polishing.

Innovative System for the Biochemical Restoration and Monitoring of Degraded Soils

Project background

Soil degradation is an issue for the whole EU, although the extent and threats vary considerably between Member States. An estimated 115 million ha, or 12% of Europe's total land area, is subject to water erosion, and 42 million ha is affected by wind erosion.

Some 45% of European soils, mainly in the Mediterranean countries, have a low organic-matter content. The number of potentially contaminated sites in the EU is approximately 3.5 million. Furthermore, over-intensive agriculture and improper tillage reduce the stock of organic matter in the soil, adding to the decline in soil quality. Current methods for the assessment of soil conditions are limited, being able to provide only "static" physical, chemical, and biological reports about the status of soil in a given moment and, consequently, only short-term interventions can be planned.

Project objectives

The main objective of the 'BIOREM' project is to demonstrate an innovative, integrated methodology for the restoration and biochemical monitoring of degraded soils.

In terms of soil remediation, the project will demonstrate that the BIOREM strategy can successfully restore degraded soils, enhancing their physical-chemical properties and biochemical activity, and increasing fertility. In terms of soil monitoring, the project promises faster, more thorough and dynamic monitoring of soil conditions.

The main specific objectives are:

- Restoration of degraded soils, taking into account current and planned uses, along with the provision of strategies and good practices for cost-effective restoration;
- Provision of support to EU farmers and land managers, to enable them to effectively tackle land contamination and depletion;
- Prevention of further soil degradation; and
- Furthering of the ability of policy-makers and land managers in all sectors to devise and implement new and effective soil use and management plans.

Expected results

The project will:

- Treat 30 degraded sub-plots, each with an area of 30 m²;
- Improve the overall condition of the treated soils, and demonstrate the superior effectiveness of BIOREM's innovative restoration and monitoring strategy;
- Carry out five sampling and monitoring campaigns conducted on 40 (30 m²) sub-plots;

LIFE11 ENV/IT/000113
BIOREM



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

Institute for Ecosystem Studies of the National Research Council (ISECNR)

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Name of contact person

Graziana MARSCIANDARO

Duration of project:

27 months (01.01.2013 - 31.03.2015)

Total budget in euro:

1,238,342.00

EC contribution in euro with %:

619,170.00 (50.00 %)

Theme: Land-use & Planning-Soil & landscape protection / Risk management-Site rehabilitation – Decontamination

- Provide physical, biochemical, molecular and environmental analyses and characterisation of 170 soil samples from 10 areas in Italy and Spain. These analyses will be used to establish 10 libraries of soil microbial content;
- Characterise the biochemical and environmental evolution of the soils and their conditions after the BIOREM treatment; and
- Remediate soils to achieve the following: a 6 tonnes/ha increase in organic matter content; a 24,2% increase in carbon content; a 120% increase in microbial content and biodiversity; 95% plant cover; a 100% reduction in organic matter loss; a 95% reduction of water-caused erosion; a 20-25% increase in soil fertility; and annual sequestration of 130 g/cm² of carbon.

Bologna Local Urban Environment Adaptation Plan for a Resilient City

Project background

Climate change is one of the main threats facing our society. The international community is trying to tackle this problem through the United Nations Framework Convention on Climate Change and the Kyoto Protocol. Although nearly all European regions are affected by climate change, the impact differs depending on the local context. Climate change thus needs to be addressed with a strategy that strengthens actions at the local level, e.g. in towns, which are often more exposed and vulnerable to climate change impacts. The implementation of local policies is more effective if they are part of a local planning framework, which also promotes partnerships between civil society and the private sector.

Since 2002, Bologna, through the LIFE project 'EcoBudget', has developed a system for local sustainable management of environmental resources and has set CO₂ reduction targets. Bologna is also developing mitigation measures, through energy, mobility and waste management planning. A local climate adaptation plan is now needed to complement the existing plans.

Project objectives

The main goal of the 'BLUE AP' project is to provide Bologna with a Local Adaptation Plan, to make the town more resilient in the face of climate change.

The project will:

- Learn from and disseminate the best EU experiences in adaptation planning at the town level, and adjust them to fit the specific Italian situation;
- Consolidate a governance and planning model that could be transferable to the large number of Italian cities already committed to (more than 1 000 Covenant of Mayors signatories), but not experienced in strategic planning for climate adaptation;
- Establish an information system that is comprehensive and innovative (integrating environmental with social data) and that will produce new information about climate change risks and vulnerability in Bologna; and
- Offer "start up" support to local stakeholders, with the aim of designing and launching some of the measures and actions defined by the Local Adaptation Plan.

Expected results

The project's main expected results are:

- A protocol involving stakeholders in climate adaptation, based on 100 "Stakeholder Challenges" and 100

LIFE11 ENV/IT/000119
BLUE AP



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

Comune di Bologna

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Name of contact person

Giovanni FINI

Duration of project:

36 months (01.10.2012 – 30.09.2015)

Total budget in euro:

986,049.00

EC contribution in euro with %:

493,024.00 (50.00 %)

Theme: Climate change - Energy-Adaptation to climate change / Land-use & Planning-Urban design (urban-rural)

- "Financing Challenges" surveys, and an analysis report summarising stakeholders' needs and opportunities;
- A baseline report addressing the strengths and weaknesses of the Bologna municipality in the face of the need to adapt to climate change;
- Preparation of the Bologna Local Urban Environment Adaptation Plan (BLUE AP);
- The political commitment by the local government to adopt and start the implementation of the BLUE AP; and
- The design and start up of at least six pilot actions, as part of the initial implementation of BLUE AP.

A model to reclaim and reuse wastewater for quality crop production

Project background

Agriculture is the top water-consuming sector in southern European countries, accounting for more than 50% of the total water demand and reaching up to 80% in specific cases, according to the European Environment Agency's report, "The European environment, state and outlook 2010, water resources-quantity and flows". In Italy, agriculture accounts for 60% of total water consumption. In the region of Emilia-Romagna, water consumption for irrigation accounts for 66% of water consumption. Agriculture's extremely high share of water consumption affects both surface and underground water resources. In the Po river basin, where 40% of Italy's national GDP is generated, this situation has led to both water body deterioration and an imbalance between surface and underground water ecosystems. The reuse of treated wastewater and irrigation system rationalisation are key issues for environmental preservation.

Project objectives

The 'ReQpro' project will contribute to the protection of water resources through the efficient re-use of treated wastewater for irrigating agricultural land, thus replacing the use of surface water and groundwater resources.

This objective will be achieved by developing a model of water reclamation and re-use for irrigation of high quality crops.

The specific objectives of the project are:

- To evaluate the efficiency and the cost of tertiary wastewater treatment, aimed at achieving the standards set out in regulations on wastewater re-use in agriculture;
- To test new irrigation management practices, maximising the amount of irrigation wastewater applied to individual land plots on an agricultural catchment area cultivated with high quality crops;
- To learn lessons about good practice in wastewater re-use;
- To evaluate the environmental and economic effects of the implementation of the proposed water re-use practice in the Po river basin; and
- To increase farmers' awareness of wastewater re-use options.

Expected results

The quantified expected results of the project are:

- Tertiary treatment of approximately half of the flow produced by the Mancasale wastewater treatment plant in Reggio Emilia, in order to produce water suitable for re-use in agriculture;

LIFE11 ENV/IT/000156

ReQpro



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

Centro Ricerche Produzioni Animali (CRPA) SpA

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Name of contact person

Marco LIGABUE

Duration of project:

27 months (01.12.2012 - 28.02.2015)

Total budget in euro:

690,200.00

EC contribution in euro with %:

343,148.00 (49.72 %)

Theme: Industry-Production-Agriculture – Fisheries / Water-Water resources protection

- Recovery of some 40 000 m³/day of irrigation wastewater during the irrigation period;
- Wastewater re-use for the irrigation of an agricultural area of some 2 000 ha;
- A reduction of the discharge into water bodies of nutrient loadings. The amount of nutrients (nitrogen and phosphorus) in treated wastewater that will be applied to agricultural land instead of being discharged to surface water is preliminarily estimated at 40 000 kg/yr of nitrogen and 5 000 kg/yr of phosphorus;
- The development and assessment of an innovative wastewater traceability system, enabling the optimal usage of reclaimed wastewater and the provision of detailed information on reclaimed wastewater volume and quality to farmers; and
- The development of a risk management system to address possible problems.

Making Public Goods Provision the Core Business of Natura 2000

Project background

Natura 2000 network sites provide a wide range of ecosystems services. Efficient management of the sites is essential for their conservation and to ensure the continued delivery of ecosystems services. However, conservation activities come with an administrative and management cost, and, in many cases, management plans cannot be implemented because of scarce financial resources. Thus governance tools and innovative models for financing are necessary for the efficient management of Natura 2000 sites, based on a qualitative and quantitative valuation of the ecosystems services they provide. Such tools and models should be adaptable to Natura 2000 sites in different eco-regions (Alpine, Mediterranean and Continental).

Project objectives

The general objective of the 'MAKING GOOD NATURA' project is to establish and demonstrate innovative procedures and approaches to solving environmental problems, taking a strategic approach based on the concept of ecosystems services.

The project's specific objectives are:

- To identify and evaluate the ecosystems services provided by Natura 2000 sites;
- To create and demonstrate innovative models for funding the implementation of Natura 2000 management plans and conservation measures;
- To identify innovative financing models that could be used during the next programming period of the Common Agricultural Policy (2014-2020);
- To create and demonstrate models for better governance in conservation management and for the socio-economic development of local communities;
- To define and apply a model of participation that will improve the interaction between the public and the private sectors; and
- To apply the new approaches and models to selected study sites in order to demonstrate their effectiveness.

Expected results

The project will aim to achieve better governance standards for the conservation of Natura 2000 sites, and for the socio-economic development of local communities. Specific results will include:

- Ecological and socio-economic descriptors for each study site;

LIFE11 ENV/IT/000168
MAKING GOOD NATURA



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

Consorzio Universitario per la Ricerca Socioeconomica e per l'Ambiente

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Name of contact person

Davide MARINO

Duration of project:

45 months (01.09.2012 - 15.06.2016)

Total budget in euro:

3,730,609.00

EC contribution in euro with %:

1,863,441.00 (49.95 %)

Theme: Land-use & Planning-Sensitive & protected areas management

- Habitat x ecosystems services' matrices to identify and evaluate ecosystems services;
- Models for the evaluation of ecosystems services and management efficiency;
- A governance model based on the concept of payments for ecosystems services, and other types of self-financing;
- A web-based tool for Natura 2000 sites that will enable the qualitative and quantitative evaluation of ecosystems services using spatial datasets.

Innovative process and solutions to reduce the weight of PET containers and boost the diffusion of the green purchases

Project background

Polyethylene terephthalate (PET) was used for some 40% of beverage containers worldwide in 2010. Europe processed 2.4 million tonnes of virgin PET for this use, with the requirement expected to increase by 2% per year. Production and use of PET results in the depletion of natural resources, and the generation of packaging waste. PET is the main polymer that must be addressed to achieve the EU plastics recycling target of 50% of plastics from households by 2020.

Processing 1 tonne of PET per hour requires 600 KW of power in a two-stage process, and results in the production of 50 000 containers/hr. The process also consumes hydraulic oil, which is difficult to dispose of. In addition, certain drinks (e.g. tea, fruit juices, milk) require container sterilisation, which is energy intensive and uses water and toxic chemicals. New processes that address these issues are needed to improve the environmental performance of PET production.

Project objectives

The main goal of the 'LIGHT PET' project is to establish a new process and plant for the production of food containers made from PET. The new plant will consist of modules for both the production of the preforms and for their shaping into bottles. The main innovation will be in the stretching-blowing process.

The specific goals of the project are:

- To reduce the consumption of PET by reducing container weight and using a greater share of recycled PET;
- To reduce energy consumption by optimising the configuration of the PET bottle plant, and changing from a two-stage to a one-stage process; and
- To eliminate the use of hydraulic oil by using an injection-compression production process, based on compressed air.

Expected results

- An innovative prototype plant for the production of food containers from PET;
- Reduced use of virgin PET, with accompanying reductions in natural resource consumption (energy, oil, and water);
- An increase in the use of recycled PET;
- Reduced waste;
- Elimination of hydraulic oil from the production process;

LIFE11 ENV/IT/000184
LIGHT PET



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

Società Industrializzazione Progettazione e Automazione (SIPA) SpA

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Name of contact person

Franco PASUT

Duration of project:

31 months (01.06.2012 - 31.12.2014)

Total budget in euro:

1,988,591.00

EC contribution in euro with %:

992,794.00 (49.92 %)

Theme: Environmental management-Cleaner technologies, Industry-Production-Food & Beverages

- Reduction of energy consumption thanks to the recovery of residual heat; and
- Testing of the prototype plant to initially produce 38 000 preforms/bottles/hr, scaling up to 50 000 preforms/bottles/hr.

Resilience to Climate change in Mediterranean Forests

Project background

Climate change is affecting Europe's forest ecosystems. Southern Europe, where the lack of water is a limiting factor for vegetation growth, is particularly affected by climate change, which is causing prolonged droughts, rising temperatures and longer periods of unsettled and windy weather. As a result, fires are becoming more frequent and severe, threatening woodland areas. There has also been a decline in forest productivity and in the tree population (mainly pines and oaks). Storms cause trees to fall, damaging timber and making it impossible or difficult to sell. Other consequences of climate change include increased damage caused by pests, the spread of epidemics affecting forest species, and a change in the dynamics of woodland species populations. Sicily has more than 500 000 ha of forest, and proper forest management is necessary to preserve forest ecosystems from the negative effects of climate change.

Project objectives

The 'RELIFORMED' project's broad aim is to preserve forest ecosystems in the face of the risks related to climate change, by promoting naturalisation processes and biodiversity, and by improving the resilience of ecosystems to environmental stress.

The specific objective of the project is to implement a regional forest policy that will increase the resilience of Sicilian forests and favour biodiversity conservation. To this end, the project will:

- Produce regional maps identifying the areas of Sicily most at risk from climate change;
- Define, through indicators, the role of communities and ecosystems in adapting to climate change;
- Define the best management models for improving the resilience of forest environments;
- Implement silvicultural techniques to support the evolution of forest systems (naturalisation, boosting of pre-forest processes) on a pilot area covering 120 ha; and
- Involve local communities in forest-protection measures.

Expected results

The main quantified expected results are:

- Development of forest-management guidelines that will be effective in boosting the resilience of Sicily's forests in the face of climate change;
- Implementation of a forest-management plan for the Region of Sicily;

LIFE11 ENV/IT/000215
RELIFORMED



Beneficiary:

Type of beneficiary

Regional authority

Name of beneficiary

Regione Siciliana - Assessorato Regionale delle Risorse Agricole e Alimentari - Dipartimento Azienda Regionale Foreste Demaniali

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Name of contact person

Dr. Luciano SAPORITO

Duration of project:

49 months (01.06.2012 - 30.06.2016)

Total budget in euro:

1,557,743.00

EC contribution in euro with %:

778,871.00 (50.00 %)

Theme: Climate change - Energy-Adaptation to climate change / Land-use & Planning-Forest management

- Demonstration of forest-management good practice at sites that are representative of Mediterranean forest types;
- Training programmes for relevant staff; and
- An increase in citizens' awareness of the issues covered by the project.

LIFE Integrated Environmental Hydraulic Requalification of the creeks of the Pedemontana strip of Emilia-Romagna

Project background

The hydrographic network of creeks and streams that drain water from the hills and mountains of Emilia-Romagna are often characterised by small watersheds and narrow stream beds prone to flooding. As a consequence, creeks and streams are characterised by steep slopes and very few floodplains. Thus, it is not always easy to consider the expansion of natural areas, as suggested by the EU Water Framework Directive (2000/60/EC, WFD) and Floods Directive (2007/60/EC), as a method to reduce flood risk and improve the ecological status of water bodies, for example via "habitat restoration and reconnection of alluvial floodplains," or by "increasing water retention by re-establishing floodplains". In the target area (covering more than 150 km²) at the base of the Apennine Mountains, water bodies are frequently crossed by urban belts located close to the hillside, and the scarcity of level ground often limits decision-making and reasonable technical solutions. Thus, innovative management strategies are needed, and a new course of action is necessary to implement a minor drainage network in hilly or mountainous territories.

Project objectives

The general aim of the 'RII' project is to demonstrate that Directives 2000/60/EC and 2007/60/EC can also be applied to:

- Networks of drainage basins and watersheds, not directly addressed by the two directives; and
- Heavily urbanised areas along the borders between hilly-mountainous territories and plains, where the minor drainage network is typically modified.

The project's specific goals are:

- To introduce, test and demonstrate the usefulness of: (a) innovative territorial management strategies and water course intervention techniques, based on WFD and Floods Directive key concepts, in order to manage hydraulic critical points and the ecological quality of the networks of drainage basins and watersheds; (b) innovative economic-legal management tools to support flood risk management and ecological restoration;
- To demonstrate restoration works in selected creeks; these works will show that flood risk can be dealt with through ecological quality improvement techniques, despite limitations caused by the location of built-up areas along creeks;
- To contribute to an improvement in the ecological quality of the minor drainage network located in a heavily urbanised strip close to the hillside, thus reducing local and downriver flood risk; and

LIFE11 ENV/IT/000243

RII



Beneficiary:

Type of beneficiary

Regional authority

Name of beneficiary

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Name of contact person

Franca RICCIARDELLI

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

1,199,250.00

EC contribution in euro with %:

599,250.00 (49.97%)

Theme: Risk management-Natural risks (Flood - Forest fire - Landslide)

- To increase the awareness of citizens and of Italian and European authorities involved in river management about the positive impacts these techniques can have for environmental protection flood risk management.

Expected results

The project will:

- Draw up an integrated plan for the large-scale hydraulic-environmental restoration of the target area;
- Identify economic and legal management tools to adopt new hydraulic-environmental strategies in agricultural areas;
- Disseminate knowledge about new strategies, techniques and tools developed during the project;
- Improve the ecological status of the creeks targeted by the pilot restoration projects; and
- Contribute to the reduction of flood risks in the target area.

Colloidal Silica Medium, to Obtain Safe inert, from RICE husk ash

Project background

In municipal waste incinerators, the main waste product is bottom ash, which is equivalent to some 10% by volume of the solid waste input. Fly ash, or the finest, lightest residue, is collected in many plants using a filtration system. Fly ash contains heavy metals (including zinc, lead, cadmium and chromium) and is therefore classified as toxic waste. In most cases, it is disposed of in lagoons, settling ponds, landfills or other sites, such as former mines in Germany. Though different techniques are being researched, there is presently no effective method for stabilising the heavy metals in fly ash. Previous projects that demonstrated the successful reuse of fly ash mainly focused on relatively stable or non-hazardous ash waste. However, the University of Brescia has developed a new method for treating fly ash.

Project objectives

The project will develop the University of Brescia's method for treating fly ash. It will derive silica gel from rice husk ash, and will use the gel to make fly ash from municipal solid waste inert, via a chemical process.

The project will:

- Demonstrate that using rice husk ash as a precursor for silica leads to lower environmental impacts and economic costs, and that the silica gel can be used to treat fly ash;
- Evaluate the performance of the new materials obtained by the treatment, and the markets for the end products;
- Reduce the consumption of natural resources, in favour of recycled material; and
- Generate new knowledge, by combining the know-how and competence of different researchers and staff from industry.

Expected results

The project's main results will be:

- The use of rice husk ash as a source of silica gel, and the use of the silica gel to treat fly ash. Theoretically, in Europe, all rice husk ash could be reused, with a significant reduction in waste destined for landfill;
- To open up the possibility of fly ash recycling; and
- To produce a new, environmentally-friendly product, with properties similar to or better than some commercial fillers, which are made from natural resources.

LIFE11 ENV/IT/000256
COSMOS-RICE



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

Alberto TURANO

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

1,335,004.00

EC contribution in euro with %:

659,224.00 (49.38 %)

Theme: Air & Noise-Air pollutants

Implementation of Eco-Compatible Protocols for Agricultural Soil Remediation in Litorale Domizio-Agro Aversano NIPS

Project background

The use of fossil fuels releases compounds into the environment, including numerous organic contaminants, which are now present in soils and water. Soil pollution has been increased by industrial pollution, mining and the over-application of fertilisers, which have added “potentially toxic elements” (PTEs) to the soil. These represent a risk because of the possibility of their accumulation in the food chain. In Campania, southern Italy, four National Interest Priority Sites (NIPS) have been identified, covering some 200 000 ha, with different levels and sources of pollution. In two of the NIPS, the urban areas of “Napoli Orientale” and “Bagnoli-Coroglio”, the storage of petroleum-derived compounds, the steel industry and asbestos cement production are the main sources of pollution. In the “Litorale Vesuviano” site, the main source is inadequate management of municipal waste. Finally, the “Litorale Domitio-Agro Aversano” site is mainly agricultural land, where there is a high level of soil contamination as a result of the illegal dumping of industrial and municipal waste, which has also had consequences for the quality of the water system.

Project objectives

The aims of the ‘ECOREMED’ project are as follows:

- To define an operative protocol for agriculture-based bioremediation of contaminated agricultural soils in the “Litorale Domitio-Agro Aversano” NIPS;
- To demonstrate the effects of this protocol in specific polluted areas in three municipalities;
- To support farmers with regulatory and financial tools aimed at improving the reclamation of degraded agricultural soils, thus restoring agronomic fertility and improving the landscape;
- To create an operative link between the technical-scientific protocols produced by ‘ECOREMED’ and local and regional administration;
- To define environmental quality indicators that could be used in the environmental regulatory framework; and
- To raise awareness of the importance of addressing soil pollution, and of the potential of bioremediation.

Expected results

The project will:

- Secure an improvement of the environmental quality in the NIPS;
- Identify the priority areas of the NIPS that should be included in the soil remediation programmes;

LIFE11 ENV/IT/000275
ECOREMED



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

Centro Interdipartimentale di Ricerca Ambiente (CIRAM) -
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Name of contact person

Massimo FAGNANO

Duration of project:

60 months (01.06.2012 - 31.05.2017)

Total budget in euro:

5,673,449.00

EC contribution in euro with %:

2,707,256.00 (47.72 %)

Theme: Risk management-Site rehabilitation – Decontamination

- Define an operative protocol for agriculture-based bio-remediation of polluted croplands;
- Identify geochemical indicators and eco-toxicological biomarkers for monitoring environmental quality;
- Analyse the environmental, social and economical impact of soil remediation programmes in the NIPS;
- Set out accompanying measures for farmers who want to develop bio-remediation protocols for their polluted soils; and
- Define an operative protocol for soil bio-remediation related to the regional regulatory framework.

Pilot project for scale re-use starting from bulky waste stream

Project background

Italy produces 541 kg of waste per capita (2008 figures). Only 30% of the total waste produced is sorted into separate streams, well below the legislative target of 45%. In terms of the collection of separated waste, northern Italy has reached a rate of 45.5%, central Italy 22.9%, and southern Italy 14.7%. More than half (56%) of the country's waste is sent for disposal. Landfill sites are the main destination for waste (49% of total waste production). Italian landfill sites produce an average of 500 kg of carbon dioxide equivalent (kg/CO₂eq) per tonne of municipal solid waste. With some 15 981 000 tonnes of municipal solid waste (MSW) disposed of in landfills in Italy in 2008, the production of greenhouse gases from waste amounted to 7 990 500 tonnes/CO₂eq, or 1.5% of Italy's total CO₂ production. Reducing the volume of landfilled waste is therefore a priority.

Project objectives

The main objective of the 'PRISCA' project is to reduce the flow of bulky waste sent to landfill in the areas covered by the project. The project will also attempt to reduce waste such as packaging that is classified as bulky waste, but which could be recovered or reused.

Specific aims of the project are:

- To contribute to the effective implementation of the EU thematic strategy on waste and natural resources, focusing on the national priorities;
- To set up two reuse centres, in Vicenza (northern Italy) and San Benedetto del Tronto (central Italy); and
- To reduce the flow of bulky waste going to landfill.

Expected results

- The establishment of two reuse plants and working teams;
- A 60% reduction in the flow of bulky waste sent to landfill by the collection centres close to the reuse centres;
- The development and sharing of a database on economic and environmental performance, and comparative assessments for future replication;
- A series of events held at flea markets, reaching some 8 000 people in total;
- A series of creative reuse workshops involving 400-600 children; and
- Eight regional seminars with 200 participants, and three national workshops with 180 selected participants.

LIFE11 ENV/IT/000277
PRISCA



Beneficiary:

Type of beneficiary

University

Name of beneficiary

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Name of contact person

Marco FREY

Duration of project:

31 months (01.06.2012 - 31.12.2014)

Total budget in euro:

1,523,981.00

EC contribution in euro with %:

761,534.00 (49.97 %)

Theme: Waste-Waste recycling

Chemical Assessment according to Legislation Enhancing the In silico Documentation and Safe use

Project background

REACH (Regulation (EC) 1907/2006 on the registration, evaluation and authorisation of chemicals), which came into force in 2007, sets out a new regulatory regime for chemicals in Europe. It requires manufacturers and importers of chemicals to submit hazard assessments and safe-use information, and it is based on the principle that the use of chemical substances should be permitted only if they have been evaluated as safe for the intended use. It is expected that some 40 000 chemical substances will eventually be registered under REACH.

REACH also promotes the use of non-animal testing of substances wherever possible. Non-animal test methods include computational models to assess chemical properties. Annex XI of REACH defines the criteria for models used for this purpose, known as quantitative structure-activity relationship models (QSAR).

Project objectives

The aims of the 'CALEIDOS' project are:

- To provide practical guidance to the users of non-animal test methods such as QSAR, for the evaluation of chemicals under REACH;
- To organise a statistically sound evaluation of the results of 25 QSAR methodologies, by using them to predict the properties of chemicals registered under REACH, and by comparing the predicted values with the values derived from experiments, as included in the substance registration dossiers;
- To evaluate if read-across (applying results from one chemical to a similar chemical) and grouping (assuming similar properties in similar substances) methods can improve the predictions, by comparing the results from read-across and grouping exercises with those obtained from QSAR models for a set of selected chemicals;
- To develop and make freely available a web tool for predicting chemical properties; and
- To establish a network of experts from regulatory bodies, industry and scientific institutions, who will work to improve the standardisation of non-animal testing methods.

Expected results

- Production of guidelines on the use of non-testing methods (QSAR, read-across and grouping), including case studies, performance statistics for non-animal testing methods, and chemicals safe-use indications;

LIFE11 ENV/IT/000295
CALEIDOS



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

Emilio BENFENATI

Duration of project:

30 months (01.01.2013 - 30.06.2015)

Total budget in euro:

895,184.00

EC contribution in euro with %:

447,592.00 (50.00 %)

Theme: Risk management-Industrial risks - Hazardous substances

- A tool, with 12 QSAR models freely available, for the prediction of substance properties relevant to REACH;
- A 20% increase in the use of QSAR data for the assessment of substances under REACH; and
- The completion of an international exercise on the reproducibility of computationally supported/non-supported read-across and grouping methods for the prediction of chemical properties.

Improved flux Prototypes for N₂O emission reduction from Agriculture

Project background

In order to achieve European targets for the reduction of greenhouse gas emissions by 20-30% by 2020, an important decrease in the output of all these gases from their main sources is needed. In Italy, agriculture was responsible for about 7% of total emissions in 2009, with the main greenhouse gas being nitrous oxide released from soil (70% of total N₂O output). Nitrous oxide emissions are primarily caused by nitrogen fertilisation in cropping systems. Current N₂O emissions in agriculture are estimated using IPCC guidelines, which use a simplified model that considers the amount of fertiliser applied, but does not take into account climate conditions and agricultural management. Alternatively, N₂O emissions are measured by means of several techniques that are either not suitable for croplands, or require the use of time-consuming procedures involving gas sampling from accumulation chambers and laboratory gas chromatography (GC) analysis.

It is, therefore, necessary to develop a different and more practical approach, allowing on-site determination of N₂O fluxes by means of accumulation chambers equipped with continuous N₂O analysers. Tuscany, the target area of this project, is a suitable territory to develop and test such an approach, being characterised by distinct soil and climatic conditions, as well as extensive and varied crop management systems.

Project objectives

The main goal of the 'IPNOA' project is to decrease N₂O emissions from agricultural activities in Tuscany, by at least 20% by the end of the project (2016), in comparison with the reference year of 1990.

Other specific objectives are:

- The development of two prototypes for monitoring N₂O fluxes, one fixed and the other portable, to measure N₂O emissions from soil;
- The identification of the best agro-ecosystem management practices to reduce agriculture emissions in Tuscany; and
- A scenario analysis at the regional scale to identify the measures to be used as financial incentives for N₂O mitigation.

Expected results

- The development of two prototype for measuring N₂O soil fluxes: a portable version allowing the scanning

LIFE11 ENV/IT/000302
IPNOA



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

West Systems

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Name of contact person

Sandro MORI

Duration of project:

48 months (01.06.2012 - 31.05.2016)

Total budget in euro:

2,039,778.00

EC contribution in euro with %:

995,948.00 (48.83%)

Theme: Climate change - Energy-Reduction of greenhouse gases emissions / Industry-Production-Agriculture - Fisheries

of the soil emission heterogeneity; and a fixed version allowing temporal emission variability, related to the environmental conditions and the agro-ecosystem management, to be studied;

- A best practices manual targeting farmers and other stakeholders, explaining the best methods to be used in agro-ecosystems management in order to mitigate N₂O emissions;
- The drafting of a regional-scale analysis to identify the best funding strategy to be adopted by Tuscany's policy-makers to mitigate emissions;
- Awareness-raising amongst Tuscany's farmers, farm organisations and consortiums on the importance of nitrous oxide emissions and the ways to reduce their negative impact; and
- The possibility of exporting this innovative approach to other regions and countries.

Innovative Solutions for Railway Noise Management

Project background

Railways are a significant cause of environmental noise pollution in Latvia and further afield. Increasing volumes of rail freight traffic and urbanisation are both having a negative impact. Moreover, surveys indicate that railways are the third most bothersome noise source and a cause of acoustic discomfort. Considering that cargo and passenger traffic circulates on rail 24-hours a day, sustained long-term exposure to noise may result in such health problems as sleep or central nervous system disorders, a decrease in operational capacity, physiological and psychological disorders, and deviations in social behaviour. Noise can also have a negative impact on pets and wildlife.

Data from a 2008 noise map of Riga showed that the emissions of noise created by rail infrastructure exceed the permitted noise level per day (L_{day}) in corresponding built-up areas on average by 5 dB(A) or 8%, and in some places the permitted noise level was exceeded by 15 dB(A) or 25%. At night, the permitted noise level (L_{night}) from railways in corresponding built-up areas was exceeded by 10-15 dB (A) or 20-30%; in some places by 25 dB(A) or 50%.

Project objectives

The goal of the ISRNM project is to demonstrate a new means of reducing rail noise pollution and to adapt and apply the Dutch "Reken en Meetvoorschrift Railverkeerslawaai '96" (RMR) method for estimating noise from Europe's railways.

The project will also test technologies for noise reduction and methods for protection against and reduction of rail noise. The technical activities of the project will be implemented in an urban environment, thus ensuring an acoustically favourable living environment for residents near rail lines in Riga.

Specific objectives are:

- To establish the best material for the construction of noise walls as a result of modelling and acoustic tests. Simulations will be carried out using different configurations of noise abatement walls. The project also foresees the creation of green (plant) noise barriers and will test the effect on noise levels of both the composite material and plant barrier; and
- To investigate the effectiveness of the RMR method in the mapping of rail noise, draft guidelines for adapt-

LIFE11 ENV/LV/000376
ISRNM



Beneficiary:

Type of beneficiary

Public enterprise

Name of beneficiary

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Māris RIEKSTIŅŠ

Duration of project:

36 months (01.07.2012 - 30.06.2015)

Total budget in euro:

1,290,810.00

EC contribution in euro with %:

645,405.00 (50.00%)

Theme: Air & Noise-Noise / Land-use & Planning-Transport planning - Traffic monitoring

ing this method in a simplified way, and propose improvements to the method, where required.

Expected results

- Acoustic testing of a 1-km long noise abatement wall made from a new composite material;
- Acoustic testing of a 0.3-km long plant barrier for the abatement of rail-caused noise;
- An anticipated reduction of 10-20% in noise levels from railways as a result of the application of these methods. This will be confirmed through monitoring;
- Drafting of a noise action plan; and
- Evaluation of the effectiveness of the RMR noise assessment method, leading to the creation of new guidelines for simplifying the adaption of this method, and proposals for improvements to RMR.

Factory of the Future: Demonstration of the production of wood panels with near-zero environmental footprint

Project background

In 2010, 4.9 million m³ of oriented strand board (OSB) panels and 14.9 million m³ of medium-density fibre-board (MDF) panels were produced, out of a total quantity of engineered wood boards produced in the EU-27 of some 61 million m³/yr.

Even though the wood panel industry focuses on environmentally friendly techniques, a vast amount of energy is used, mostly for wood drying applications. Energy usage depends on factors such as wood moisture content, required final board quality and drying installation type.

Project objectives

The goal of the 'Factory of the Future' project is to attain a fully self-sufficient plant with no environmental impact. To this end, the beneficiary aims to combine innovative technologies and best practices on its existing OSB and MDF production lines. Additional installations, such as a combined heat and power (CHP) unit and rain capturing units will be integrated to the production lines. Where necessary, changes will be made to the production lines to further improve the plant's environmental performance.

The improvements will be made possible by a thorough analysis of the current production lines. Energy consumption will be lowered by maximising the energy efficiency of the process, pre-drying the wood with excess heat, using biomass as a renewable energy source and integrating a CHP unit into the process. Water consumption will be reduced by capturing rain water, recycling condensation water from the production process and increasing the water efficiency of the steam generator.

Specific aims are to:

- Reduce the use of fossil fuels for thermal energy by 90%;
- Decrease CO₂ emissions from fossil fuels by 80%;
- Reduce water consumption by 70-75%; and
- Generate electricity using a biomass-powered cogeneration plant. Excess electricity will be sold to the grid.

The project will also identify opportunities to further reduce the factory's environmental footprint, to become a truly 'invisible' production facility. The aim is to demonstrate that this can be done in an economically viable way, maintaining production volume and quality. The project's achievements will be broadly disseminated, so that more facilities can implement similar measures.

LIFE11 ENV/LU/000854
Factory of the Future



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

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Marko BECKER

Duration of project:

41 months (01.06.2012 - 30.10.2015)

Total budget in euro:

6,070,183.00

EC contribution in euro with %:

3,035,090.00 (50.00%)

Theme: Environmental management-Eco-products design /
Industry-Production-Wood - Furniture

Expected results

The project expects to establish a self-sufficient, environmentally sound production plant with the following characteristics:

- No more than 10% of the thermal energy generated using natural gas, equalling a gas consumption of 1 486 508 m³; a reduction of 13 378 500 m³/yr (equivalent to the household use of 21 500 persons);
- Water consumption decreased to 64 000 m³/yr (versus the current 240 000 m³/yr), with more than half of the current consumption (127 000 m³/yr) to come from harvested rain water;
- Recycling of at least 30 000 m³/yr of condensation water from the OSB production process;
- The water efficiency of the steam generator increased by 20%;
- 39 GWh of electricity produced by the new CHP plant to be supplied to the local grid; and
- A reduction in CO₂ emissions from fossil fuels of more than 80%.

Erection of a demonstrative de-oiling plant for recycling oily steelmaking sludge and mill scales

Project background

Steelmaking plants generate various kinds of residues, including oily mill sludge and scales. These are generated at the rolling mill plant during the cooling and rolling processes of hot steel. Generally, low polluted sludge and scales are recycled internally, while highly polluted residues are landfilled. Both solutions lead to environmental issues: air pollution through dust and gas emissions, and soil pollution by polycyclic aromatic hydrocarbons (PAH). The European steel industry generates an estimated 500 000 tonnes/yr of oily sludge and mill scales. More than 30% of this total is not treated. Managing these residues will help combat soil, water and air pollution.

Project objectives

The 'PLD' project aims to 'de-oil' the sludge and mill scales from metal industries using an environmentally-friendly process: the Paul Wurth Lhoist De-oiling Process (PLD).

The global objectives of this project are:

- To demonstrate the feasibility and efficiency of the PLD process;
- To prove that PLD will have lower environmental impacts than current de-oiling technologies, including: lower CO₂ and NOX emissions; and lower energy consumption. This will help to reduce greenhouse gas emissions and have a positive effect on air pollution. This new process intends to be auto-thermal, meaning that no external energy will be required for the process, except to heat up the furnace.

The new process will generate no secondary materials, as 100% of the PLD process 'waste' will be reused to feed the beneficiary's sinter plant, where it will replace the primary raw material, iron ore. As a result, the depletion of natural resources will be limited.

The project will also have a positive impact on the environment as a whole, since it will tackle the huge problem of landfilling sludge. If successfully validated, the PLD process will not only allow users to treat waste generated during steel production, it will also help them manage the waste they have accumulated over a number of years. The process will become a decontamination solution for landfills that could be used worldwide.

Expected results

The PLD process will achieve the following quantified results:

LIFE11 ENV/LU/000855
PLD



Beneficiary:

Type of beneficiary

International enterprise

Name of beneficiary

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Name of contact person

Michel HOUBART

Duration of project:

37 months (01.09.2012 – 30.09.2015)

Total budget in euro:

9,898,653.00

EC contribution in euro with %:

4,944,377.00 (49.95%)

Theme: Industry-Production-Metal industry / Waste-Industrial waste

- Reduction of gas emissions: the objective is to reach lower values than emissions limits normally imposed on sinter plants by Best Available Techniques;
- Based on preliminary trials, some 50% of the CO₂ coming from the catalytic oxidation of the hydrocarbons will be captured by the lime in the PLD process. This will be precisely calculated in the lifecycle assessment (LCA);
- PLD is expected to be auto-thermal, thus lowering energy consumption. The target for energy consumption is 3 Nm₃/t of natural gas and 30 kWh/t of electricity;
- Reduction of CO₂ emissions by 50%. For example, the PLD process will emit 130 kg of CO₂/tonne of waste, while thermal desorption generates 260 kg of CO₂/tonne;
- Re-use of 100% of oily materials, thus avoiding landfilling; and
- Saving of iron ore: recycling 1 tonne of oily sludge will save around 1 tonne of iron ore.

MOBILE demonstration line for generation of Renewable ENERGY from micronised biomass

Project background

Biomass is an important source of renewable energy and in Poland the technical potential of biomass is estimated at 408-755 PJ/yr. Some 80% of Poland's biomass is in solid form and the other 20% is found in liquid states. Whilst biomass energy production from direct forest harvests is expected to decline in Poland, scope still exists to produce renewable energy from 'waste' biomass products. Care is needed during such energy conversion processes to avoid pollution risks caused by possibly harmful elements in the waste biomass.

One option for this is 'micronisation' technology, which involves using specially designed rotating rotors to exert sufficiently high levels of force so as to break up waste biomass into molecular material. Such technology already exists and has been applied, for example, in food processing. The technology has not however been transferred to, nor tested at, an operational level in the biomass sector, so no ready-made equipment for this purpose currently exists.

Project objectives

The main objective of the 'MOREENERGY' project is to demonstrate an innovative technology using 'micronisation' methods for generating pollutant-free energy from waste biomass. A full scale prototype demonstration installation will be designed and built to test and document the performance of 'micronisation' techniques in biomass energy production, under different operational parameters. Economic and environmental performance will be monitored and used to inform an awareness raising campaign aimed at promoting the technology's market uptake. Long-term legacies from the project are expected to contribute to climate action targets at national, EU and global levels.

Expected results

The main anticipated project results relate to validation of the new technology on a commercial-scale, and the raising of awareness about the benefits of such technology among targeted stakeholders. More specifically the project will:

- Create and launch a Prototype Demonstration Installation;
- Produce an Environmental Impact Statement for the technology;
- Produce an energy balance report, taking into account the energy needs of the technological process;

LIFE11 ENV/PL/000442
MOREENERGY



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

Robert PODGÓRZAK

Duration of project:

30 months (01.07.2012 - 31.12.2014)

Total budget in euro:

2,964,270.00

EC contribution in euro with %:

1,482,135.00 (50.00%)

Theme: Climate change - Energy-Energy supply

- Produce an economic assessment, taking into account the economic viability of technology; and
- Carry out 10 demonstration events that explain how the technology works and how it can help reduce EU dependency on fossil fuels.

Agricultural farms and smart grids integrated renewable energy sources

Project background

The EU's 'climate and energy package' became legally binding in 2009 and it includes targets for Member States to reduce CO₂ emissions by 2020. Replacing fossil fuels with renewable energy sources is promoted as a key mechanism to help achieve these targets.

Polish targets for increased renewable energy uptake mean that the country is obliged to ensure that 15% of gross final energy consumption will be produced from renewable sources by 2020. This target remains feasible since Poland has a strong potential for generating renewable energy. Analysts suggest Poland could, by 2050, be sourcing as much as 48% of its energy from renewable sources. However, supply of, and demand for renewable energy in Poland remains restricted due, amongst other things, to a lack of awareness about renewable energy and a lack of tools for facilitating uptake.

Project objectives

The main objective of the 'OZERISE' project is to demonstrate an innovative rural development model to help farmers to increase the production of renewable energy for localised uses (via various technologies including biogas, wind and solar power), whilst also carrying out actions to better understand how to reduce overall energy consumption on farm holdings and in farm households. A territorial planning methodology will be tested, which involves creating a cluster of farms that are willing to work together to pilot an integrated set of tools for energy management and production. ICT approaches will be applied to coordinate, monitor, advise and steer the cluster members' energy activities. The project aims to establish a replicable model for the set-up and running of sustainable micro-energy grids in rural areas. These grids will be capable of producing local socio-economic and environmental benefits, which in turn contribute to climate action targets at national, European and global levels.

Expected results

The project expects to achieve the following quantified results:

- Monitor energy consumption on 10 farms;
- Demonstrate new prototype tools for assessing energy efficiency on farms against economic criteria and other influential agricultural data such as weather conditions;

LIFE11 ENV/PL/000444
OZERISE



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

Grzegorz WIŚNIEWSKI

Duration of project:

34 months (01.09.2012 - 30.06.2015)

Total budget in euro:

886,894.00

EC contribution in euro with %:

443,447.00 (50.00%)

Theme: Climate change - Energy-Energy supply

- Demonstrate a territorial planning and decision-support system for sustainable energy planning and management on farms;
- Develop an ICT tool for collating and analysing data to inform the operations of the new territorial planning and decision-support system;
- Establish the conditions and requirements for setting up at least one farm cluster capable of operating a micro-grid. This will include five or more of the monitored farms committing to investing in renewable energy systems;
- Increase the participating farms' share of renewable energy usage by more than 20%, whilst also reducing their energy and heat consumption by 5-15%; and
- Demonstrate possibilities for broadening the project results via replication through wider or additional farm clusters linked within energy micro-grids.

Remediation of degraded land in the region of Lignite Mine Konin by cultivation of industrial hemp

Project background

Lignite – otherwise known as brown coal – is a soft brown fuel with characteristics that put it somewhere between coal and peat. It is one of the primary energy sources in Poland, where some 60 million tonnes are mined every year. The opencast mines used in this industry have a significant impact on the environment and the landscape: large areas are degraded and topsoil produced over thousands of years is removed.

In Poland, lignite mining is carried out on approximately 16 000 ha, whilst the area of land damaged as a result of lignite mining covers more than 67 000 ha. Unfortunately, current remediation methods for land affected by lignite mining are ineffective and the total area of truly remediated land returned to agriculture is small.

This issue is not restricted to Poland. Lignite is also mined in the following EU countries: the Czech Republic, Germany, Greece, Hungary, Romania, Slovakia and Slovenia. The biggest producer in the EU is Germany, with an output of 175 million tonnes/yr, followed by Greece, with 63 million tonnes/yr.

Project objectives

The 'EKOHEMPKON' project aims to develop methods of cultivation and crop rotation that will allow for the rehabilitation of areas used for the mining of lignite.

The land remediation will be conducted on 25 ha of post-mining terrain, on the basis of the cultivation of two pioneer crops:

- An industrial hemp yielding high biomass in the form of straw containing mainly carbon, oxygen and hydrogen; and
- Alfalfa that is able to assimilate nitrogen in symbiosis with the root nodule bacteria and leaves the produced organic matter as a green manure.

The hemp and alfalfa will be mowed and a novel, environmentally sound technology of hemp straw processing developed. The terrain will be ploughed, creating a kind of biological composite in the soil that will generate accelerated agricultural remediation. The yield of the two crops should increase significantly over the years of the project and improve the habitat for biodiversity.

LIFE11 ENV/PL/000445
EKOHEMPKON



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

Institute of Natural Fibres and Medicinal Plants

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Jerzy MAŃKOWSKI

Duration of project:

72 months (01.10.2012 – 30.09.2018)

Total budget in euro:

868,834.00

EC contribution in euro with %:

434,417.00 (50.00%)

Theme: Risk management-Site rehabilitation – Decontamination

The project will disseminate information about the successful new remediation model and hemp straw processing. It also hopes to increase public awareness about the problem of remediation of degraded soils.

Expected results

- Demonstration of the practical feasibility of remediation of former lignite mining areas;
- Successful remediation of 25 ha of post mining land using an accelerated innovative biological composite method;
- A 20-50% increase in the soil's humus content;
- An increase in the yield of the cultivated crops: hemp from 2 tonnes/ha to 5-7 tonnes/ha; and alfalfa from 4 tonnes/ha to 7-10 tonnes/ha in the sixth year;
- An increase in the absorption of atmospheric CO₂ by plants from 1 tonne/ha to 2 tonnes/ha; and
- The creation of favourable habitats for birds and pollinating insects.

Demonstration of the innovative technology of the improvement of absorption of the geothermal deposit layer

Project background

Poland has a rich reserve of geothermal energy, which analysts believe could meet some 30% of the country's heating requirements. At present, there are four geothermal installations in Poland: Baska-Bialy Dunajec, Pryrzyce, Mszczonow and Uniejow. Their combined capacity is 75 MW. A number of new geothermal installations are also being developed in the Podhale (South Poland) and Niz Polski (Polish Plain) regions.

Greater uptake of Poland's potential geothermal energy capacity is currently limited by a lack of cost-effective access to the country's deep underground geothermal reservoirs.

Project objectives

The general objectives of the 'GeoPyrz' project involve finding feasible solutions to help Poland source more energy from its geothermal reserves and so contribute to national, EU and global climate action targets. This high level goal will be achieved by demonstrating (and disseminating information about) new methods for improving absorption of energy from geothermal reserves by using different acid-based approaches to remove or dissolve impurities that impede the energy flow.

Expected results

- The validation of a new operational-scale technology that is capable of improving cost-effective access to geothermal energy reserves, and which will improve absorption of the geothermal deposit layer by 10%;
- A 500 Megagrams/yr reduction in CO₂ emissions; and
- A 400 000 m³/yr reduction in (natural gas) fuel consumption.

LIFE11 ENV/PL/000447

GeoPyrz



Beneficiary:

Type of beneficiary

Public enterprise

Name of beneficiary

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Romuald GRABIEC

Duration of project:

25 months (03.09.2012 - 30.09.2014)

Total budget in euro:

452,619.00

EC contribution in euro with %:

226,309.00 (50.00%)

Theme: Climate change - Energy-Energy efficiency

Demonstration installation for thermal utilisation of sewage sludge by pyrolysis

Project background

Today, one of the main challenges of waste management is the treatment of municipal sewage sludge. In Poland, some 527 000 tonnes of this waste was produced in 2010 and forecasts predict that volumes of sewage sludge will continue to increase. Many new wastewater treatment plants are being built or modernised across Poland and, as a result of this extensive investment programme, large amounts of sewage sludge will be produced that will need to be properly disposed of. Landfill sites (the main method of waste disposal today) will be limited by EU restrictions on the landfilling of biodegradable waste. This has increased interest and demand for thermal disposal methods.

Poland's national waste management plan (2010) promoted greater uptake of thermal treatments for municipal sewage sludge, and noted that in 2010, only 3.75% of this waste was treated by thermal methods. Technology developed by the beneficiary offers opportunities to treat more of Poland's sewage waste using pyrolysis and the technology may be particularly relevant for small towns and villages.

Project objectives

The main objective of the 'Spalarnia pirolityczna OS' project is to verify and to promote an innovative technology for treating sewage sludge using a thermal pyrolysis boiler. Findings from previous laboratory-scale tests that combined waste silica with sewage sludge will be up-scaled and applied to demonstrate the potential of a more 'market-ready' boiler installation. Operations will be monitored to confirm heat conversion data and the performance of the boiler against various input and output parameters. Emissions will be carefully monitored and controlled. Knowledge produced by the demonstration phases will be used in a comprehensive publicity campaign to raise awareness about the technology's environmental and socio-economic benefits. The campaign will target companies operating in associated sectors, as well as potential investors and the general public.

Expected results

The main anticipated project result is the demonstration of an innovative technology for hazard-free treatment of sewage sludge using waste silica in a thermal pyrolysis boiler.

LIFE11 ENV/PL/000453
Spalarnia pirolityczna OS



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

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Name of contact person

Tadeusz FUROWICZ

Duration of project:

43 months (01.06.2012 - 31.12.2015)

Total budget in euro:

2,357,810.00

EC contribution in euro with %:

1,178,905.00 (50.00%)

Theme: Water-Waste water treatment

Other expected results include:

- The evaluation and optimisation of the performance parameters for the technological process;
- An analytical report about the technology's potential environmental impacts;
- An analytical report comparing the technology's energy inputs and outputs;
- An analytical report about the technology's economic viability; and
- A total of 10 information meetings and 10 demonstration events to explain the performance of the project's technology.

Evaluation of the health state of forests and an effect of phosphite treatments with the use of photovoltaic SLE UAV

Project background

Air and satellite remote sensing can provide detailed data about forests. However, cooperation between satellite service providers and smaller research institutions is often difficult to orchestrate.

Stratospheric long endurance (SLE) unmanned air vehicles (UAVs) could provide small R&D organisations with the means to improve and harmonise their international research activities. SLE UAVs use solar photovoltaic cells to provide energy for propulsion and can, therefore, stay in the air for extremely long periods without the need for refuelling. Indeed, they can fly almost permanently, as long as there is no need to change mission or technical specifications. They can follow any monitoring or measurement path, or circle over a specified area at an altitude of up to 15-20 kilometres.

Forests in Poland are threatened by multiple land use pressures, as well as invasive phytopathogens such as those belonging to the genera *Phytophthora*, which have reduced the density and strength of trees. Treatments to tackle invasive *Phytophthora* pathogens are costly and not so effective, mainly because of the challenges of covering such large areas, and the difficulty in observing and monitoring the problem from the ground.

Project objectives

The 'HESOFF' project aims to integrate innovative SLE UAV technologies with innovative methods for forest cultivation. It seeks to demonstrate how SLE UAVs can be used to effectively evaluate the health of forests according to different characteristics, allowing for more targeted interventions.

The project will test the effectiveness of phosphites in improving the resistance of trees to the invasive *Phytophthora* pathogens. It will use experimental techniques to evaluate the health of oak trees, and their environmental conditions, before and after applying the phosphite treatment.

The project will also introduce new methods for assessing the state of forests and the effectiveness of cultivation through images produced by SLE UAVs. A forest is typically defined by properties such as the age and distribution of trees, by the species, the density, the yield, the necessity of intervention measures, the site quality, etc. These properties can be assessed through visual interpretation of SLE UAV aerial images.

LIFE11 ENV/PL/000459
HESOFF



Beneficiary:

Type of beneficiary

Regional authority

Name of beneficiary

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Bohdan NAUMIENKO

Duration of project:

60 months (01.08.2012 – 01.08.2017)

Total budget in euro:

2,958,845.00

EC contribution in euro with %:

1,479,422.00 (50.00%)

Theme: Industry-Production-Agriculture - Fisheries

Expected results

The most important result of the 'HESOFF' project will be to verify the use of SLE UAV technology as a more environmentally and economically advantageous means of evaluating the health of forests. This will include optimising the use of multispectral cameras on planes.

The project also expects to demonstrate the effectiveness of phosphite treatments in tackling *Phytophthora* pathogens and improving the health of forests. Specific targets for treated areas include:

- A 50% improvement in the health of oak stands;
- A 70% decrease in the DNA of invasive *Phytophthora* pathogens in soil and plant tissue;
- An improvement in forest tree root systems, with an increase in the amount of fine root from 30 to 50%; and
- 30% of tree crowns rebuilt, with decreased transparency and defoliation.

Revitalisation of the climate in dried-out communities in Eastern Slovakia via hydro-climate recovery

Project background

Municipalities from Slovakia's Ondávka region (including Baškovce, Černina, Gruzovce, Hrubov, Ohradzeny, Slovenská Volová, Sopkovce and Turcovce municipalities) have all been adversely affected by flooding in the past. Yet, little has been done to address the problem at its source. Dams have been used to contain water flows but these can have negative socio-economic, cultural and environmental impacts. Alternative and more natural methods of flood control exist that could be applied.

This project seeks to find solutions to help retain rainwater on land in order to reduce flood risks. Such an approach can help to gradually renew an area's water retention capacity. It can also help tackle water management challenges associated with 'soil sealing', which causes loss of soil resources as a result of the covering of land for housing, roads or other construction work.

Project objectives

Targeting land within eight Ondávka municipalities, the project focuses on establishing environmentally sustainable hydrological conditions via a coordinated and integrated programme of interventions, such as the re-cultivation of logging roads and other connecting paths, construction of flow control barriers, water retention ponds and rainwater gardens, and other measures for the prevention of excess rainwater run-off from land. This integrated approach will have numerous positive effects, such as preventing flooding, drought and erosion and mitigating the negative effects of climate change.

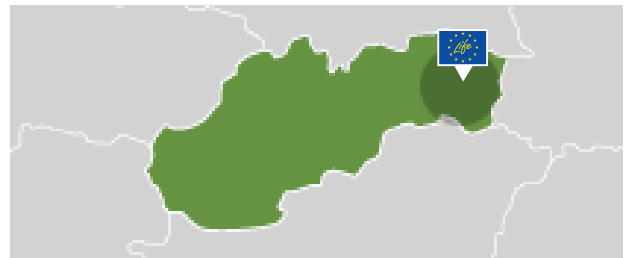
The project will demonstrate new construction methods for retaining rainwater where it falls so that it has the chance to fill groundwater sources, feed vegetation, and evaporate, thereby revitalising the local hydrological cycle and helping to maintain a stable climate. Natural flow control barriers in streams, rainwater gardens, retention ponds and water harvesting techniques will all represent tangible aspects of the project providing demonstrative effects.

In addition, the project aims to change local communities' approach to, and control of, rainwater management

Expected results

- An inventory of the geographical features, health and state of the local landscape, and a methodology for monitoring the project. The inventory will include accurate maps of project sites where the various

LIFE11 ENV/SK/001019
Hydro-climate recovery



Beneficiary:

Type of beneficiary

NGO-Foundation

Name of beneficiary

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Dana KRAVČÍKOVÁ

Duration of project:

29 months (02.04.2012 - 05.09.2014)

Total budget in euro:

1,380,535.00

EC contribution in euro with %:

690,267.00 (50.00%)

Theme: Risk management-Natural risks (Flood - Forest fire - Landslide) / Water-Water resources protection

water retention measures will be implemented. A total of 10 methodologies will be used for the assessment and selection of project sites;

- Introduction of 20 water retention ponds, 35 rainwater gardens, 150 flow control barriers and the re-cultivation of 7 km of old logging roads with an expected retention of 120 000 m³ of water;
- Creation of 88 new jobs throughout the duration of the project;
- Monitoring and collection of data on the effectiveness and impacts of project measures on the local environment;
- A manual entitled 'Revitalising the climate in my region' will be published in both Slovak and in English. This will outline the project's methodologies, theories, results and philosophies; and
- More than 130 participants will attend events presenting the results and lessons from the project.

Introduction of sustainable groundwater use in the underground karst system of the Krásnohorská jaskya Cave

Project background

Slovakian groundwater resources have experienced significant depletions (by as much as 35%) since 1980. The problem is particularly acute in the area of the Slovak Karst. Intensification of agriculture and forestry have played a part in destabilising traditional hydrological systems, and led to landscape changes and flooding issues that affect important natural heritage sites. The project focuses on a protected area within the Slovak Karst National Park, which includes part of the UNESCO World Cultural Heritage List site at the 'Caves of Slovak Karst and Aggtelek Karst'. There is a unique stalactite and stalagmite decoration in the Karst of Krásnohorská Cave but this cave is also the only source of drinking water for local inhabitants. The current approach to exploiting this water source is considered a threat to the long-term sustainability of the stalactite and stalagmite, as well as the karst's other features.

Project objectives

The project's objective is to reduce the risk of contamination of a key drinking water source of the Krásnohorská Cave. This will be achieved through the implementation of innovative activities that contribute to the requirements of the Water Framework Directive (2000/60/EC) at a local level. The project will also help reduce risks to the fragile karst ecosystem, which remains dependent on the quantity and quality of groundwater.

Specific objectives include:

- A comprehensive assessment of individual components of the underground landscape. This activity will involve: water sampling and monitoring, tracing tests and field mapping;
- The creation of models to record the functionality of groundwater resources, as well as the factors that affect groundwater. Such models will be able to illustrate the impact on groundwater of different scenarios that might occur and influence the project site. During this activity, mathematical modelling of rock/water chemical interaction and interactive rainfall-runoff modelling of the hydrogeological structure will take place;
- Developing and testing a prototype facility for securing drinking water supplies for the population of the Krásnohorská Dlhá Lúka village and protecting the drinking water from turbidity problems;
- Delineation of environmentally sensitive sites ('hot spots') and drawing up of a set of management rules for these 'hot spots'. The rules will take account of factors affecting water quality in the vicinity of the Krásnohorská jaskya Cave; and

LIFE11 ENV/SK/001023
KRASCAVE



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Peter MALÍK

Duration of project:

64 months (01.06.2012 - 30.09.2017)

Total budget in euro:

1,226,476.00

EC contribution in euro with %:

613,238.00 (50.00%)

Theme: Habitats-Rocky & Caves / Land-use & Planning-Sensitive & protected areas management / Water-Water resources protection

- Monitoring of the project's effects on groundwater quality and water use patterns by local community stakeholders.

Expected results

- Calibrated computer models of existing and anticipated interactions of biotic and abiotic components of the underground landscape of the Krásnohorská Cave;
- A functional prototype of a device installed to protect public drinking water supplies from pollution problems caused by turbidity;
- Delineation of environmentally sensitive sites ('hot spots') accompanied by the introduction of management arrangements to safeguard the hot spots' long-term environmental integrity; and
- An increased awareness among local and other stakeholders about the project's relevance, actions and results.

New tertiary waste water treatment for organic micro-pollutants PPCPs (Pharmaceutical and Personal Care Products)

Project background

Surface water and groundwater are subject to pollution by wastewater and various natural and synthetic chemicals, which are proven to be present in most water bodies in Europe. These include synthetic organic chemicals, pesticides, drugs and endocrine disruptors.

Maintaining and improving the aquatic environment is one of the main objectives of European water policy. According to the European Water Framework Directive (2000/60/EG) "the ultimate aim...is to achieve the elimination of priority hazardous substances and contribute to achieving concentrations in the marine environment near background values for naturally occurring substances". One of the main challenges to achieving this is removing substances derived from the large quantities of pharmaceutical and personal care products (PPCPs) that enter water systems.

Removal of PPCPs requires advanced 'tertiary' treatment to remove stubborn contaminants. However, existing tertiary treatment techniques – including advanced oxidation, nano-filtration and reverse osmosis – offer relatively low retention yields and are very costly in terms of the initial investment, energy consumption and maintenance. Such treatments are, therefore, still not widely used in wastewater treatment plants (WWTPs).

Project objectives

The main goal of the 'WATOP' project is to develop a semi-industrial pilot plant to demonstrate a new purification system for the removal of PPCPs from wastewater. The project aims to show that a membrane filled with innovative nano-resins of cross-linked cadmium (CD) and sodium polyacrylate (PAA) will remove PPCPs and other pollutants from water in a highly effective and efficient way.

The project has set a target of 82-94% removal of PPCPs from wastewater in the pilot treatment process. It also hopes to develop the regeneration capability of the membrane – by means of mild thermal treatment (lower than 120°C) and by washing with a solution of methanol – and to reduce or even eliminate clogging problems on the membrane.

By demonstrating the technological viability and environmental and economic benefits of the new tertiary treatment process, the project ultimately hopes to improve both water quality and the management of water resources.

LIFE11 ENV/ES/000503
WATOP



Beneficiary:

Type of beneficiary

NGO-Foundation

Name of beneficiary

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Claudio FERNÁNDEZ

Duration of project:

36 months (01.06.12 - 31.05.2015)

Total budget in euro:

963,774.00

EC contribution in euro with %:

481,887.00 (50.00%)

Theme: Water-Waste water treatment

Expected results

- Demonstration of an active filter device capable of processing 3 000 m³/day of wastewater with an energy consumption of 0.9-1.20 kWh/m³ of permeated water;
- Retention of 82-94% of the target compounds;
- High performance in different conditions: optimal operating pH levels between 3 and 10 and temperature between 1°C and 25°C;
- Extended useful life of the purification unit, providing an efficient and long-term device;
- Reduction of operating pressure to below 15 bars, with an associated reduction in energy consumption per m³; and
- Reduction of economic costs of the tertiary treatment to 0.20-0.12 €/m³.

New approach on soil remediation by combination of biological and chemical oxidation processes

Project background

After the oceans, soil represents the second largest carbon pool on the planet. However, pollution and loss of soil biodiversity reduces the ability of soils to regulate the composition of the atmosphere, diminishing their role in absorbing carbon and counteracting global warming. At the same time, soil erosion is a serious environmental problem that is aggravated by climate change.

The Soil Thematic Strategy (COM(2006)231) aims to protect and ensure the sustainable use of soil by preserving soil functions, preventing threats to soil, mitigating their negative effects and restoring degraded soils. The main causes of soil contamination in Europe are the increasing amount of waste being produced, and the extensive use of chemical products. Soil pollution has already been identified as a problem at more than 3 million European sites, of which some 500 000 are thought to need urgent remediation. In Spain alone there are more than 100 000 polluted sites, many of them located close to protected areas, as is the case of the site targeted by this LIFE+ project.

Techniques for the reclamation of polluted sites typically use ex-situ operations to reduce levels of pollution. However, whilst these have often recovered the soil quality standards as defined by levels of pollutants, they have not adequately considered restoration of the functionality of the soil as a carbon sink for CO₂ mitigation. In-situ operations are also often hampered by difficulties in agreeing actions with landowners, as well as being costly, energy intensive and potentially damaging to the landscape and soil structure.

Project objectives

The project aims to develop a new concept for soil and groundwater remediation that can achieve both reduced soil pollution and improved soil functionality. It will combine well-known soil remediation technologies in a new way, specifically by combining biological processes such as phytoremediation and biodegradation with in-situ chemical oxidation (ISCO) in a new, full-scale process to be demonstrated on contaminated industrial and military sites. Implementation is expected to be supported by methods to assess the technical and economical feasibility and environmental benefits of the new process.

The beneficiary hopes to show reduced levels of pollutants in the treated soil and also improved soil parameters and characteristics, such as texture, drainage and pH levels (edaphic properties). In tandem, the project

LIFE11 ENV/ES/000505
BIOXISOIL



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Olga ESCOLANO

Duration of project:

48 months (01.09.12 - 01.09.2016)

Total budget in euro:

2,671,553.00

EC contribution in euro with %:

1,335,237.00 (49.98%)

Theme: Land-use & Planning-Soil & landscape protection / Risk management-Site rehabilitation - Decontamination

hopes to achieve groundwater quality improvement and rapid land restoration to a level that can support sensible use without compromising current industrial and military activities.

The project ultimately seeks to provide landowners and regulators with a new paradigm for land remediation protocols.

Expected results

- Increased know-how about soil remediation as a CO₂ mitigation process;
- Demonstration of the feasibility of treating soil through combined phytoremediation, bioremediation and ISCO;
- Identification of best practice in such treatment – including a new automated injection device for in-situ chemical oxidation;
- A 70% reduction in soil contaminants in test sites; and
- Restoration of soil functionality.

Rehabilitation of a heavy metal contaminated riverbed by phytoextraction technique

Project background

In Europe, techniques for rehabilitating river sediments contaminated with heavy metals have tended to focus on ex-situ physical and chemical approaches, such as pyrometallurgical separation, solidification, electrokinetics, soil washing, and excavation and burial at hazardous-waste sites. Remediation techniques based on phytoextraction have scarcely been used. These work by transferring heavy metals and excess nutrients from soils to plants, which can then be periodically removed from the system.

The riverbed and banks of the Guadalentín River in Murcia are contaminated with heavy metals and vegetation cover is degraded. This is mainly as a result of direct waste spills coming from industries (mainly tanneries), farms (swine) and agriculture (excessive fertilisation with swine slurries). However, as in the rest of Europe, Murcia has only limited experience in working on contaminated sediments and this experience is mostly restricted to research operations.

Project objectives

The 'RIVERPHY' project aims to demonstrate the use of phytoextraction techniques to successfully rehabilitate a stretch of the contaminated Guadalentín River, downstream from the industrial and urban areas of Lorca. Supported by effective evaluation and dissemination activities, the project aims to develop an alternative and sustainable approach to the environmental and landscape rehabilitation of contaminated rivers.

The project plans to use native accumulator plants - which will be periodically removed from the system and replaced - to absorb heavy metals and excess nutrients from the soil. In addition, techniques of bioengineering and landscape integration will be used to protect slopes and restore native communities of flora and fauna. Together, these changes will provide vegetative cover and mitigate soil erosion, re-establishing a stable ecological equilibrium that is compatible with its surroundings and which takes full account of the needs of the local population and traditional activities.

The project plans to make further use of the residual plants that have accumulated the contaminants in the phytoextraction process. These will be processed as biomass for energy generation and the extracted metals recovered for subsequent use in the manufacture of other products, such as concrete. Monitoring and dissemination activities will help to spread awareness of the effectiveness of these techniques.

LIFE11 ENV/ES/000506
RIVERPHY



Beneficiary:

Type of beneficiary

Regional authority

Name of beneficiary

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María Encarnación MOLINA MIÑANO

Duration of project:

58 months (01.06.12 - 31.03.2017)

Total budget in euro:

1,712,251.00

EC contribution in euro with %:

835,622.00 (48.80%)

Theme: Land-use & Planning-Soil & landscape protection / Risk management-Site rehabilitation - Decontamination

Expected results

- A 20% reduction in Cr, Cu and Zn in the contaminated riverbed;
- Establishment of riparian vegetation - from less than 50% cover to more than 75%, and from fewer than 10 different species of native vegetation to more than 20;
- Restored microbial communities and plant colonisation;
- Restored physical, chemical and biological properties of soil and restored soil functionality;
- Landscape restoration based on ecological and aesthetic criteria;
- Generation of 14 515 kg of dry biomass, equivalent to 8.1 MW/h per ha; and
- Successful demonstration of the feasibility of phytoextraction techniques to rehabilitate contaminated riverbeds.

New biodegradable and eco-friendly almond shell based masterbatches for traditional sectors

Project background

Today, plastic toys account for some 90% of the toys market. Approximately 80-90% of the plastic parts produced by injection-moulding contain colourants or other additives - either for aesthetic reasons or to improve their use. The most common way of colouring and changing the properties of such plastics is by using concentrates - called masterbatches - that are added to the polymer matrix in the form of pellets or granules.

A masterbatch consists of a polymeric matrix in which a high proportion (50-80%) of pigments, colourants, dispersing waxes and other additives and fillers are included. The masterbatch is added to the polymer in which it is to be incorporated during the transformation process - injection moulding, extrusion - at an average rate of 3% by weight.

However, there are still no masterbatches on the market using biodegradable plastics. A new process that introduced biodegradable polymers to traditional sectors such as the toy or furniture industries would stand out in the market, especially in comparison with imported products from countries such as China.

Project objectives

The aim of the 'MASTALMOND' project is to create and test, at the pre-industrial level, new masterbatches - colour concentrates - based on biodegradable plastics and using a formula containing a high percentage of almond shell, a natural waste material. It ultimately hopes to reduce the negative environmental impact from plastics.

The project will focus initially on the technical requirements of two traditional industrial sectors, toys and auxiliary furniture. However, the hope is that results achieved will be extended to other industrial sectors, helping to increase sustainability.

The project will optimise the use of new masterbatches of different colour concentrates based on biodegradable polymers with different proportions and particle sizes of almond shell at laboratory scale.

Beyond the laboratory, it will adjust or modify conventional extrusion systems to allow application at industrial level. The project will establish demonstrators to make toy and furniture products from the new materials.

LIFE11 ENV/ES/000513
MASTALMOND



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

Asociación de Investigación de la Industria del Juguete, Conexas y Afines

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Jaime VILAPLANA

Duration of project:

36 months (01.06.2012 - 31.05.2015)

Total budget in euro:

2,016,292.00

EC contribution in euro with %:

1,008,145.00 (50.00%)

Theme: Waste-Agricultural waste

Expected results

The project aims to reduce the impact from plastics on the environment through:

- New processes for achieving masterbatches using milled almond shell in high concentrations within biodegradable polymers;
- Re-use of natural waste/renewable resource (520 tonnes/yr in Europe);
- Integration of organic and inorganic pigments;
- Demonstrations of toy and furniture manufacturing capabilities incorporating biodegradable polymers through injection moulding;
- Optimisation of the processes to meet established technical specifications;
- Market uptake of new eco-friendly masterbatches; and
- A new market for an agricultural waste product.

Recovery of the natural periurban area “Las Arcillas”: Sustainable “Environmental Balance”

Project background

The town of Teruel has a population of 35 241 and lies in one of the least populated regions of Spain. It is an area noted for its harsh climate - very cold in winter - and remote, mountainous location. This contributed to significant population loss from migration during the 20th century, but also environmental problems, including erosion and geological instability.

Teruel is celebrated as the “town of the Mudéjar” because of its many buildings in this medieval style – a merging of Western and Islamic influences - often decorated with elaborate ornamentation made from cheaper materials such as brick and tilework. They were mainly built between the 12th and 16th centuries and are now all included within the Mudéjar Architecture of Aragon, a UNESCO World Heritage Site since 1986.

Project objectives

The project aims to tackle some of the environmental threats facing the important historical-cultural town of Teruel, particularly in the face of climate change. It hopes to achieve environmental, cultural and socio-economic benefits for the locality, and provide a positive example for other historic towns in Europe.

A particular focus will be placed on the recovery of former argyle mines that were used to build Mudéjar churches and towers and now form an unusual and important cultural landscape. The project will conduct an assessment of quarry cultural landscapes. It will also introduce cycle lanes to connect mines with the urban centre to increase the use of sustainable transport in Teruel and help mitigate climate change.

Other foreseen actions include:

- Planting of juniper and oak trees, and gypsophilia to solve problems of erosion caused by heavy rain and landslides, which currently affect two districts - San Julián and Arrabal; and
- Measures to integrate peri-urban areas as new green leisure areas, to reduce the need for people to travel further afield and, consequently, their carbon footprint.

The project seeks to deliver benefits to local biodiversity, as well as creating synergies between cultural and natural heritage and promoting sustainable tourism in the town. Throughout the project, empowerment and participation of the local population will be a key objective.

LIFE11 ENV/ES/000515
Teruel Balance+Positivo



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

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Florencio CONDE

Duration of project:

43 months (01.06.12 - 31.12.2015)

Total budget in euro:

2,706,584.00

EC contribution in euro with %:

1,353,292.00 (50.00%)

Theme: Services & Trade-Tourism - Accomodation

Expected results

- Environmental recovery of former argyle mines in Teruel, generating value from the town’s natural and cultural heritage;
- Establishment of a database of quarry cultural landscapes;
- Increased use of cycle lanes and pathways in mine areas, with a reduction in the use of private cars and an associated reduction in greenhouse gas emissions;
- Planting of 12 000 juniper and oak trees, as well as gypsophilia plants, and the promotion of truffles from the project area;
- An increase in CO₂ sequestration (by some 120 tonnes/yr);
- Reduction in soil erosion and damage to urban areas from heavy rain and land slides; and
- Creation of 6 ha of new public green zones.

Reducing GHG Emissions in the Food Industry through Alternative Thermal Systems based on Induction Technology

Project background

Industrial processing of seafood requires a large amount of energy. The type of product and the necessity to keep it fresh for consumption at a later date means that there is a high energy demand for thermal processes such as freezing, cooking and sterilisation. This contributes significantly to the cost of the final product and to the carbon footprint of the industry.

Seafood Processing Industries (SPIs) are actively seeking solutions to improve their systems and processes in order to reduce costs and increase productivity. At the same time, they are aware of their responsibility to contribute to the fight against climate change. Reducing energy consumption and switching to cleaner, alternative energy sources are thus major areas of interest for the sector.

ANFACO-CECOPESCA is a certified reference centre for quality control and R&D in the fish and aquaculture processing industry and is recognised by the European Accreditation Laboratory (EAL). It identified the replacement of energy-intensive thermal processes in the processing of seafood as the main contribution the sector could make to reducing CO₂ emissions.

Project objectives

The 'INDUFOOD' project's main objective is to reduce emissions of greenhouse gases (GHGs) from thermal processes in the seafood processing industry. It plans to design, develop and test a new induction system, which would provide an alternative source of heat, avoiding the use of fossil fuels. The project ultimately hopes to contribute to the implementation of EU commitments under the Kyoto Protocol.

As well as building a pilot plant for the induction system, the project will develop a software application to calculate the carbon footprint of different functional units.

The project will analyse different thermal systems used in the cooking and sterilisation of seafood. It will compare the carbon footprint and financial costs of different functional units consuming fossil-fuels with units using the new thermal processes based on induction technology. The project expects to demonstrate both the feasibility of the new technology, and its benefits in terms of increased energy efficiency, reduced costs and lower GHG emissions.

LIFE11 ENV/ES/000530
INDUFOOD



Beneficiary:

Type of beneficiary

Professional organisation

Name of beneficiary

Asociación Nacional de Fabricantes de Conservas de Pescados y Mariscos - Centro Técnico Nacional de Conservación de Productos de la Pesca

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Name of contact person

Francisco PÉREZ

Duration of project:

41 months (01.06.12 - 31.10.2015)

Total budget in euro:

1,096,199.00

EC contribution in euro with %:

548,099.00 (50.00%)

Theme: Climate change - Energy-Reduction of greenhouse gases emissions / Industry-Production-Food & Beverages

Expected results

- Validated thermal processes for the seafood processing industry based on induction technology;
- Significantly reduced CO₂ emissions in comparison with traditional processes; and
- Improved energy efficiency, lower energy consumption and reduced costs, which will help to improve the competitiveness of the sector.

“Operation CO₂”: Integrated agroforestry practices and nature conservation against climate change

Project background

Climate change is a well-known and urgent challenge for international, national, regional and local environment policies and actions. Reducing greenhouse gas emissions has been identified as a vital and shared worldwide aim to mitigate the effects of climate change. LIFE projects and many other initiatives across Europe have looked at ways to reduce such emissions from a whole range of human activities, industries and processes.

In addition to reducing emissions, however, efforts to remove greenhouse gases from the atmosphere can also contribute to mitigating climate change. Plants can play an important role through their natural extraction of CO₂ from the atmosphere via the process of photosynthesis. Reforestation of land leads to the capture of carbon by the trees through turning CO₂ from the atmosphere into biomass.

However, although agroforestry techniques could contribute significantly in the fight against climate change, they have not yet been developed in a meaningful way in the EU.

Project objectives

The overall objective of the ‘OPERATION CO₂’ project is to demonstrate the economic viability and environmental validity of agroforestry carbon sequestering projects in Europe. It aims to demonstrate new agroforestry approaches at three different locations in Spain, with a multinational team of nine partners from three Member States: Spain; the Netherlands; and the UK.

The first pillar of this project will promote active nature conservation and carbon management in natural forests over an area of 4 500 ha. This will seek to implement a series of targeted forest and carbon actions resulting in the long-term improvement of carbon sequestering in natural forests. The project thus hopes to deliver the certification of carbon credits for the forest area that will subsequently be released on the Voluntary Carbon Offsets Market.

The second pillar of the project will involve the transformation of two naturally degraded areas – each covering 25 ha – into integral agroforest ecosystems. It aims to successfully plant a large variety of species on a range of soil types in degraded, non-irrigated agricultural lands that face the negative effects of climate change

LIFE11 ENV/ES/000535
OPERATION CO2



Beneficiary:

Type of beneficiary

University

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Name of contact person

Yolanda CALVO CONDE

Duration of project:

60 months (01.09.2012 - 30.08.2017)

Total budget in euro:

3,505,906.00

EC contribution in euro with %:

1,752,950.00 (50.00%)

Theme: Climate change - Energy-Reduction of greenhouse gases emissions

in the form of ever increasing drought. It foresees the planting of four components of integral systems: timber; biomass; cash crops; and fruit trees and shrubs.

Expected results

- A management plan for active nature conservation and carbon management in natural forests;
- Certification of carbon credits for natural forests;
- A management plan for transforming naturally degraded areas into integral agroforest ecosystems;
- The effective establishment of rich biodiversity in land at risk from climate change; and
- A demonstration of the economic, technical and environmental feasibility of carbon sequestering and climate change mitigation through agroforestry schemes.

Sustainable urban development in “PLATAFORMA CENTRAL IBERUM”

Project background

Urban planners need to improve the sustainability of existing development models to avoid creating or exacerbating long-term social and environmental problems. They must take full account of social and environmental needs, including the impact on and relationship with climate change and the loss of natural areas and biodiversity. Crucial to the success of future urban development will be the integration of new technical solutions and greater involvement of local populations.

These issues are even more acute in the case of industrial areas, which have not typically received the same attention as urban areas, but have often emerged in ad-hoc and unplanned ways. Urban development of industrial areas requires a shift from case-by-case management to a more integrated framework covering environmental, social and economic aspects.

Project objectives

The ‘PLATAFORMA CENTRAL IBERUM’ project aims to create the first industrial estate based on the principles of sustainable development in Europe. It plans to demonstrate a new approach to the development of industrial areas, integrating all the issues involved from a sustainable development perspective, including all environmental impacts.

The project will focus specific attention on a number of key issues for delivering sustainability:

- Control of the whole water cycle, including through: the collection and full re-use of rainwater; creating permeable structures to avoid land sealing; establishing canals and reservoirs to allow water to be collected for distribution; using Sustainable Urban Drainage Systems (SUDS); and the creation of storm ponds to maintain surface aquifers and provide local administrations with an assured water stock;
- An agro-gardening system that: (i) creates arable lands of autochthonous species; (ii) promotes the sowing of specific seeds to generate biodiversity; and (iii) promotes bio-spraying as an alternative to chemical products;
- Creation of woodland areas; and
- Energy saving and energy efficient installations, notably in lighting and transport: adding LED illumination; electric maintenance vehicles with necessary recharging points in the industrial area; cycle lanes; an electric bicycle system connecting the train station with the industrial area; and the generation of electric energy from biomass.

LIFE11 ENV/ES/000538
PLATAFORMA CENTRAL IBERUM



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

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Nuria MUÑOZ ESTÉVEZ

Duration of project:

61 months (18.06.2012 - 31.07.2017)

Total budget in euro:

8,252,477.00

EC contribution in euro with %:

2,577,014.00 (31.23%)

Theme: Land-use & Planning-Urban design (urban-rural) /
Water-Water resources protection

Expected results

- Full control of the water cycle, delivering: a demonstration of innovative SUDS; reduced demand for freshwater supplies and associated reductions in expenses and in energy consumption in purification and pumping; a reduced ‘hot island’ effect in the industrial area; and a reduction in flooding and run-offs typical of torrential rain in many industrial areas;
- Development of an agro-gardening scheme, delivering: the return of traditional agriculture techniques; the recovery of a potential vegetation area; an increase in biodiversity more green space;
- Creation of woodland, delivering: social benefits; a climate change mitigation contribution; and biodiversity benefits; and
- Energy efficient installations and increased use of renewables.

Demonstrative industrial installation for the reduction of the greenhouse gas emissions in industrial parks

Project background

Industrial estates have sprung up all over Europe during the last 50 years. These areas can bring great benefits, as the powerhouses of local economies, and help to provide prosperity and employment, but they can also bring environmental challenges.

In Murcia, Spain, there are more than 70 industrial parks in a region of 11 300 km². Across Europe, the majority of industrial areas are characterised by their poor energy performance and by high CO₂ emissions.

Project objectives

The overall objective of the 'ENERING' project is to demonstrate sound environmental and economically-feasible solutions to reduce CO₂ emissions in industrial estates. Some work will be based on the design or adaptation of buildings. Other strategies will include the use of passive, renewable and/or residual energy to meet some of the requirements on the estates. The project will not only include individual solutions but also management actions, affecting a whole industrial estate.

The project aims to demonstrate the economic and environmental feasibility of different solutions for the design and performance of new industrial buildings. This will include demonstrating the use of renewable energies to reduce CO₂ emissions. For already developed and old industrial buildings, the project aims to demonstrate sound environmental and economically feasible solutions to reduce CO₂ emissions by adaptation strategies. It hopes to demonstrate the feasibility of developing industrial facilities to produce renewable energy to cover some common energy need in the parks, compensating for/reducing CO₂ emissions from the buildings and generating heat to supply industrial facilities.

The project hopes to demonstrate a replicable model that could deliver savings of some 28 000 tonnes/yr of CO₂ emissions if adopted by 25% of the industrial estates in Murcia. It will work with research centres, universities, regional administrations, municipalities, professional associations and businesses to promote this transfer beyond the life of the project.

From an economic point of view, savings will vary with energy prices. But important indirect effects could be achieved – for instance, a decrease in electricity demand at peak times would reduce threats to the stability of

LIFE11 ENV/ES/000542
ENERING



Beneficiary:

Type of beneficiary

Public enterprise

Name of beneficiary

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Juan Pablo CABALLERO CORBÁLAN

Duration of project:

31 months (01.06.2012 - 31.12.2014)

Total budget in euro:

1,953,942.00

EC contribution in euro with %:

974,626.00 (49.88%)

Theme: Climate change - Energy-Energy saving / Climate change - Energy-Reduction of greenhouse gases emissions

electricity grids and allow energy managers to reduce the capacity and size of grids.

Expected results

Quantified savings/improvements will include:

- A reduction in energy consumption of 3 650 MWh/yr, covering all lighting needs and other common services of the industrial estate;
- Harnessing of 3 200 Mwh/yr, which is estimated to be sufficient to cover the complete needs of 14 industrial buildings;
- A reduction of 726 tonnes of petroleum equivalent (tpe) of primary energy/yr; and
- A reduction of 1 416 tonnes/yr of CO₂ emissions.

Innovative and Demonstrative Arsenic Remediation Technologies for Soils

Project background

The closure in recent decades of many mining and industrial facilities has left a large number of contaminated sites across Europe. In Asturias, the situation is striking, with a multitude of degraded areas remaining, both from old mining (coal and metal) activities and the relatively recent dismantling of heavy industry (chemical and metallurgical) plants.

Soil contamination is not a trivial problem. The challenge is even greater when contaminants with complex geochemical characteristics and behaviour – such as arsenic – are present in areas under restructuring or in protected areas.

Despite the efforts of recent decades, it is estimated that there are thousands of contaminated former industrial and mining sites in every EU country, including several hundred affected by arsenic. Traditional management measures including soil confinement and landfilling are not sustainable solutions. More efforts are needed in terms of policies and techniques to advance specific recuperation actions for such sites.

Project objectives

The 'I+DARTS' project aims to demonstrate the technical and economic feasibility of using best available technologies to provide more advanced and sustainable soil remediation solutions for regions undergoing industrial restructuring. It expects to deliver a decision support tool that will enable the selection of the most appropriate technique for remediation of specific contaminated sites.

The project plans to conduct pilot actions of a variety of techniques for the remediation of soils contaminated by arsenic and heavy metals. It will work on three test sites presenting a diversity of characteristics and scenarios, aiming thus to be globally representative of other locations. Two sites will be former mining areas and one an old industrial site. The sites are located in diverse areas: rural/natural; suburban; and urban. The project intends to conduct an innovative biogeochemical characterisation of the sites. It will then compare the application of enhanced remediation technologies, such as phytoremediation, bioremediation, soil washing or electrokinetics.

The decision protocol developed by the project will take into account the characteristics of each site - including

LIFE11 ENV/ES/000547
I+DARTS



Beneficiary:

Type of beneficiary

University

Name of beneficiary

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Enrique JAIMEZ

Duration of project:

50 months (02.07.2012 - 31.08.2016)

Total budget in euro:

878,639.00

EC contribution in euro with %:

439,319.00 (50.00%)

Theme: Land-use & Planning-Soil & landscape protection / Risk management-Site rehabilitation – Decontamination

the original contamination source and intended future land use, as well as calculations of the technical and economic feasibility of the best available technologies - to offer recommendations on the best approach to remediation.

Expected results

- Strengthen existing scientific knowledge around decontamination of highly polluted soils;
- Demonstrate the effectiveness and feasibility of best available technologies in dealing with former industrial and mining sites more sustainably;
- Provide a decision support tool for identifying the best remediation approach for a given site. This tool will thus support the application of the project's methods in other parts of the EU; and
- Present solutions to enhance and update current Environment Policies and Governance Strategies on contaminated soils in Asturias (and eventually beyond).

Development of a web based REACH Help Desk to support the chemical safety assessment of nanomaterials

Project background

The development of nanomaterials is a particularly exciting area of science and industry. Nanomaterials and nanotechnologies are expected to yield numerous technological advances, including in healthcare, through new treatments and methods of drug delivery. More than 300 European businesses are now involved in the production of substances at nanoscale and production and sales are soon expected to reach 10 million tonnes and more than EUR 450 billion respectively.

The EU Regulation REACH requires manufacturers and importers to demonstrate that they have appropriately identified and assessed all the associated risks of any chemical substance manufactured or imported in quantities of one tonne or more per year per company. A relevant registration dossier must be submitted to the European Chemicals Agency (ECHA), including all information on physicochemical, toxicological and ecotoxicological properties, and the corresponding risk assessment based on a chemical safety assessment (CSA).

Project objectives

The 'REACHnano' project aims to provide the industry and stakeholders with easy-to-use tools to support the risk assessment of nanomaterials along their lifecycle. It thus seeks to support the implementation of the REACH regulation with regard to nanomaterials and ultimately improve the protection of the environment and human health.

The project seeks to consolidate the knowledge base on nanomaterials-related risk and risk assessment. It will collect and evaluate the adequacy of the available information on the physicochemical, toxicological and ecotoxicological properties of nanomaterials and related exposure-, use- and risk-management measures.

'REACHnano' plans to develop a complete selection of standard testing models to be used in the risk characterisation process for nanomaterials and a complete description of the current exposure scenarios across their lifecycle. These will cover the existing operating conditions, efficient risk management measures and estimated exposure levels.

The complete set of innovative tools supporting the risk assessment process, information exchange and the information search process will be made freely available in the form of a web-based toolkit, which will be disseminated

LIFE11 ENV/ES/000549
REACHnano



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Carlos FITO

Duration of project:

36 months (02.07.2012 - 30.06.2015)

Total budget in euro:

915,861.00

EC contribution in euro with %:

457,929.00 (50.00%)

Theme: Industry-Production-Chemicals / Risk management-Risk assessment & monitoring

widely to EU stakeholders, including SMEs and competent authorities. Webinars, workshops and training will support the use of the tools and thus implementation of the REACH regulation on nanomaterials.

Expected results

The main outcome of the project will be a free, web-based toolkit delivering:

- Improved risk assessment of nanomaterials along their lifecycle, including standard testing models and exposure scenarios;
- Improved implementation of the REACH regulation;
- Decreased pollution risk to the environment and human health from new and developing nanotechnologies; and
- A reduction by 5-10% of nanoparticles escaping to the air, water and/or soil from the production process, depending on the specific measures implemented in each exposure scenario.

BIO-MOnitoring and Automatic Mlcrobiological Contamination Control System of Industrial Hydraulic Circuits

Project background

Users and managers of cooling towers and air-conditioning systems apply biocides to the circulating cooling water to control the growth of microorganisms, biofilms and algae. The chemical products used are oxidants and are harmful to human health and the environment. However, they tend to be used in excess as a security measure, to ensure prevention of microbial contamination that can lead to serious infections, such as legionnaire's disease. Currently, monitoring systems calibrate biocide doses based on regular aerobic microorganism counts to prevent too high doses that could harm the workers and too low doses that could enable microbiological contamination of the installation. However, these must be carried out in a laboratory, using an analysis system that tests a filtered, cultivated sample from the installation. The results typically take between 24 and 48 hours to deliver. During this time, the use of biocides tends to err on the side of too much, to guarantee no microbiological contamination, leading to water contamination and air pollution.

Project objectives

The principal aim of the 'BIOMOMI' project is to validate and demonstrate a new technology that allows the real-time monitoring of aerobic microorganisms present in the water of a hydraulic system, and the subsequent optimisation of the dosage of an adequate biocide to minimise contamination risks.

The project plans to design and construct a prototype that can perform real-time monitoring of the concentration of aerobic microorganisms in water (control unit) and the concentration of biocides necessary for water treatment (dosing unit). It will develop software and programming for correct communication between the dosing unit and the control unit, as well as for the collection of analytical data for monitoring.

It will test the system at industrial-scale in two representative Spanish textile companies with very different hydraulic systems, both of which require disinfection. The project will identify critical points in each circuit for sample-taking and it will install, adjust and optimise the prototype. It will also study and optimise the synergetic effect of both oxidising and non-oxidising biocides and determine the compatibility, bio-efficiency and kinetic reaction between both types.

A study will compare the technical and economical advantages of the technology demonstrated, with respect to tra-

LIFE11 ENV/ES/000552
BIOMOMI



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Rosa LÓPEZ

Duration of project:

36 months (01.01.2013 - 31.12.2015)

Total budget in euro:

1,425,366.00

EC contribution in euro with %:

712,540.00 (49.99%)

Theme: Air & Noise-Air pollutants /Industry-Production-
Textiles - Clothing

ditional control systems. The results will then be disseminated to other relevant industrial sectors.

Expected results

- An analysis of aerobic microorganisms within hydraulic systems within 15 minutes;
- Considerable reduction in the use of chemicals, reducing or preventing the creation of potentially carcinogenic compounds, such as trichlorobenzene or trichloromethane;
- Concentrations of free chlorine in the water maintained within safety margins;
- Reduced contamination of air and water by excessive biocides;
- An expected reduction in maintenance costs of 10-20%;
- Increased lifetimes of hydraulic systems and equipment, reducing demand for raw materials and energy; and
- The potential for more stringent regulatory controls on the use and discharge of biocides in hydraulic systems.

Collection system of used cooking oils in educative centres and biodiesel production tests with cavitation technology

Project background

The gradual replacement of fossil fuels by biofuels is a key aim of European environmental policy. Bio-diesel can be made using vegetable oil or animal fat, but at present, viability of production is severely restricted by the lack of availability of raw materials at a reasonable cost.

One area of interest to researchers trying to solve this dilemma is to utilise used cooking oils (UCOs). These oils are generated by households and are difficult to collect and manage - at the moment they are usually dumped in water sanitation systems, causing adverse effects to water resources and hindering subsequent treatment at wastewater treatment plants. It is estimated that one litre of oil can contaminate 1 000 litres of water. UCOs were once used for animal feed and soap but are now prohibited from use in animal feed (EC/1774/2002) and because of inclusion in the European Catalogue of Residues (EC/532/2000) have to be managed via specific process flows.

Project objectives

The 'EDUCO' project seeks to demonstrate the successful and feasible use of UCOs as a feedstock for bio-fuel production. It ultimately hopes to contribute to the long-term replacement of fossil fuels by bio-fuels.

The main objective of the project is to design and build a pilot plant for the treatment of UCOs, which will then be used for biodiesel production through cavitation technology. The pilot plant is already under construction and is designed to produce biodiesel using vegetable oils as a raw material. It will be adapted and optimised during the project to enable UCOs to be used. An important aim will be to improve techniques for recovering the UCOs.

The project will promote the use of renewable energy to encourage sustainable consumption in society, focusing on educating children about recycling by involving them in the process from an early age. It hopes that the participation of children will have an immediate impact on families and also ensure the cultivation of long-term environmentally-friendly habits.

Domestic UCO requires pre-treatment before it can be used as a feedstock for biodiesel. It will therefore be collected at schools - where the concept of recycling and the use of renewable energy can be instilled - and then subjected to a cleaning process at a work centre. This cleaning process will provide opportunities for meaningful employment and involvement in environmental improvement.

LIFE11 ENV/ES/000557
EDUCO



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Mireia MESAS SUÁREZ

Duration of project:

30 months (01.07.2012 - 31.12.2014)

Total budget in euro:

1,287,575.00

EC contribution in euro with %:

643,787.00 (50.00%)

Theme: Services & Trade-Education & Cultural activities / Waste-Municipal waste (including household & commercial) & Waste use

Expected results

The project will result in the creation and adaptation of an innovative system for collecting UCOs and converting them to bio-diesel by cavitation technology. Specific results will include:

- A pilot plant for oil treatment;
- Adaptation and optimisation of an existing pilot plant for bio-diesel production;
- An increase in the amount of collected UCOs in schools in Catalonia;
- The design and production of a specific container for collecting UCOs;
- Bio-diesel produced by the project will be used in a fleet of vehicles collecting UCOs;
- A decrease in CO₂ emissions; and
- The creation of new jobs at a work centre.

Environmentally Friendly Processing of Ceramics and Glass

Project background

Ceramics are conventionally produced using one of three types of heat treatment: single-fire heat treatment; two-step or double-fire processes; or third-fire processes. The latter, which encompasses most commercial applications nowadays, applies additional decorative coatings to fully sintered, glazed ceramics that are subsequently treated at relatively lower temperatures, usually ranging from 600-800°C.

Third-fire processing is necessary in many cases to deliver high-value-added products that exhibit attractive aesthetic features such as iridescence and lustre.

These thermal processes generate high energy consumption and CO₂ emissions. Furthermore, the solvents that are used cause additional greenhouse gas emissions and also many accidents in the working environment.

Project objectives

The objective of the 'CERAMGLASS' project is to reduce the environmental impact of the thermal treatment of ceramics. It aims to demonstrate the successful application of an innovative laser-furnace technology that has already been developed by the beneficiary and which has shown excellent results on planar ceramics and glass at laboratory-scale.

The project plans to construct a pilot plant that combines a continuous furnace and a scanning laser. Using the laser-assisted process it aims to lower the firing temperature for the production of ceramic tiles. Through operation and experimentation, the beneficiary hopes to identify the optimum thermal treatment conditions for using the laser-furnace. It hopes to demonstrate considerably reduced energy consumption and industrial scalability.

The project also aims to show that it is feasible with the new technology to produce robust ceramic tile formats only 4 mm thick. This would represent a 50% reduction in tile thickness, with a consequent reduction in raw material consumption.

The replacement of toxic starting materials will allow a minimisation of CO₂ and other gas emissions, and toxic residues. The adapted processes should also reduce the energy consumption of the process.

LIFE11 ENV/ES/000560
CERAMGLASS



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

Prof. Xermán Francisco DE LA FUENTE LEIS

Duration of project:

37 months (01.06.2012 - 30.06.2015)

Total budget in euro:

2,897,551.00

EC contribution in euro with %:

1,448,196.00 (49.98%)

Theme: Industry-Production-Non-metallic minerals

Expected results

- Successful demonstration of an innovative laser-furnace technology for thermal treatment of ceramics at pilot-scale;
- The ability to achieve optimised final properties of ceramic products with reduced treatment temperatures;
- Minimised energy consumption from more efficient processes – an estimated reduction of 0.3 kWh/m² for each 10°C temperature reduction will be achieved;
- Demonstration of the potential for producing thinner ceramic tiles, thus reducing demand for source materials and related environmental costs;
- Minimised CO₂ and other greenhouse gas emissions – an estimated reduction of 0.072 kg CO₂/m² for each 10°C temperature reduction will be achieved;
- A reduction in the use of solvents in decorative paints and glazes; and
- A reduction in the number of work-related accidents and improved health conditions as a result of the elimination of solvents and fumes.

Disposal and Valorisation of Iberian Pig Wastes from Slaughterhouses

Project background

The pork industry generates waste – including hair, blood and wastewater from fat smelting procedures – that can have a serious impact on the local environment, notably on ground and surface water. Some 890 000 tonnes/yr of pig wastes are being produced in Europe. Related management costs reach as much as EUR 20.68 million/yr.

Project objectives

The main objective of the 'IBERWASTE' project is to demonstrate the technical and economic feasibility of innovative disposal and valorisation systems for Iberian pig wastes in an environmentally friendly way, turning valueless wastes into inputs for agriculture. To achieve this, the project aims to develop one overall procedure or protocol to oversee the management of pig wastes and two new technologies to improve the effectiveness of waste valorisation and disposal methods.

The project aims to design, optimise and scale-up a protocol, providing instructions covering collection, classification, disposal and preservation techniques for pig wastes, including blood, hair, tail or smelting water wastes. At the same time, the two new technologies will be demonstrated at semi-industrial level.

An innovative waste classification system will enable the detection of spoilage microorganisms and other quality indicators in real time. This should support slaughterhouses in making appropriate decisions about the most environmentally friendly and economically advantageous disposal or valorisation alternative, depending on the quality of the wastes and on market profitability.

A prototype ECO-hydrolysis procedure will be constructed based on the combination of physico-enzymatic technologies to transform protein pig waste into products rich in amino acids. The goal is to demonstrate that an environmentally friendly procedure, using wastewater from the smelting procedure, can turn all protein waste into a product with agricultural value as a fertiliser. Alternative treatments will be proposed for any non-hydrolysed waste that could appear if the yield is lower than 100%. The fertiliser will be tested at lab- and field-scale.

Expected results

- A new management protocol for pork industry waste;
- An innovative waste classification system;

LIFE11 ENV/ES/000562
IBERWASTE



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Sabina GIOVANINNI

Duration of project:

39 months (01.06.2012 - 31.08.2015)

Total budget in euro:

1,866,280.00

EC contribution in euro with %:

933,140.00 (50.00%)

Theme: Industry-Production-Food & Beverages / Waste-Industrial waste

- 100% waste recovery from the pork industry chain, thereby decreasing the amount of pig wastes reaching sewage treatment plants to nil, and eliminating environmental pollution to air, soil and water from such waste;
- Transformation of 100% of waste pig blood and hair into a valorised solution rich in amino acids using an ECO-hydrolysis procedure;
- A protocol on the formulation and preservation required to produce fertiliser and a good practices manual on end-product application;
- A demonstrated 20%+ bio-stimulant effect of the end-product fertiliser; and
- A reduction in wastewater from slaughterhouses through valorisation in the ECO-hydrolysis procedure.

Demonstration project for water saving in car wash premises using innovative detergents and soft treatment systems

Project background

In some Mediterranean regions urban development is putting the viability of existing water resources at risk. That is the case in Catalonia, Spain.

One sector contributing to this high water consumption is commercial car washing. At present, car-washes in the city of Girona use tap water, with each car washed consuming 350 litres of water.

The industry poses another environmental threat through its use of detergents in cleaning and waxing vehicles. Some detergents currently used contain hazardous substances classified in Directive 67/548/CEE as highly toxic to water organisms.

The project beneficiary operates a busy car-wash business – providing employment to people with intellectual disabilities – and believes it can help to show how water shortages can be managed more effectively by better planning to reduce consumption and technical improvements in the treatment and recycling of wastewater.

Project objectives

The 'MINAQUA' project aims to provide a technical and environmental solution that minimises the consumption of clean tap water for car washing, and reduces the volume and pollutant load of generated wastewater. Specifically, the project will:

- Demonstrate that “soft” treatments are able to treat wastewater from car wash services in an effective way;
- Use laboratory experiments with alternative detergents to evaluate efficiency and applicability at full scale in car washes;
- Demonstrate that the application of new environmentally-friendly finishing products – such as waxes – may extend the period required between washes by helping to avoid accumulation of dirt on vehicle surfaces;
- Show that use of such detergents and waxes can reduce the pollutant load in wastewater, improving the efficiency of the treatment system;
- Investigate whether the quality of the water regenerated by soft treatment systems is acceptable to be recycled in car-wash activities, thus reducing consumption of tap water;
- Disseminate results and experience from the project to different stakeholders and promote the uptake of these technologies in other sectors.

LIFE11 ENV/ES/000569
MINAQUA



Beneficiary:

Type of beneficiary

NGO-Foundation

Name of beneficiary

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Name of contact person

Ada COLOMER RUBIO

Duration of project:

50 months (16.07.2012 - 30.09.2016)

Total budget in euro:

1,267,524.00

EC contribution in euro with %:

626,859.00 (49.46%)

Theme: Water-Waste water treatment

Expected results

The project will achieve the following quantified results:

- Demonstrate that water use in commercial car washes can be reduced by more than half;
- Demonstrate that innovative biodegradable detergents can be effective in cleaning vehicles;
- Increase water recycling and re-use;
- Reduce the presence of surfactants in wastewater from car washing;
- Reduce the frequency of car washing through use of improved finishing products;
- Publish and disseminate to relevant stakeholders technical studies and good practice guides; and
- Enable stricter regulation on water consumption, treatment and recycling.

Demonstration of a re-use process of WEEE addressed to propose regulatory policies in accordance to EU law

Project background

The quantity of waste electrical and electronic equipment (WEEE) being generated in the EU is growing at more than three times the rate of solid waste being generated. According to Eurostat data for 2008, 4% of all waste generated in the EU is now WEEE. These devices pose an environmental hazard because of their metals, plastics and glass components. Particularly toxic components include the heavy metals lead, mercury and cadmium, as well as selenium and arsenic.

Inadequate management and treatment processes for WEEE create risks of significant amounts of toxins being released to the air, soil and water. One of the most significant management challenges is adequate collection. More than 85% of WEEE is estimated to be non-selectively collected.

The 2002 European WEEE Directive (2002/96/EC) set collection, recycling and recovery targets for all types of electrical goods. However, collection of WEEE is not working as effectively as intended. Currently, only 33% is officially reported as 'subject to collection'. This has led to efforts to review the Directive amid concerns about the scope of its ambition and the costs of collection.

Project objectives

The 'ECORAEE' project intends to show that reusability is a way to solve the problem of WEEE in an economic, technical and environmentally feasible way. It thus hopes to provide a good option for overcoming some of the barriers that exist to successfully achieving the objectives of the WEEE Directive.

The project consortium is made up of a university, a company specialising in waste management and an innovation centre in Galicia, Spain. Together they will characterise and compare the environmental impact of different finishing processes of WEEE. They will then define a process for preparing WEEE for re-use and identify the resources needed to implement this in practice. The project plans to conduct four demonstrations of the process of preparing computer equipment for re-use to analyse its feasibility.

The consortium plans to assess the need for new standards and regulation to support the transposition of the WEEE Directive. It hopes to define mandatory requirements for re-use preparation. To support the establishment of auditable standards, it also hopes to confirm a

LIFE11 ENV/ES/000574
ECORAEE



Beneficiary:

Type of beneficiary

University

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José António VILÁN

Duration of project:

36 months (02.07.2012 - 30.06.2015)

Total budget in euro:

1,244,077.00

EC contribution in euro with %:

622,038.00 (50.00%)

Theme: Waste-Waste from Electrical & Electronic Equipment (WEEE)

single calculation method and accompanying documentation on the lifecycle assessment (LCA) of WEEE.

Expected results

- Development of protocols and a business plan for the process of re-use of WEEE;
- Defined parameters to characterise the environmental and economic impact of the process of preparing computers for re-use;
- Demonstrated technical and economic feasibility of WEEE re-use preparation actions;
- Demonstrated scalability of the process of preparing WEEE for re-use;
- Promotion of new regulatory standards for WEEE re-use, based on this new best available technology;
- Eventual improved implementation of the WEEE Directive; and
- Raised awareness amongst stakeholders on the preference for reusing rather than recycling WEEE.

Testing and Development of air quality mitigation measures in Southern Europe

Project background

Air pollution caused by airborne particulate matter (PM) is a major environmental and human health problem. The EU is moving towards the implementation of the Thematic Strategy on Air Pollution, through the most recent Directive 2008/50/EC on ambient air quality and cleaner air for Europe. Lower limit values for particulate matter in air will come into effect, creating significant challenges for the implementation of effective mitigation measures.

A number of urban and industrial areas in Europe are not capable of meeting EU thresholds on airborne PM. Southern European and Mediterranean countries in particular suffer from a combination of diverse emission sources, including industry, traffic and dust intrusions, with a climate characterised by arid conditions – as well as high radiation and photochemical conversion rates – that significantly enhance particle levels in the air.

Project objectives

The overall goal of the 'AIRUSE' project is to develop, demonstrate and adapt cost-effective and appropriate measures to ensure better air quality in urban areas. It aims to identify the most effective mitigation measures to reduce PM levels to within acceptable limits and thus to contribute to meeting current and future EU targets around air quality.

Specific actions to achieve this overall goal include:

- Harmonising methods for identifying the sources of PM in the air;
- Determining the relative contribution of different emission sources;
- Identifying those sources that are responsible for exceeding PM limits in specific areas;
- Evaluating the effect of current air quality mitigation measures;
- Developing targeted mitigation measures for the most important and relevant PM sources in Southern European urban areas;
- Assessing how different mitigation measures impact on PM sources and overall air quality; and
- Further adapting and optimising targeted mitigation measures.

The project thus hopes to identify the most practical and cost-effective strategies for reducing PM in the air in southern European urban areas. This should support

LIFE11 ENV/ES/000584
AIRUSE



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Xavier QUEROL

Duration of project:

48 months (01.10.2012 - 30.09.2016)

Total budget in euro:

2,352,219.00

EC contribution in euro with %:

1,138,861.00 (48.42%)

Theme: Air & Noise-Air quality monitoring

and encourage concrete actions to reduce PM exposure levels at local level and assist national and regional authorities in implementing the "Thematic strategy on Air Pollution" and meeting the requirements of the EU Air Quality Directive (2008/50/EC).

Expected results

- The demonstration of effective PM mitigation strategies for southern Europe;
- The achievement of important reductions in PM10 and PM2.5 levels, towards the limits set in the Air Quality Directive;
- Technical guides for implementing the demonstrated mitigation strategies in other regions in southern Europe and beyond; and
- Improved possibilities for implementing the Thematic Strategy on Air Pollution in southern Europe and for meeting current EU limit values for PM concentration levels and stricter PM limits in the future.

Demonstration of a Tool for the Evaluation and Improvement of the Sustainability in the Transport Sector

Project background

Transport was responsible for approximately one-quarter of the EU's greenhouse gas (GHG) emissions in 2008 - 12.8% of overall emissions are generated by aviation, 13.5% by maritime transport, 0.7% by rail, 1.8% by inland navigation and 71.3% by road transport. Furthermore, whilst many sectors have been reducing CO₂ emissions, transport's share has been steadily increasing. Road transport is the sector that has shown the most significant increase.

To achieve an efficient reduction in GHG emissions, the sector needs substantial change to reduce its consumption of fossil fuels. The promotion of energy efficiency and alternative fuels for road transport in particular is vital. According to an evaluation by the Science and Technology Options Committee of the European Parliament, biofuels could be one of the best replacement options in the short and medium term. Finding feasible alternatives to petrol for road transport would also reduce the security and cost concerns that emerge from the current reliance on imported oil.

Project objectives

The main objective of the 'BIOLCA' project is the demonstration of an innovative web-based tool that can identify the best options for the development of biofuel use in the transport sector.

The tool will use the lifecycle assessment (LCA) methodology to analyse, from a sustainability point of view, different scenarios for the development, production and use of biofuels in transport. It will enable comparison in order to identify those options that offer a better performance in terms of environmental, social and economic impacts. It will also identify key points in the lifecycle of biofuels requiring targeted action to improve sustainability.

To make the tool work, the project will:

- Model the biofuel lifecycle, quantifying the inputs and outputs of each process, and establishing the relationship among the different parameters and processes;
- Develop specific indicators to assess environmental, social and economic impacts of biofuels at each stage of the lifecycle;
- Develop systematic calculation methods for measuring these indicators; and
- Create and feed a database with enough data to carry out the demonstration of the tool in all scenarios proposed by the real users participating in the project.

LIFE11 ENV/ES/000585
BIOLCA



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

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Juan Antonio GASCÓN REDONDO

Duration of project:

30 months (01.07.2012 - 31.12.2014)

Total budget in euro:

1,222,915.00

EC contribution in euro with %:

611,457.00 (50.00%)

Theme: Climate change - Energy-Reduction of greenhouse gases emissions / Services & Trade-Transportation - Storage

The project will demonstrate the usefulness of the tool as a means of identifying the most sustainable options for the design, production or use of a biofuel in two real-scale examples. It will implement the tool in the public bus fleet of Bilbao's City Council and for the refuse truck fleet of a private company.

Expected results

- Delivery and demonstration of the first tool capable of including social and economic parameters in the assessment of the sustainability of biofuel development in the transport sector;
- Promotion of improved sustainability in the transport sector, by reducing emissions, pollution, costs and dependency on oil imports in the long term;
- Increased development of the biofuels sector as an important alternative energy source for transport, with improved sustainability over its lifecycle; and
- Increased potential for the definition of future regulation on the use of biofuels in transport.

Eco-Efficient Dry Wool Scouring with total by-products recovery

Project background

Wool sheared from sheep contains a high level of impurities – as much as 60% by weight. Before the wool can be used commercially, it must be cleaned using a hot aqueous scouring process. Depending on the properties required for the final product, this can involve a complicated process, using detergents and alkali, which generates large quantities of wastewater with a high organic content. For every kg of clean wool produced by aqueous cleaning, some 17 litres of effluent, with a high Chemical Oxygen Demand (COD) value - 0.3-2.4 kg - is generated.

Global production of wool in 2009 was 2.04 million tonnes (Source: FAO STAT-United Nations). The EU is the fourth largest wool producer in the world after Australia, China and New Zealand.

Project objectives

The 'WDS' project aims to demonstrate an innovative process of "wool dry scouring" based on closed-loop processing and total waste recovery. It hopes to demonstrate that it is possible to achieve quality improvements in the clean wool at the same time as reduced wastewater generation and increased recovery and valorisation of by-products.

The project aims to recover lanolin (a waxy substance secreted by sheep to help them shed water from their coats and which has commercial uses in the cosmetics industry) and wool dust from the raw wool product by means of solvent extraction and purification technologies in a prototype dry process. It is expected that this will improve the yield of recovered by-products from wool treatment in comparison with traditional processes and present a cleaner wool for the aqueous scouring process.

Since it is working with a cleaner input material, the scouring process will require less water and energy and fewer chemical cleaning products.

Expected results

- Demonstration of the technical feasibility of an innovative environmentally friendly dry scouring technology for wool;
- Recovery of all valuable grease components;
- Reduced pollution loads in the waste streams from wool processing;
- An 80-100% reduction in the use of cleaning chemicals such as detergents;

LIFE11 ENV/ES/000588
Wooldryscouring (WDS)



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Juan Carlos CASTELL

Duration of project:

36 months (01.09.2012 - 31.08.2015)

Total budget in euro:

3,007,866.00

EC contribution in euro with %:

1,477,182.00 (49.11%)

Theme: Environmental management-Cleaner technologies / Industry-Production-Textiles - Clothing

- An 80-95% reduction in water consumption;
- Reduced energy consumption;
- Avoidance of complex and expensive wastewater treatments;
- An improvement in the final wool quality in terms of whiteness, fibre openness and wool combing performance, providing a 5-25% increase in sale price;
- Demonstration of the economic feasibility of the process, taking into account the financial benefits from the recovery of valuable by-products and a 40% reduction in costs from reduced resource consumption and wastewater treatment requirements; and
- An improvement in the ability of the wider wool-scouring sector to meet EU environmental requirements.

High resolution AppROach for ManagEMent of Surface Water EutroPhication in Rural areas of the DUero River BaSin

Project background

Eutrophication tends to occur in ponds and reservoirs with excessive nutrient content, creating abundant plant growth. This can lead to the formation of bluegreen algal blooms, which can generate bio-toxins that are a danger to the environment, wildlife and human health. Bluegreen algal blooms can develop in days and with a spatial differentiation that creates major difficulties for monitoring. A means of providing efficient and effective management of surface water eutrophication is therefore of great urgency and interest.

The Cuerda del Pozo reservoir in Soria (Castilla y Leon) represents an excellent case study because of its many uses, including: water supply to the city of Soria, recreational use, and a source of drinking water for cattle.

Project objectives

The main objective of the 'ROEM+' project is to demonstrate the efficiency and viability of an innovative approach for the integrated management of hydrographic basins to prevent eutrophication and algal blooms. It seeks to bring reservoir management in line with the strategic management trends that can be clearly recognised in other environments, notably regarding marine ecosystems.

The project will deploy cutting-edge remote sensor networks within the whole geographic area directly and indirectly connected to the reservoir. This will serve to quantify and localise the origin of pollutant and nutrient discharges in the whole drainage hydrographic basin, and assess the impact of land use and forest, agricultural and livestock management. Monitoring will provide data that can be used by an integrated 'e-platform' tool to generate dynamic and spatially distributed simulation models. It will consider all natural (ecosystem) and human aspects, including the role of climate change, so that different scenarios can be considered and the likely efficiency of corrective or preventative actions assessed.

The tool should allow managing bodies to decide how and where to use or protect the water so that the water mass can realistically absorb and buffer natural and human impacts and pressures. A plan of corrective actions will be proposed and implemented with the goal of achieving the "good ecological status" of the target reservoir. As an added benefit, it is hoped that some of the corrective measures could turn into new economic

LIFE11 ENV/ES/000590
ROEM-plus



Beneficiary:

Type of beneficiary

Research institution

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Analía LÓPEZ FIDALGO

Duration of project:

42 months (01.09.2012 - 28.02.2016)

Total budget in euro:

1,844,834.00

EC contribution in euro with %:

922,416.00 (50.00%)

Theme: Water-River basin management

activities at the local level in rural areas and enhance other environmental benefits derived from the recycling of materials and from an improvement of the energy consumption balance.

Expected results

- Accurate temporal and spatial data on pollutant and nutrient discharges;
- Modelling systems to identify risks of eutrophication and algal blooms;
- Reduced occurrence of algal blooms and the achievement of "good ecological status" of the water;
- Recycling (closing the phosphorous cycle);
- Significantly improved management of fish stock populations;
- An information platform and case study accessible to other environmental actors, and land managers;
- Improved implementation of the WFD; and
- The potential for new economic activities in rural areas.

Prototype for Producing Hydrogen by means of Clean Water, Ammonia and Recycled Aluminium

Project background

One of the EU's priorities is limiting carbon dioxide (CO₂) emissions caused by the burning of fossil fuels. One of the most important means of achieving this is by developing new and more efficient methods to produce electricity using renewable sources of energy. Hydrogen (H) is one of the fuels regarded as offering the best potential for reduced emissions of pollutants and greenhouse gases.

There are currently two major disadvantages to using this gas as an alternative source of clean energy. Firstly, the production process is in most cases carried out by catalytic conversion of methane gas (CH₄), which itself generates an enormous amount of CO₂. The second problem is that it is a voluminous element, both in gaseous and liquid states, and highly inflammable. Thus its storage and transportation would be both costly and dangerous and should probably be avoided.

Project objectives

The 'H2ALRECYCLING' project aims to design and construct a pilot plant to obtain hydrogen for use as an alternative clean fuel using a new and more environmentally friendly process. It seeks to exploit the reaction between aluminium and waste ammonium hydroxide from other industrial processes, which generates hydrogen as a by-product. It hopes to optimise the efficiency of the process for powering a fuel cell.

In order to achieve this objective, the project will carry out the following specific tasks:

- Evaluating the requirements that the pilot plant must meet for hydrogen production to be technically viable;
- Conducting trials of the process for producing hydrogen to power a fuel cell at pilot scale to determine the critical variables that will influence the full design;
- Designing and constructing the prototype process;
- Operating and studying the prototype process through tests; and
- Optimising the design and operational parameters of the prototype.

The project will evaluate the final results obtained from the optimised process through detailed analysis of the outputs achieved and environmental and financial costs involved. It will be compared with alternative processes. The results obtained will be disseminated as widely as possible, both at a national and international level.

LIFE11 ENV/ES/000593
H2ALRECYCLING



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

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Name of contact person

Javier PORCAR VIVES

Duration of project:

42 months (01.10.2012 - 28.03.2016)

Total budget in euro:

1,137,418.00

EC contribution in euro with %:

554,600.00 (48.76%)

Theme: Climate change - Energy-Energy supply

Expected results

The project expects to establish a pilot plant for producing hydrogen from waste ammonium hydroxide (NH₃(aq)) and aluminium (Al) to power a fuel cell. It is expected to attain the following results/output:

- Zero production of greenhouse gases;
- Efficiency of NH₃ recovery above 80%;
- 100% energy efficiency of the hydrogen generation process;
- An estimated efficiency of the global energy generation process of more than 80%;
- A hydrogen production rate of 1.6 g H₂/sec; and
- A fuel cell with a potency of 80 kW.

Simulation of the Release of Nanomaterials from Consumer Products for Environmental Exposure Assessment

Project background

Nanomaterials are increasingly being developed for a range of industrial uses. However, there is a lack of standardised methods for estimating the release of nanomaterials to air, water and soil during the various stages of any nanotechnology-enabled product's lifecycle. Current legislation for chemicals and environmental protection was not originally formulated bearing nanomaterials in mind.

Industry currently has to follow a precautionary principle to minimise potential exposure levels and risks. However, to enable the full economic potential of this exciting sector to be realised, whilst ensuring safety for the environment and human health, better understanding and knowledge of the associated risks is needed. This will enable a better regulatory framework in relation to the effects of nanomaterials.

Project objectives

The 'SIRENA' project aims to improve understanding of risks associated with nanomaterials through the demonstration and testing of a methodology to simulate the unintended release of nanomaterials from consumer products. It will replicate different lifecycle scenarios to be adopted by a wide number of industrial sectors to get the necessary information for exposure assessment.

'SIRENA' will work with 72 sample specimens consisting of a variety of nanocomposites currently used in three different industrial sectors: aerospace, automotive and construction. Examining these scenarios will help identify parameters for the exposure assessment required in risk assessment, data that should be available prior to commencing the detailed risk assessment of a nanomaterial.

The project thus hopes to provide producers and manufacturers with suitable tools and procedures to mitigate risks by choosing products conveying minimum nanomaterial release.

Ultimately the project hopes to facilitate the adaptations needed for nanomaterials in the current regulatory framework and support implementation of EU environmental policy and legislation in relation to chemical products (REACH) in particular.

LIFE11 ENV/ES/000596
SIRENA



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

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Unzueta IDOIA

Duration of project:

36 months (02.01.2013 - 30.12.2015)

Total budget in euro:

1,122,942.01

EC contribution in euro with %:

560,235.00 (49.89%)

Theme: Risk management-Human health protection & Industrial risks - Hazardous substances

Expected results

The project expects to deliver the following:

- Validated methodologies and prototypes for Environmental Exposure Scenario Replication at different stages in the lifecycle of nanocomposites;
- A protocol for the selection and prioritisation of nanomaterials in consumer products;
- A report on the methods to simulate the release of nanomaterials from consumer products at different lifecycle stages;
- A searchable database including outcomes from the technological surveillance system;
- Best practice manuals for safe nanomaterial use;
- Exposure data to support risk-management decision-making and regulation to protect human health and the environment;
- More "eco responsible design" of nanomaterials;
- Improved general acceptance of nanomaterials; and
- Effective updating and implementation of REACH.

Revalorisation of coastal algae wastes in textile nonwoven industry with applications in building noise isolation

Project background

Algae and seaweed accumulations on beaches and along coasts are an environmental nuisance. They can also discourage tourism and threaten the Blue Flag status of the best beaches. Thus local administrations must devote time and resources to the physical collection and removal of the matter.

However, this creates a new problem in the long-run. Sand is also removed when algae residues are collected. To minimise this erosion, the most widely adopted current practice is to leave the algae residues where they are in winter and only collect them in summer.

Generally, these measures take place within an Integrated Coastal Zone Management (ICZM) system, where all the marine accumulations are managed as urban solid wastes and deposited in landfill and/or incinerated. This way of managing these wastes implies financial costs and leads to other associated environmental problems.

Project objectives

The 'SEA-MATTER' project aims to demonstrate and validate the re-use of coastal algae and seaweed accumulations as raw material in the composites industry. It seeks to demonstrate and implement wet-laid technology for converting these materials into reinforcement structures for composites products. It also hopes to improve marine waste collection systems.

Starting with the acquisition of the raw waste material, the project will consider the establishment of a new model for the collection, transport and management of algae and seaweed wastes. Current methods and technologies will be reviewed and alternative approaches assessed to identify more environmentally-friendly options.

The project plans to take marine wastes to its wet-laid plant to demonstrate successful conversion into composites for the building industry.

The beneficiary expects that the wet-laid process will allow different fibres to be intimately blended to give a tailored product that exhibits the optimum properties of each fibre type. The resulting composites will be validated as acoustic/noise insulation panels for buildings.

LIFE11 ENV/ES/000600
SEA-MATTER



Beneficiary:

Type of beneficiary

Professional association

Name of beneficiary

Asociación de Investigación de la Industria

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Rosa LÓPEZ FERRE

Duration of project:

30 months (01.09.2012 - 28.02.2015)

Total budget in euro:

738,918.00

EC contribution in euro with %:

369,458.00 (50.00%)

Theme: Industry-Production-Textiles - Clothing / Waste-Waste use

Expected results

- Implementation of an effective and clean collection and transport system for algae and seaweed accumulations;
- Reduced beach erosion;
- A reduction of at least 15% in the landfilling of marine biomass waste;
- Reduced management costs associated with marine biomass for coastal municipalities;
- The successful demonstration of wet-laid technology to develop useful nonwoven materials from marine biomass;
- Demonstrated valorisation of the resulting composites as an environmentally-friendly material for producing sound-insulation panels for buildings; and
- A contribution to the better application of the EU Directive on waste disposal and the Framework Directive on Wastes.

Integrated Process for a Sustainable and Cost Effective Food Waste Treatment

Project background

According to EUROSTAT data, the manufacturing, food services and catering, and retail and wholesale sectors account for 58% of all food waste generated in the EU and are responsible for 99 million tonnes/yr of CO₂ emissions.

Packaged food waste creates particular problems, as it combines organic and inorganic fractions that cannot be currently separated and are, therefore, sent to landfill. The inorganic fraction can make up as much as 20% of the waste volume.

The 2008 European Directive on Waste and Contaminated Lands (2008/98/EC) has highlighted the need to maximise the re-use and valorisation of waste, whilst the 1999 Landfill Directive (1999/31/EC) sets a clear target of reducing the organic waste sent to landfill, by 35% from 1995 to 2014.

Project objectives

This project aims to promote an innovative concept that will enable the sustainable management of packaged and unpacked food waste across the EU.

The project will define new strategies for the optimisation of collection and reception procedures for food waste, to be implemented at waste generation points. This will include influencing behavioural change and political will towards greater environmental responsibility amongst stakeholders.

The project then aims to demonstrate, optimise and promote an innovative technology for processing packaged and unpacked food waste. This de-packaging and post-treatment technology aims to separate organic and inorganic fractions. The project will also focus on identifying means of efficiently re-using and recycling separated fractions and reducing the amount of this type of waste being sent to landfill.

Finally, the project will work to comply with clean and efficient energy use and with carbon-neutral and water efficiency concepts.

Expected results

The project expects to demonstrate that an innovative food-waste collection, de-packaging and post-treatment process can help achieve a 15% reduction in food waste sent to landfill in five-to-ten years. Specific expected results include:

LIFE11 ENV/ES/000601
FoodWaste Treatment



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

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Antonio DOMÍNGUEZ PADILLA

Duration of project:

36 months (01.09.2012 - 31.08.2015)

Total budget in euro:

1,440,515.00

EC contribution in euro with %:

720,257.00 (50.00%)

Theme: Industry-Production-Food & Beverages

- Optimisation of the procedures for the collection and reception of food waste;
- Successful demonstration of a de-packaging and post-treatment technology for packed and non-packed food waste, capable of treating up to 2 tonnes/hr;
- A 2 500 tonne-reduction in the amount of food waste sent to landfill during the project lifetime;
- An associated reduction in CO₂ emissions of 15 000 tonnes;
- A saving of €30 000 in waste management costs compared with landfill disposal;
- Clean (less than 0.3% contaminants) organic and inorganic separated fractions;
- Valorisation of the separated fractions;
- A reduction of 2 tonnes of CO₂ equivalent emissions for every tonne of plastic not incinerated; and
- The promotion of improved compliance with EU Directives and of possibilities for stricter regulation on food waste management/landfilling.

Innovative hybrid MBR-(PAC-NF) systems to promote Water Reuse

Project background

Water re-use is emerging as a viable alternative source of high-quality water. It has been estimated that, in 2004, 700 million m³ of wastewater was re-used in Europe (Angelakis et al., 2008). However, this figure is less than 20% of the estimated water re-use potential. The main challenges related to water re-use include reliability, removal of recalcitrant compounds, energy consumption, reagent consumption and costs. The feasibility and economic and environmental advantages of water re-use also need to be demonstrated.

Project objectives

The 'aWARE' project aims to promote the re-use of reclaimed water within water management organisations. To this end, the project hopes to demonstrate the technical feasibility and economic and environmental advantages of two different technologies.

The project proposes an innovative hybrid process, using membrane bioreactors (MBR), powdered activated carbon (PAC) and nanofiltration (NF) to enable re-use of wastewater. It will experiment with MBR-PAC-NF configurations - including PAC dosage and cleaning conditions - to optimise their efficiency and reliability. It hopes to demonstrate the feasibility of such a process in removing contaminants, define the optimal operation for each configuration and identify risk assessment factors.

The project will evaluate energy and reagents consumption, as well as sludge and footprint minimisation of the systems. It will carry out lifecycle assessment (LCA) and cost/benefit analysis (CBA) for the environmental and economic impact of the proposed configurations to enable comparison with existing advanced treatments.

By consolidating knowledge about water reclamation technologies and promoting water re-use initiatives amongst water management bodies, the project hopes to enable both implementation of existing EU environmental policy and further legislation in the re-use of wastewater. It ultimately seeks to contribute to a considerable water re-use scheme at EU level.

Expected results

- An optimised process with defined operating configurations and flexibility, providing long membrane lifetime and limited area requirements for the installation;

LIFE11 ENV/ES/000606
aWARE



Beneficiary:

Type of beneficiary

NGO-Foundation

Name of beneficiary

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Name of contact person

Olga FERRER MALLÉN

Duration of project:

42 months (01.06.2012 - 30.11.2015)

Total budget in euro:

2,603,683.00

EC contribution in euro with %:

1,301,840.00 (50.00%)

Theme: Water-Water saving

- Improved water quality and quantity – with a quantified reduction in chemical and microbiological content;
- Control plans for water quality monitoring, providing a basis for future risk assessment and risk management strategies;
- Lower environmental impacts than conventional exploitation of natural water resources, as shown by quantified reductions in energy and chemical consumption and waste;
- Reduced costs in comparison with conventional approaches;
- Demonstrated reliability and safety – contributing to eventual regulation of the sector to ensure public and industry confidence; and
- The fulfilment of EU Directives.

Polyvalent Biocide from Local Wastes

Project background

Pesticides have long been identified as a major environmental concern, since they pollute waters and harm biodiversity. The prohibition at European level of certain kinds of chemical substances has sought to prevent pollution from this source.

However, the use of alternative safer substances does not currently guarantee the same eradication of vegetal pathogens or control of insects etc. This impacts on crop quality and financial return for the farmer.

Additional challenges in this area include appropriate disposal of waste from crops. Common practices of burying waste can lead to the development of certain kinds of bacteria and/or fungi plagues in soil and water. Uncontrolled fires, dumping and other often illegal or negligent forms of disposal of this waste material also usually have a negative environmental impact.

In addition, the dairy industry, and especially cheese production, generates a huge amount of whey as a waste product, which is often dumped on soil and in aquiferous channels. It has a very negative environmental impact because of its high nutrient content, particularly high levels of lactose, which promotes the growth of bacteria and eliminates oxygen from the water.

Project objectives

The 'SaveCrops-LIFE' project aims to produce an environmentally-friendly biocide that will achieve multiple environmental gains. It hopes to deliver effective control against threats to plants, avoid pollution to soil and water from traditional pesticides and valorise agro-alimentary waste products that are currently creating environmental problems from inappropriate disposal.

The project aims to develop a new biocide from crop and whey waste emerging from the agriculture and agro-alimentary sector. It will conform with an eco-design methodology, especially in the stages of procurement and production.

The project will test the ecological biocide on numerous types of cultivated products, especially tomato, vine and olive crops. Strict evaluations will be carried out, comparing the new biocide to current ecological pesticides on the basis of:

LIFE11 ENV/ES/000613
SaveCrops-LIFE



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

José Luí LLERENA RUIZ

Duration of project:

36 months (15.09.2012 - 15.09.2015)

Total budget in euro:

599,999.00

EC contribution in euro with %:

296,599.00 (49.43%)

Theme: Waste-Agricultural waste / Waste-Industrial waste

- Impact on wildlife, flora and humans;
- Protection of agro-food products from pathogens, insects and other threats; and
- Economic advantages, notably from valorising waste products.

Expected results

The project expects to achieve the following results:

- A validated formula for producing biocide from crop waste and whey waste;
- A reduced environmental impact in comparison with chemical pesticides;
- A reduced environmental impact through revalorisation of agro-alimentary waste products;
- Effective control of vegetal pathogens;
- Economic benefits for the agro-alimentary sector; and
- A technical report for adaptation of plant-product factories to biocide production.

Telemangement Network using Free Controllers Connected to a GIS for an Optimised Irrigation in Vitoria-Gasteiz

Project background

Currently, there are some 5 000 ha of green space in Spain. The maintenance of these areas with the existing irrigation and water supply systems entails a water expenditure of some 500 million m³/yr. This represents approximately 2% of the total annual water consumption in Spain.

The city of Vitoria-Gasteiz in the Basque Country has various problems with its irrigation systems, largely as a result of the complexity of the infrastructure required to service the disparate green areas. This situation is aggravated by the lack of an inventory of the city's irrigation network, which hampers both its maintenance and the ability to act in case of breakdown or accident.

Historically, poor water management means that most of the irrigation systems operate inefficiently, leading to some 60% of the water extracted being lost and wasted. This situation is aggravated by the existence of obsolete facilities, the lack of resources, expertise and personnel within municipalities to perform proper maintenance, the occurrence of accidents, cracks and leaks and the lack of an early detection system for such eventualities.

Project objectives

The 'IRRIGESTLIFE' project aims to demonstrate the effectiveness of a smart irrigation system that meets the actual needs of a city's green spaces, whilst minimising water consumption, through the avoidance of leaks, over-watering and human error. It plans to base the system on an accurate measurement of the key parameters.

The project will conduct an inventory of all the irrigation units in Vitoria-Gastéiz and identify the key parameters for meeting the exact irrigation needs of each green area. Improved knowledge and understanding of the irrigation needs of the green areas will be provided by a characterisation of the microclimate and monitoring of climate variables by means of sensors connected to the municipal geographic information system (GIS).

The irrigation network will be improved by creating the capacity to identify anomalies in irrigation requirements and irrigation operations on site in real time through a remote management system integrated into the municipal GIS. As well as climate sensors, the project will install autonomous photovoltaic (PV) power units and a data transmission network connecting the city through the gardens.

LIFE11 ENV/ES/000615
IRRIGESTLIFE



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

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Name of contact person

Asier SOPELANA BOSCH

Duration of project:

37 months (01.09.2012 - 30.09.2015)

Total budget in euro:

2,514,817.00

EC contribution in euro with %:

1,184,213.00 (47.09%)

Theme: Services & Trade-Sports & Recreation activities
Water-Water saving

Expected results

The project expects to demonstrate a smart irrigation system based on measurements of climate parameters using data taken from sensors. More specifically it hopes to deliver:

- Four prototypes that allow maximum use of the existing irrigation infrastructure in the city;
- An irrigation system integrated into the municipal GIS to enable the management of irrigation by municipal technicians and incorporating an alarm system for decision-making in real time;
- Water savings of 30% in irrigating the green areas of Vitoria-Gastéiz;
- A 20% reduction in the working hours needed to manage the irrigation works; and
- Energy savings from the installation of autonomous PV power units.

Irrigation Expert Simulator

Project background

Scarcity of fresh water is a key issue worldwide, and the Mediterranean basin is one of the areas at risk. Irrigation is the main use of fresh water, accounting for 69% of global withdrawals and 93% of total consumption. More efficient management of irrigation on farms is, therefore, vitally important.

Significant advances have been made in academic knowledge about the precise water requirements of individual plots, which can depend on many factors including the type of crop, the climate and soil properties. There is also new and improved irrigation technology, which facilitates the programming of personalised irrigation schedules for each particular scenario, and optimised irrigation under deficit conditions. However, there is a significant gap between these advances and the actual irrigation practices of farmers.

Computer tools can be used to simulate conditions, compare benefits of different irrigation practices and calculate optimum irrigation activity. But the present generation of simulation tools is not adequate for the task. Some of them are too complex for use by farmers, or even for many technicians, whilst others are based on such simple models that the data produced can be used as no more than a reference.

Project objectives

The main objective of the 'IES' project is to develop a web platform for training and supporting farmers in developing personalised irrigation schedules. This 'Irrigation Expert Simulator (IES)' aims to optimise water use by farmers and achieve the most efficient and beneficial use of fresh water.

The project will develop a set of simulation and decision-support tools within a web platform that will enable farmers, technicians and experts to interact with an agronomical knowledge-base to get irrigation recommendations for case-specific scenarios. Users will have the opportunity to assess the expected outcomes of their management decisions by simulating irrigation schedules on a virtual crop.

The project will test suggested models on a number of plots and will check results achieved by a number of real users. It hopes to demonstrate improved efficiency in water use without reducing crop productivity.

LIFE11 ENV/ES/000621
IES



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

Ferrán TERSA

Duration of project:

36 months (01.10.2012 - 16.10.2015)

Total budget in euro:

1,012,968.00

EC contribution in euro with %:

506,484.00 (50.00%)

Theme: Industry-Production-Agriculture - Fisheries / Water-Water saving

Expected results

- To provide farmers with easy-to-use software to identify optimum irrigation schedules for particular plots;
- Improved awareness by farmers of better water-use strategies and an improved ability to cope with water shortages;
- A 15% reduction in water consumption for irrigation practices, without reducing crop productivity;
- Improved energy efficiency of irrigation;
- Reduced water and energy costs for farmers and, therefore, increased competitiveness;
- Improved marketability of irrigation management systems for suppliers and manufacturers; and
- The encouragement of water conservation and greater understanding of water policies by government administrations.

Model for a green energy autonomous office building

Project background

The building and construction sector accounts for 40-45% of energy consumption in Europe and thus offers the greatest single potential for improving energy efficiency. However, there is a lack of initiatives aimed at addressing issues of the built environment from a lifecycle perspective. Water scarcity and pollution are also major challenges facing urban build environments. Automated systems offer an interesting approach to managing resources better, something that the beneficiary has already been exploring.

Project objectives

'The Autonomous Office' project aims to construct a green, energy-autonomous office building that is able to operate without connecting to the electricity grid. It aims to integrate principles of bioclimatic design and renewable energy technologies to minimise the environmental footprint of the construction and its users. It thus hopes to provide a sustainable model in terms of energy demand and its contribution in reducing CO₂ emissions.

The project will develop a bioclimatic design for the building to take advantage of natural lighting and reduce temperature differentials, thus reducing energy demand in the building. It will also integrate highly efficient energy equipment and control units to satisfy the building's needs for hot water, heating, cooling, ventilation, lighting and so on. The environmental design proposal will be tested by computer software to guarantee that the most efficient design and environmental strategy is selected.

The project will integrate a variety of renewable energy technologies into the design of the building to produce energy for use onsite and minimise the carbon footprint. The project will then build the office building and test it for energy efficiency and water consumption. It hopes to show that it is possible to construct an office building that is able to produce the energy it needs in a sustainable way. It will also work to study how these strategies might be implemented more widely in the near future, disseminating results amongst stakeholders in the building and construction industry.

Expected results

- An integrated design for a building that adopts both passive and active strategies to obtain energy autonomy through renewable resources;
- Successful construction of an energy-autonomous building with zero fossil fuel consumption after construction;

LIFE11 ENV/ES/000622
The Autonomous Office



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

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Name of contact person

Ricardo GONZÁLEZ MARTÍNEZ

Duration of project:

43 months (01.06.2012 - 31.12.2015)

Total budget in euro:

1,173,640.00

EC contribution in euro with %:

579,142.00 (49.35%)

Theme: Environmental management-Eco-products design / Industry-Production-Building

- A reduction in energy demand from typical values of 250 kWh/m² in office buildings to 110 kWh/m² – through bioclimatic design;
- A further 25% reduction in energy demand to a target of some 90 kWh/m² through energy efficient energy equipment and control units;
- Production of 100% of the energy requirement – 54 000 kWh for the 600 m² building – through on-site renewable energy micro-generation systems;
- Prevention of 48.19 tonnes of CO₂ emissions per year for an equivalent building – 15.9 tonnes CO₂/yr from photovoltaics; 15.9 tonnes CO₂/yr from hydrogen systems (PEM fuel cell); 5.04 tonnes CO₂/yr from a small wind turbine; and 11.35 tonnes CO₂/yr from a biomass boiler;
- Consumption of fresh water supplies limited to 15 litres/person/day – half of what is currently be considered good practice; and
- Excellent general working conditions for end users.

Fostering GREEN Public Procurement in ROAD construction through the validation of high-performance asphalt eco-mixtures

Project background

The European road network is estimated at over 5.5 million km. The OECD has reported that typically, 10 000 m³ of aggregates is needed for each kilometre of two-lane road constructed. Bitumen used in road construction is derived from fossil fuels, and asphalt manufacturing produces a number of air pollutants. These include particulate matter (PM), nitrogen oxides (NO_x), sulphur oxides (SO_x), carbon monoxide (CO), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAH) and carbon dioxide (CO₂). It is estimated that each tonne of hot mixed asphalt produces 34.97 kg of CO₂ equivalent.

There is potential for making major environmental improvements through the development and implementation of more eco-friendly practices in the road-building sector. At present, policies encouraging of Green Public Procurement (GPP) have yet to make the desired impact.

Project objectives

The 'GREENROAD' project aims to provide achievable ways for the road sector to become greener and to demonstrate sustainable programmes of public works. It specifically aims to demonstrate the technical and economic viability of using at least 90% recycled asphalt mixtures in road construction. At the same time, it expects to reuse industrial waste.

The project will work to produce an optimal composition of asphalt using eco-mixtures composed of steel slag and wastes from pilot road milling and end-of-life tyres. It hopes to minimise the amount of natural resources used as raw material, reduce the required temperature of the production process and minimise energy consumption. It will seek to validate the high technical performance of these asphalt mixtures in "real" environments. It will also demonstrate the environmental and economic benefits of using recycled waste products in asphalt production. Lifecycle analysis will be carried out, including data on carbon footprints and resource consumption, comparing 'GREENROAD' eco-mixtures with conventional ones.

This ultimately seeks to significantly improve implementation of GPP in construction contracts and enable municipal and other public works construction contracts to include a requirement for the use of green asphalts. It will seek to establish the requirements needed to successfully implement a GPP Action Plan for use in road construction generally. It will also undertake in-depth

LIFE11 ENV/ES/000623
GREENROAD



Beneficiary:

Type of beneficiary

Large enterprise

Name of beneficiary

COPSESA

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María José PALLOL PÉREZ

Duration of project:

36 months (01.09.2012 - 31.08.2015)

Total budget in euro:

1,280,882.00

EC contribution in euro with %:

634,115.00 (49.51%)

Theme: Environmental management-Green procurement / Services & Trade-Public administration

analysis of the potential for the replication of the mixtures in environments outside the project area.

Expected results

- Production of high performance asphalt comprising less than 10% natural resources;
- Valorisation of 800 tonnes of black slag from steel mills in Cantabria, 80 tonnes of milling wastes, and 2 tonnes of rubber from old tyres;
- Reduction in consumption of natural aggregates by 880 tonnes;
- A 20°C reduction in production temperatures;
- A 20% reduction in manufacturing energy consumption;
- A 30% reduction in emissions of greenhouse gases at the production site;
- A 20% reduction in the price of asphalt mixtures;
- Establishment of GPP procurement criteria for use with the award of road construction contracts; and
- Encouragement of new and wider markets for steel slag and reclaimed road materials.

Recovery of reverse osmosis membranes at its end of life

Project background

Seawater is the world's main water resource and the process of desalination facilitates its use. The main technologies employed are thermal evaporation (distillation) and reverse osmosis (RO) membranes. The world market for RO water treatment systems is growing quickly – from an estimated \$1.4 billion in 2000 to \$3.8 billion in 2008. Unfortunately, there can also be a high environmental cost. The energy required to produce RO water is about 10 times more than for conventional water distribution. Greater re-use can therefore help to compensate for this deficit and this is also a fast-growing area. Capital expenditure on advanced water re-use is forecast to grow at an annual rate of 19.5% until 2016.

There are currently more than 15 000 desalination plants operating in 100 countries. Of these, 80% use polymer-based membrane technologies, nearly 90% of them based on reverse osmosis. The RO membranes used in this process reach their end-of-life typically after five-to-10 years, resulting in costly waste, which at present has to be sent for landfill. The beneficiary estimates that in Spain alone 100 000 membranes need replacing each year.

Project objectives

The 'REMEMBRANE' project aims to prolong the life of membranes used in the reverse osmosis method of water treatment through an innovative technology to improve membrane recovery and enable re-use. It seeks to avoid waste, reduce costs and improve the overall efficiency of the desalination process.

A mobile demonstration plant will be established to develop diverse mechanical and chemical treatments for any RO membrane recovered at end-of-life. These will seek to make them suitable for re-use in the same desalination process or in other RO applications that need a lower quality water specification – such as for use in irrigation or industry. As part of the pilot project, a compact, portable testing unit will be built to perform trials on the recovered membranes at real installations.

The project aims to demonstrate how the application of 'REMEMBRANE' technology will increase the economic value to users by recovering RO membranes in an economically efficient way. Key benefits will be decreased landfill disposal, lower waste and less need to produce new membranes. This ultimately aims to improve the ef-

LIFE11 ENV/ES/000626
REMEMBRANE



Beneficiary:

Type of beneficiary

Public enterprise

Name of beneficiary

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Name of contact person

Frank ROGALLA

Duration of project:

34 months (01.09.2012 - 30.06.2015)

Total budget in euro:

1,900,767.00

EC contribution in euro with %:

950,383.00 (50.00%)

Theme: Waste-Industrial waste

efficiency of desalination processes and enhance the feasibility of water regeneration.

Expected results

Construction of a demonstration plant that will provide:

- Successful demonstration of RO membrane recovery for re-use in diverse applications;
- An eventual reduction of 2 000 tonnes/yr of waste material sent to landfill;
- Eventual waste disposal savings of €80 000/yr excluding transport costs;
- Reduction in the cost of membrane replacement to €100/unit;
- Reduced consumption of natural resources in the production of new membranes;
- Enhanced feasibility of water regeneration through desalination processes; and
- Stimulation of other applications that can increase the amount of re-used water produced and at lower cost.

Full use of the whey produced by the dairy industry

Project background

Cheese manufacture in the Basque region of Spain results in the production of some 25 million litres/yr of the waste by-product whey. This liquid has a high nutrient content, which can result in environmental problems if it is disposed of inappropriately. However, the high content of serum proteins also gives whey considerable potential to be processed for commercial uses, including in food products, animal feed and biogas.

Project objectives

The 'VALORLACT' project aims to demonstrate an innovative methodology for recovering and transforming whey into valuable products. It seeks to design a system for collection and processing of whey from Basque dairies of sufficient scale to make one or more processing plants economically viable.

The project will complete an inventory of all whey generated in the project region and characterise its different types, including nutritional and sanitary parameters. It will then define an action plan to valorise the whey completely. It will define methods of storage, treatment, manufacture, transport and logistics and will provide technical details about operational conditions, facilities and administration to harness a large enough quantity of waste product.

The project will identify what infrastructure is needed and construct and operate a pilot plant for whey treatment to obtain whey protein concentrate, lactose and other derivatives. It will also build and operate a pilot plant to extract biogas from the lactose fraction. The project aims to demonstrate and validate under real conditions the valorisation of the resulting products as food, meal for animal feed, and biogas as a form of renewable and clean energy.

The project will include technical, economic and environmental feasibility studies, including lifecycle assessment, resulting in a validated and agreed procedure to valorise whey generated in the Basque Country. It will also assess the integration of the procedure into the Basque Waste Management Plan. The project expects to contribute to improvements in the overall environmental performance of the dairy sector.

Expected results

- Operation of a pilot whey treatment plant with a capacity of 250 litres/hr;

LIFE11 ENV/ES/000639
VALORLACT



Beneficiary:

Type of beneficiary

Regional authority

Name of beneficiary

Gobierno Vasco - Dirección de Innovación e Industrias Alimentarias
Departamento de Medio Ambiente, Planificación Territorial, Agricultura y Pesca

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Name of contact person

Luis Javier TELLERÍA

Duration of project:

42 months (01.07.2012 - 31.12.2015)

Total budget in euro:

1,727,071.00

EC contribution in euro with %:

773,530.00 (48.53)

Theme: Industry-Production-Food & Beverages

- Operation of a pilot plant to extract biogas from lactose with a capacity of 1 500 litres/day;
- Collection and valorisation of more than 80% of whey generated in the area - equivalent to more than 18 million litres/yr of whey;
- Production and validation of 5 tonnes of animal feed and at least 100 kg (350 units) of food products;
- Generation of 6 400 m³ of biogas - a reduction of 56 000 kg of (CO₂ equivalent) emissions;
- Definition and agreement of a system for ongoing revalorisation of whey in the Basque Country; and
- Definition of the conditions and technology necessary for the implementation of the system in other regions.

The project will also contribute to enabling further legislation to restrict dumping of whey to water bodies and/or sewage.

Customised Advanced GIS Advisory Tools for the Sustainable Management of Extensive Crops

Project background

A major challenge for farmers and farm managers is to produce crops in a more efficient and sustainable way. Pressure on the land is increasing with the growing demand for food, but at the same time, key resources, notably water, are becoming increasingly scarce, and there are also important economic and environmental pressures to reduce the use of fertilisers.

An earlier project led by ITGA developed a simple tool that makes recommendations on farming techniques and practices in order to improve efficiency and sustainability. This tool was tested in Navarra and demonstrated improvements in the efficiency of extensive agriculture. However, its scope is limited as it only provides recommendations on irrigation and the use of mineral fertilisers, and it only covers two varieties of crops.

Project objectives

The 'sigAGROasesor' project aims to develop an online tool capable of displaying customised recommendations for extensive agriculture, in real time, and for specific areas of cultivation, on the basis of a series of detailed variables and values. It ultimately seeks to help farmers and farm managers achieve the most efficient and sustainable production of crops.

The project aims to further develop an existing decision-support tool for extensive agriculture to incorporate a wider range of variables and crop varieties. The tool will provide recommendations on the following issues: crop varieties; sowing techniques; fertilisation; irrigation; and risk of plagues, diseases and weeds.

The success of the tool will be demonstrated on some 600 plots of land in 10 different regions. To do this, data on different variables - climate, geo-referenced location, leaching, etc. - will be made available to the users, shown in layers. Maps obtained by using satellite remote-sensing acquired data will be developed and used in the project to demonstrate the capacity to harness all the available technical knowledge. Incorporating weather maps as an important variable in crop production will be a particular challenge.

Farmers will complete the dataset with specific information about their land, including the definition of management farming units. With this information, the programme will be able to make the required recommendations to achieve a better use of resources. Using four decision-making tools



Beneficiary:

Type of beneficiary

Public enterprise

Name of beneficiary

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Name of contact person

Alberto LAFARGA

Duration of project:

41 months (01.08.2012 - 31.12.2015)

Total budget in euro:

2,995,848.00

EC contribution in euro with %:

1,497,924.00 (50.00%)

Theme: Industry-Production-Agriculture - Fisheries

that will be developed within the project, the overall tool is expected to: provide reliable recommendations; deliver location-specific information and recommendations; facilitate a more sustainable use of resources; encourage replicability by using free software, which can be used elsewhere; and enable better information collection (traceability) in the agricultural sector.

Expected results

- An accessible online tool – Geoportal – for extensive agriculture, integrating: four decision-support systems; environmental indicators; a list of variables and procedures; a database of farmers and pilot plots; a database of soil analysis in all regions; and maps of the different project areas;
- A good practices guide;
- A user guide for the tool;
- A report on the evolution of different environmental indicators;
- Variety cards for each variety; and
- Better use of resources, especially water and fertilisers.

Development and demonstration of Best Practices to Design and Produce Sustainable Commercial Bags

Project background

In 2009, the EU produced 3 264 422 tonnes of plastic sacks and bags made from polymers, as much as 85% using ethylene. In Spain some 13.5 billion commercial plastic bags are made every year. Production of these bags has a high environmental impact – the main issues being the use of non-renewable materials, the emission of harmful volatile organic compounds (VOCs) and waste management of the bags after use.

The common production method is to use polymers derived from petroleum, especially high density polyethylene (HDPE). The subsequent printing process typically involves flexography or gravure technology, both of which require solvent-based inks and varnishes.

Project objectives

The 'ECOFLEXOBAG' project aims to reduce the negative environmental impact of commercial bags during their entire lifecycle. Its main objective is to develop and demonstrate an innovative methodology that will help manufacturers – particularly small and medium-sized enterprises (SMEs) – to design and produce environmentally sustainable bags.

Best practices for the design and production of bags will be identified and established, together with systems for monitoring these processes. These identified best practices will be adapted to an on-line tool that will allow bag manufacturers to implement them in the most effective way.

The project has the following specific objectives:

- To prevent or reduce current adverse environmental impacts from the production and management of plastic bag waste;
- To prevent or reduce the direct and indirect effects of VOCs being emitted into the environment during the manufacturing process;
- To increase the eco-innovation of SMEs in line with the principles of the Environmental Compliance Assistance Programme for SMEs (ECAP) whilst taking account of their competitiveness; and
- To help SMEs to comply with EU policy on sustainable consumption and production.

Expected results

The development of an innovative methodology for the design and production of sustainable commercial bags is expected to deliver:

LIFE11 ENV/ES/000646
ECOFLEXOBAG



Beneficiary:

Type of beneficiary

Professional organisation

Name of beneficiary

AIDO - Industrial Association of Optics, Colour and Imaging

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Name of contact person

David PÉREZ

Duration of project:

31 months (01.06.2012 - 31.12.2014)

Total budget in euro:

1,291,227.00

EC contribution in euro with %:

643,714.00 (49.85%)

Theme: Environmental management-Eco-products design / Services & Trade-Trade

- Environmental improvement in some 1 000 companies, currently responsible for producing a total of 850 000 tonnes/yr of plastic bags;
- Replacement of at least 50% of non-biodegradable bags for single use with reusable and/or biodegradable bags;
- Reduction of VOC emissions during the printing process to within legal requirements;
- Improvement of some 10% in five key performance indicators (KPIs): substrates consumption; ink and varnish consumption; number of printing forms; energy consumption; and water consumption; and
- Dissemination of the project's results to 25% of the commercial bag manufacturers in Europe.

NOise barriers with SUN energy production for district heating system

Project background

Exposure to noise is a considerable environmental problem in many parts of Europe. Although noise is not regarded as life-threatening in the same way as many other environmental problems, noise management is of increasing importance to human health and quality of life. More than two million people in Sweden are exposed to traffic noise exceeding 55 dB. The Swedish municipality of Lerum is divided by major transport thoroughfares for both road and rail traffic. In addition to tackling noise pollution, the municipality aims to invest in energy-saving and renewable energy technology in order to cut its emissions of greenhouse gases by 2050.

Project objectives

The main objective of the 'NOISUN' project is to demonstrate innovative noise barriers that produce solar energy for distribution to local district heating systems. This will be achieved by installing and evaluating specially adapted solar collectors at major road and rail thoroughfares in Lerum. Sub-objectives of the project include:

- Demonstrating an optimal design for noise barriers with solar heat production adapted to both road and rail environments;
- Demonstrating an optimal technical solution for connections to the district heating system and compatibility between solar energy provision and other energy sources in the energy system;
- Testing and demonstrating the technical solutions in a pilot-scale facility along a stretch of the main western railway line and the E20 motorway through Lerum;
- Measuring and optimising the contribution of solar energy production to the district heating system; and
- Evaluating the socio-economic effects of the facility based on noise reduction and solar energy contributions to the energy system.

Expected results

The project will lead to a number of primary quantitative environmental improvements. Based on one possible placement of a 400 m noise barrier, affecting some 250 properties, the results will be as follows:

Noise:

- A 5-10 dB reduction in noise levels, from 65 dBA to 60-55dBA (an 8-10 dB reduction is perceived as halving the noise level); and
- A 60-90% reduction in the number of citizens and properties experiencing sound levels above 55 dBA.

LIFE11 ENV/SE/000837
NOISUN



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

Municipality of Lerum

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Name of contact person

Henrik BENGTTSSON

Duration of project:

39 months (01.06.2012 - 31.08.2015)

Total budget in euro:

1,138,226.00

EC contribution in euro with %:

569,113.00 (50.00%)

Theme: Air & Noise-Noise / Climate change - Energy-Energy supply

Energy:

- Production of 400 000 kWh/yr of renewable energy;
- A saving of 440 m³/yr of woodchips;
- A saving of 20 000 kWh of electricity (required to produce woodchips);
- A saving of 200 tonnes of CO₂ emissions - some 130 tonnes of biomass (trees) can remain in the forest and thus bind CO₂; and
- A saving of additional CO₂ by reducing the need for forestry and transportation of biomass.

Socio-economic:

- A reduction in the costs associated with noise of SEK 630 000-945 000 per year; and
- As a result of reduced noise levels, an overall increase in the value of properties in the project area of 5%.

Solar thermal collectors with a ZERO electricity heat pump & energy storage for sustainable heating and cooling

Project background

Heating and cooling systems are responsible for an estimated 25% of global energy consumption, the equivalent of that used by transportation and industry. The demand for heating and cooling systems continues to grow in both developed and fast-growing economies.

Energy saving technology, which can be retrofitted at reasonable cost, is of particular value. The tenants of residential buildings and workers in office buildings should also be able to look forward to a better indoor environment once new technology is installed. Avoiding heat-overload during peak hours of the afternoon should lead to a reduction in the investment and running cost for air-conditioning. Additionally, society would not need to expand the electricity network to cope with extreme air-conditioning use during peak hours, resulting in less need for investment in power plants and the electricity distribution network.

SunCool is a device that works with an existing boiler or heat pump, combining renewable energy, energy efficiency and the reduction of CO₂ emissions. The technology, which can be fitted in existing buildings, has been in development since 2008 and is ready to be tested in a pilot installation.

Project objectives

The overall objective of the 'SUNCOOL' project is to demonstrate the beneficiary's patented solar thermal collectors with a zero electricity heat pump and energy storage for sustainable heating and cooling. Specific objectives are to:

- Demonstrate in a pilot installation the energy effectiveness of the solar collectors. A complete and fully functional SunCool installation will be made at the ICA's warehouse in Helsingborg, Sweden. The system will provide the building with air-conditioning, heating and possibly also hot water; and
- Present and disseminate the project results in Europe and other areas. The project intends to show the fully functioning solar collectors to potential customers, partners, stakeholders, target groups and others. Interested parties will be invited to the beneficiary's facilities in Stockholm and the demonstration installation in Helsingborg to observe the functionality of the SunCool system, as well as to receive information about the project.

LIFE11 ENV/SE/000838
SUNCOOL



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

ClimateWell AB

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Name of contact person

Per OLOFSSON

Duration of project:

33 months (01.06.2012 - 01.03.2015)

Total budget in euro:

3,653,371.00

EC contribution in euro with %:

1,826,685.00 (50.00%)

Theme: Climate change - Energy-Energy supply

Expected results

The SunCool installation is expected to lead to the following key environmental results (compared to state-of-the-art heating and cooling technology):

- A 90% reduction in CO₂ emissions (380 000 kg/yr);
- A 90% reduction in energy consumption (540 000 kWh/yr);
- A 50% reduction in investment cost (800 EUR/kW of thermal output), enabling solar cooling to be in every home;
- 500 000 kWh/yr of solar energy captured;
- 80 000 kWh/yr of air conditioning delivered; and
- 450 000 kWh/yr of heating and tap water delivered; and
- An improved temperature difference that also allows for cooling temperatures and heating in colder climates.

BLUe ConcEpt For A Low nutrient/ carbOn System – regional aqua resource management

Project background

An estimated 33% of European rivers and lakes show signs of eutrophication and a substantial proportion of Europe's freshwaters are at risk of not reaching "good environmental status" by 2015. Aquatic environments hold large volumes of biomass, such as mussels, algae and reed, which could be used for energy production, animal feed, chemicals, medicines and water purification. These resources also serve as cleaning natural agents, removing pesticides and heavy metals, help to prevent eutrophication, and store nutrients and CO₂. However, they are generally regarded as waste because of a lack of knowledge and strategies for appropriate resource management.

Project objectives

The 'BUCEFALOS' project's overall objective is to demonstrate a holistic approach to regional coordination for the sustainable resource management of aquatic biomass. The project will demonstrate innovative methodologies and technological applications for cultivating and harvesting mussels. It will also restore wetlands and establish algae cultivation sites with a view to cleaning freshwater and providing efficient yields of biomass for biogas.

Specific objectives of the project are to:

- Demonstrate methodologies, tools and stakeholder communication strategies for the regional coordination of the sustainable resource management of aquatic biomass;
- Demonstrate methods and techniques on a concrete business/action level that both contribute to the cleaning of water and air and also make profitable and sustainable use of aquatic biomass;
- Establish and demonstrate a full-scale mussel cultivation site in the Baltic Sea;
- Demonstrate vertical harvesting of mussels on submerged artificial constructions;
- Establish and demonstrate a number of wetlands and algae cultivation sites with the dual purpose of cleaning water and producing biomass for biogas;
- Establish and demonstrate a full-scale biogas plant for biogas production from aquatic biomass; and
- Assess and test a number of use areas and applications for aquatic biomass, including waste products.

Expected results

- A set of tools, models and strategies for the regional coordination of the sustainable resource management of aquatic biomass (GIS tool, reports);
- A full-scale mussel cultivation site in the Baltic Sea;

LIFE11 ENV/SE/000839
BUCEFALOS



Beneficiary:

Type of beneficiary

Regional authority

Name of beneficiary

Skåne Regional Council

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Name of contact person

Bo FRANSMAN

Duration of project:

36 months (01.09.2012 - 31.08.2015)

Total budget in euro:

3,268,622.00

EC contribution in euro with %:

1,634,311.00 (50.00%)

Theme: Water-Water resources protection

- A full-scale harvester for mussel cultivations around submerged artificial constructions;
- 2-5 full-scale wetlands for water remediation and biogas production;
- 2-5 full-scale algae farms for water remediation and biogas production; and
- A full-scale biogas plant for biogas production from aquatic biomass.

This will lead to the following quantified results:

- A 12.5-tonne reduction in phosphorus levels;
- A 155-tonne reduction in nitrogen levels;
- An 800-tonne reduction in CO₂ emissions as a result of biomass growth in the wetlands and algae cultivation sites;
- A 1 442-tonne reduction in CO₂ emissions from replacing fossil fuels with biogas; and
- It is forecast that the project's plant in Trelleborg will be able to generate 401 500 Nm³/yr of biogas and produce 2.71 Gwh/yr of renewable energy.

Baltic Sea Information on the Acoustic Soundscape

Project background

The Baltic Sea is one of the world's largest semi-enclosed bodies of brackish water. The special geographical, oceanographic and climatological characteristics of the Baltic ecosystem make it highly susceptible to the environmental impacts of human activities at sea and in its catchment area. During the past few decades, the level of human-introduced underwater noise has increased in the marine environment. In the Baltic Sea, the largest contributor to human-induced underwater noise is commercial shipping and the number of ships is set to double by 2030. The size of the ships is also expected to increase, potentially increasing the noise levels. The European wind energy sector is also experiencing strong growth and the construction of renewable energy sources has a considerable impact on the local marine ecosystem.

Project objectives

The overall goal of the 'BIAS' project is to ensure that underwater noise is at levels that do not adversely affect the marine environment of the Baltic Sea.

Specific objectives of the project are:

- To establish and implement standards and tools for the management of underwater noise, in accordance with the Maritime Strategy Framework Directive (MSFD), in the marine region of the Baltic Sea;
- To demonstrate the national and regional advantages of a transnational approach to the management of underwater noise in accordance with the MSFD;
- To produce soundscape maps showing the underwater noise generated by commercial vessels. These maps will serve as the initial assessment for the MSFD, as the most central input to the GIS-based planning tool that will be implemented, and as the baseline for future monitoring programmes, in accordance with the MSFD;
- To implement a user-friendly planning tool designed for a straightforward management of human-induced underwater noise. The tool will be GIS-based and consist of the soundscape maps showing the initial assessment of underwater noise, and simplified calculations for the management of intermittent sound sources (e.g. piling and underwater explosions);
- To establish standards for recording, handling and processing data on underwater noise in accordance with the MSFD; and
- To establish standards for hardware specifications and the handling of sensors and data, and a data-sharing platform.

LIFE11 ENV/SE/000841
BIAS



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

Swedish Defence Research Agency

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Name of contact person

Peter SIGRAY

Duration of project:

48 months (01.09.2012 - 31.08.2016)

Total budget in euro:

4,451,138.00

EC contribution in euro with %:

2,215,567.00 (49.78%)

Theme: Air & Noise-Noise / Habitats-Marine

Expected results

- A basis for standardised and appropriate management of underwater noise in all EU Member States bordering the Baltic Sea;
- A plan for cost-efficient and regionally coordinated management of underwater noise in the Baltic Sea;
- GIS layers that will serve as a basis for future management decisions on human activities generating underwater noise, and for the future evaluation of indicators of the environmental status of the Baltic Sea;
- The BIAS tool to have been demonstrated to all other EU Member States bordering the Baltic Sea;
- Publicly available state-of-the-art, regionally adapted standards for recording, handling and processing data on underwater noise in the Baltic Sea; and
- A publicly available data-sharing platform containing standardised and quality assured data on Baltic underwater noise.

RenewPACK: Demonstration of an Innovative Renewable Barrier Material for Sustainable Food Packaging

Project background

The EU food packaging industry uses some 247 000 tonnes/yr of thin aluminium foil. When used in multilayer constructions, such as food trays, this material is very difficult to separate and recycle.

Food packaging can also have a negative environmental impact through the use of high-barrier plastics, such as EVOH (ethylene vinyl alcohol copolymer) and PVdC (a synthetic plastic containing chlorine). Some 120 000 tonnes/yr of these materials are produced in the EU, generating 132 000 tonnes of CO₂ emissions if the material is recovered by incineration. PVdC can, moreover, give rise to emissions of the highly toxic substance, dioxin, when incinerated.

Project objectives

The main objective of the 'RenewPACK' project is to demonstrate the suitability of a new patented material, 'Xylophane', as a barrier material in food packaging. Xylophane is based on xylan, which is a natural polysaccharide derived from agricultural by-products (grain husks) and is, therefore, renewable and biodegradable. Specific aims of the project are:

- To demonstrate the production process of xylan, which involves a highly innovative process step – membrane filtration; and
- To demonstrate the many possible recycling options for Xylophane and its advantages over existing materials – i.e. incineration, composting and ability to be re-pulped.

The project envisages the construction of a prototype pilot plant that will serve as a model for future full-scale plants in Europe.

Since the technology and production process could be licensed to target groups within the agricultural sector and the paper chemical industry, if the proposed project is successful, it would also allow local agricultural communities to diversify their income streams.

Expected results

The main result will be the demonstration of how non-renewable and very energy intensive packaging materials can be substituted with a new, highly innovative and patented material that is renewable and biodegradable.

LIFE11 ENV/SE/000842
RenewPACK



Beneficiary:

Type of beneficiary

Small and medium-sized enterprise

Name of beneficiary

Xylophane AB

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Name of contact person

Lisa BINDGÅRD

Duration of project:

49 months (01.06.2012 - 30.06.2016)

Total budget in euro:

3,346,674.00

EC contribution in euro with %:

1,673,337.00 (50.00%)

Theme: Industry-Production-Food & Beverages

The project will have the following quantitative results:

- Energy savings: 80-90% reduction in energy consumption for the production of Xylophane in comparison with aluminium foil, which correlates to 52-84 GWh for the pilot plant;
- Reduction of CO₂ emissions: A 100% reduction of fossil fuel consumption in comparison with EVOH will reduce the emission of new CO₂ by 100%. This correlates to 400-1 000 tonnes of fossil fuels and 1 200-3 300 tonnes of CO₂ respectively for the pilot plant. The project has the potential to actually be CO₂ negative given that the raw material is biodegradable and the waste produced will be transformed into biogas;
- Reduction of toxic material: 100% reduction in dioxin emissions in comparison with PvdC; and
- The world's first production of xylan on a large scale: 12-15 tonnes per week of xylan will be produced.

Cost-Effective Nitrogen REmoval from waste water by Low-Temperature Anammox

Project background

Eutrophication is a major issue throughout the European Union. It is caused by high loads of nutrients, mainly phosphate and nitrogen, being discharged in to waterways. Eutrophication results in a reduction in biodiversity, and a decline in the ecological quality of surface waters. Furthermore, it can lead to blooms of toxic algae.

Over the years, the phosphate load in EU surface waters has decreased, but nitrogen concentrations remain high. Nitrogen mainly derives from agricultural sources, but is also present in the effluent from wastewater treatment plants. Current nitrogen removal technologies are characterised by high costs and unfavourable environmental footprints. They require energy-intensive aeration and are space intensive. The development and implementation of cost-effective measures to improve the ecological quality of surface waters is central to EU and national policies.

Project objectives

CENIRELTA (Cost-Effective Nitrogen REmoval from wastewater by Low-Temperature Anammox) is an effective nitrogen-removal technique, with low investment costs and the possibility of generating revenue. The technique is based on anaerobic treatment of wastewater with anammox (ANAerobic AMMonium OXidation) bacteria. The anammox process is proven at elevated temperatures (30-35°C) and high nitrogen loads. CENIRELTA, however, has refined the technique so that it works at low temperatures and low nitrogen concentrations in wastewater. First estimates indicate that more than 1 000 wastewater treatment plants in the EU could benefit from implementation of the technique. Additional gains are possible at sites where treatment is not yet implemented, particularly in southern and eastern EU countries. The 'CENIRELTA' project will demonstrate the technology through a pilot installation on a scale large enough to extrapolate to full scale. The pilot site will be WSHD's Dokhaven wastewater treatment plant.

The project will:

- Provide sound evidence of the effectiveness of CENIRELTA, through monitoring and economic analysis;
- Combine all relevant process control information into a steering model, facilitating rapid implementation at full scale; and
- Disseminate the results of the demonstration project to stakeholders in the EU.

LIFE11 ENV/NL/000785
CENIRELTA



Beneficiary:

Type of beneficiary

Public enterprise

Name of beneficiary

Waterschap Hollandse Delta

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Olaf DUIN

Duration of project:

42 months (01.07.2012 - 31.12.2015)

Total budget in euro:

2,478,548.00

EC contribution in euro with %:

1,239,274.00 (50.00%)

Theme: Water-Waste water treatment

Expected results

This pilot project will demonstrate that CENIRELTA is more effective, cost-effective and sustainable than other methods for nitrogen removal in wastewater treatment plants. The technique will offer:

- Removal efficiency above 85%;
- Energy use reductions of 50-60%; and
- Sludge yield increases of at least 20%, enhancing biogas production.

The project will also provide evidence of the attractiveness of the technique for full-scale application, including a process-control model, which will facilitate rapid implementation.

Hydrochip

Project background

Surface water quality has been deteriorating in recent decades, as a result of the emission of chemical compounds, physical alterations, and the presence of harmful organisms, such as cyanobacteria. With climate change, the latter is becoming an increasingly serious health risk and is causing significant economic damage.

The Water Framework Directive (WFD) sets out to improve the chemical and ecological quality of European surface waters by the end of 2015. Since no absolute standards can be set, because of the great ecological variety of surface water across the EU, national metric standards have been developed for a number of ecological quality parameters. Two of these parameters for ecological quality are the presence and the species variety of phytobenthos (microscopic plant life on the bottom of the surface water) and phytoplankton (microscopic plant life in the surface water).

The composition of the phytobenthos and phytoplankton is currently measured by analysing water samples underneath a microscope. This technique is very laborious, time consuming, prone to errors and bias, and is not absolutely quantitative. As a result, these ecological parameters, though prevailing over chemical parameters, are only measured on a very limited basis, preventing rapid detection of, and subsequent action to address changes in water quality.

Project objectives

The project aims to demonstrate a new measuring device called Hydrochip, which will facilitate monitoring of the implementation of the WFD with regard to the ecological parameters; phytobenthos and phytoplankton, in an innovative way.

The main objectives of the project are to:

- Demonstrate that Hydrochip can be used to reliably, quantitatively and efficiently determine ecological water quality in a high throughput fashion, by using molecular biomarkers to determine phytobenthos (diatoms) and phytoplankton (cyanobacteria);
- Demonstrate that Hydrochip is a good alternative to the standard techniques currently employed to determine phytobenthos and phytoplankton in surface water samples;
- Demonstrate and validate that Hydrochip can be easily adapted to determine ecological quality param-

LIFE11 ENV/NL/000788

Hydrochip



Beneficiary:

Type of beneficiary

Research institution

Name of beneficiary

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Name of contact person

Marco JASPERS

Duration of project:

49 months (01.06.2012 - 30.06.2016)

Total budget in euro:

1,428,835.00

EC contribution in euro with %:

713,988.00 (49.97%)

Theme: Water-Water quality improvement

ters in other European surface waters with a different ecological make up;

- Disseminate the project results to target groups using a comprehensive networking approach.

Expected results

The project will:

- Demonstrate that Hydrochip can reliably determine ecological water quality parameters in the Netherlands, to the same or to a wider extent than the standard method, and in a cost-effective way;
- Produce results that are readily adaptable to other European surface waters with a different ecological make up; and
- Contribute to new national and European policies on metric standards for ecological water quality parameters.

Boosting Electromobility

Amsterdam - Rotterdam - Utrecht

Project background

Three cities of the 'Randstad' region of the Netherlands – Amsterdam, Rotterdam and Utrecht – are working to increase the use of electric transport. They have joined forces for the roll out of a large-scale, interoperable network of charging points in the metropolitan area, and will also introduce measures to facilitate the purchase of electric cars.

Project objectives

The aim of the 'E-mobility 3 cities NL' project is to contribute to the roll out of a number of fast-charging points for electric vehicles in order to gather user information and practical experience. This experience will be shared with private enterprises in order to make the business case viable.

A fast-charging point can charge the battery of an electric car in half an hour. This demonstration project will install a number of fast-charging points in the three cities, targeted at frequent urban drivers (such as taxicab and delivery van drivers, as well as travelling business people), for whom fast charging is a necessity. The specific objectives of the project are:

- To boost electric transport in Amsterdam, Rotterdam and Utrecht by setting up an adequate charging infrastructure;
- To stimulate the geographic spread of charging infrastructure in the Randstad, in order to boost electric transport between cities; and
- To stimulate cooperation between the three cities in order to implement a regional, uniform network of charging infrastructure and to share information and knowledge on electric transport.

The project is a crucial step towards establishing a full coverage municipal and regional charging infrastructure for electric transport, which consists of regular and fast-charging points. The project will demonstrate the functioning of different types of charging points in various circumstances. It aims to prove that by rolling out sufficient charging infrastructure the use of electric transport will increase. In addition, the project will collect data which provides necessary information for the implementation of a large-scale fast-charging infrastructure, such as location conditions, user-friendliness, reliability and customer needs.

LIFE11 ENV/NL/000793
E-mobility 3 cities NL



Beneficiary:

Type of beneficiary

Local authority

Name of beneficiary

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Name of contact person

Maarten VAN CASTEREN

Duration of project:

43 months (01.06.2012 - 31.12.2015)

Total budget in euro:

1,473,133.00

EC contribution in euro with %:

733,178.00 (49.77%)

Theme: Land-use & Planning-Transport planning - Traffic monitoring

Expected results

- Twelve (semi) public fast-charging points, mainly for taxis and delivery vehicles;
- Twenty-four (semi) public regular charging points, mainly for taxis and delivery vehicles;
- Three well-functioning platforms of stakeholders that will meet 12 times during the project and contribute to its implementation. The platforms will set the basis for increasing electric transport in Amsterdam, Rotterdam and Utrecht;
- A communication and PR campaign that informs at least 80% of the car owners and companies in the three cities about the targets for the transition to electric transport and charging possibilities; and
- A direct contribution to reducing traffic CO₂ emissions and particulate matter (PM10) and a huge potential impact on emission levels of these air pollutants.

Urban Participation and Focus on Reusing Waste and Recycling Development of Communications

Project background

In moving towards a European society based on the principles of waste prevention, re-use and recycling, a two-pronged approach is required. The first is to provide EU citizens with the services, infrastructure, products and knowledge that will enable them to act. The second is to engage EU citizens to make changes to their lifestyles that will reduce consumption, and to encourage them to sort waste for reuse and recycling. To achieve these goals, the public, governments and business must all play their part, which will only happen if the demand is driven by the general public. Therefore, public participation is key to both implementing and driving forward the principles of the waste hierarchy.

Public participation varies greatly on a geographical basis, with higher levels of recycling and waste prevention in some areas than in others. There are huge variations in recycling levels across Europe and large variations within countries. In the UK, areas characterised by high-to-middle income and low-density housing are currently achieving high levels of recycling (up to 70%), whereas densely populated urban areas are achieving much lower levels, often less than one-third of the levels achieved by their suburban counterparts.

Approximately 50% of the EU27 population lives in densely populated areas (Eurostat, 2010), so engaging with these citizens is vital to the implementation of the principles of the waste hierarchy.

Project objectives

The project will demonstrate how waste policy can be more effectively implemented by municipalities by changing behaviour using targeted communications in specific low-performing areas identified by waste collection data and local demographic statistics. The project will help the EU understand how to evaluate, monitor and develop policies that can only be delivered by active engagement with the public.

Specifically, the project will demonstrate the innovative use of communications media and processes to increase participation in waste prevention and recycling in deprived urban areas, in communities with a high proportion of youth, transient and student residents, and in communities with a high proportion of people from different cultures. The project will also target communications at individuals living in apartment blocks, and will develop employment and education opportunities. Com-

LIFE11 ENV/UK/000389
UP&FORWARD COMS



Beneficiary:

Type of beneficiary

Public enterprise

Name of beneficiary

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Peter DAVIES

Duration of project:

31 months (01.06.2012 - 18.12.2014)

Total budget in euro:

1,370,464.00

EC contribution in euro with %:

685,232.00 (50.00%)

Theme: Information-Communication-Awareness raising – Information / Waste-Municipal waste (including household & commercial)

communications campaigns will be targeted at some 66 000 households in the Greater Manchester area.

Expected results

- The project will demonstrate a model process for waste-related engagement in low-performing urban areas. This will lead to increased participation, with the aim being to at least halve the gap between the waste management performance of low and high performing areas;
- The project will demonstrate that positive changes in attitudes can be achieved, and practices in relation to waste prevention and recycling behaviour can be changed. This will be done by demonstrating the use of various communications media: phone applications, software, computer games and broadcasts; and
- The project will provide opportunities for young people to gain employment and training in community engagement and the media.

Celtic Seas Partnership (CSP) – stakeholder driven integrated management of the Celtic Seas Marine Region

Project background

The European Atlas of the Seas describes the Celtic Seas Marine Region (CSMR) as a very windy stretch of water that has long been a busy shipping area, with intensive fishing activity – small-scale in the south and deep-sea fishing in the north. Over the past 20 years, aquaculture has taken off more strongly and diversified more than in other marine regions. In coastal areas, there is an active and varied tourist industry. The Celtic Seas have a wide range of marine habitats, supporting a diversity of marine wildlife. In addition, the CSMR supports some of the major migratory fish stocks of the north-east Atlantic, including Atlantic mackerel, blue whiting and sea bass.

This northern part of the north-east Atlantic region has a strong maritime heritage and wide range of maritime users (e.g. transport, cabling, aggregates, offshore wind). As pressures increase for use of the marine space and natural resources, there is a need for better coordination and communication between users and the relevant governing bodies.

Project objectives

The 'CSP' project will support the implementation of EU environmental and maritime policy, using a stakeholder-led approach, to contribute to the development of marine strategies, particularly under the Marine Strategy Framework Directive (MSFD), for the achievement of good environmental status of marine waters.

The project will develop appropriate stakeholder engagement mechanisms and build stakeholders' capacities to enable them to support delivery of integrated management, to reduce conflicts between coastal and marine-resource users, and to enhance the environmental, economic and social sustainability of the CSMR. To build this engagement, the project will hold three Celtic Seas Conferences.

The project will:

- Test and evaluate best practice approaches to conflict resolution and co-location of activities in the marine environment;
- Develop transboundary governance structures;
- Use Integrated Coastal Zone Management (ICZM) principles to support the implementation of the MSFD; and
- Develop sectoral action plans to aid practical implementation of ecosystems-based management.

LIFE11 ENV/UK/000392
CSP



Beneficiary:

Type of beneficiary

NGO-Foundation

Name of beneficiary

WWF UK

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Name of contact person

Janet MILLER

Duration of project:

48 months (01.10.2012 - 30.09.2016)

Total budget in euro:

3,947,093.00

EC contribution in euro with %:

1,973,546.00 (50.00%)

Theme: Environmental management-Integrated management / Habitats-Marine

Expected results

The project expects to deliver the following results by 2016:

- CSMR stakeholders will be familiar with the requirements of the MSFD and will be willing to cooperate and coordinate activities;
- Transboundary governance approaches led by stakeholders will demonstrate effective use of the ecosystems approach for cross-border marine management;
- Good practice approaches will have been developed and applied in the relevant sectors to mobilise capacity to support sustainable management of the CSMR; and
- Techniques and methods will have been developed to help monitor good environmental status in the marine region.

Assessing, Capturing & Utilising Methane from Expired and Non-operational landfill

Project background

Methane (CH₄) is a potent greenhouse gas with 21 times the global warming potential of carbon dioxide (CO₂). At a global level, the methane in landfill gas contributes to climate change. The UK and the European Union in general has a huge legacy of closed landfill sites. Many of these are derelict or under-used. They represent a significant liability because of their potential to be sources of migrating toxic contaminants and landfill gas. There are approximately 20 000 closed landfill sites in the UK. A recent trial conducted by the Environment Agency indicated accessible whole-site landfill methane volumes of around 100-150 m³/hr.

Using methane from closed landfill sites to generate energy presents an alternative to non-renewable fossil fuels. In addition to reducing emissions and the environmental impact of drilling and mining fossil fuels, use of methane from landfills will contribute to a green economy and increase the capacity and appetite for further innovations in micro-generation from landfill gas and biogas more generally.

Project objectives

The 'ACUMEN' project will demonstrate how methane from expired and non-operational (closed) landfill sites can be captured. Economic and technical uncertainties have so far hampered the wide take-up of new technologies to manage methane emissions from closed landfill sites.

'ACUMEN' will show how these can be overcome through a combination of innovative technologies and techniques, and will establish the technical and economic viability of capturing, using and mitigating methane from closed landfill sites.

The project expects to contribute to a significant reduction in the 12.9 million tonnes/yr of CO₂ equivalent emitted from closed landfill sites in the UK. The project will demonstrate how this approach can be easily transferred to other countries in Europe that have to overcome similar barriers to capturing methane from old landfill sites.

The project will also identify and map the stakeholder audience for communication of the project and its outcomes, and recruit a smaller group of participants who will actively contribute to the project implementation.

Expected results

The project will select at least 10 landfill sites, based on site selection criterion that include critical factors and

LIFE11 ENV/UK/000402
ACUMEN



Beneficiary:

Type of beneficiary

Regional authority

Name of beneficiary

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Name of contact person

Neil DAVIES

Duration of project:

36 months (04.06.2012 - 29.05.2015) v

Total budget in euro:

2,873,852.00

EC contribution in euro with %:

1,436,926.00 (50.00%)

Theme: Climate change - Energy-Reduction of greenhouse gases emissions

most favourable circumstances for deploying a particular technology at a site, such as site size, location, known or expected landfill gas potential and access to the power grid. The methane from the selected sites will be used or mitigated, and the approach to achieve this will be explained in guidance documents. The project will demonstrate a methodology for mitigation and utilisation technologies on at least two sites where gas volume and quantity has been assessed as suitable.

The project will also produce a good-practice guide and accompanying technical information on assessment of methane generation through to mitigation and use, and a cost-benefit analysis including assessment, mitigation and use of methane from closed landfill sites. Data and information from the LIFE+ project will be considered in the next review by the UK Government of the Greenhouse Gas Inventory. Results will be disseminated to relevant organisations and individuals.

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