

EPA-Funded Research: Land Use, Soil and Transport

Reports from completed projects are available on the EPA website at www.epa.ie/downloads/pubs/research/land/

During the ERTDI Programme 2000-2006, 34 research projects were funded in the area of Land Use, Soil and Transport, comprising of:

5 Capability Development projects

8 Doctorate projects

3 Desk Studies

3 Fellowship projects

5 Large-scale studies

6 Medium-scale studies

4 Small-scale studies

34 Total projects

34 EPA (2000 – 2006) Projects indexed by

[Year and Content](#)

[Lead Organisation](#)

[Project Leader](#)

Year and Content:

2000-DS-1-M2	<u>Environmental Impacts and Parameters for Inclusion in the Economic Evaluation of Roads</u>
2000-LS-2.1.6-M2	<u>Eutrophication from Agricultural Sources (Phosphorus and Nitrogen) - Environmental Soil P Test</u>
2000-LS-3.2.4-M2	<u>Forest Operations - Quantification and Management of Erosion and Siltation</u>
2000-LS-4.3-M1	<u>Priority Environmental Research to Meet the Needs of the National Spatial Strategy - Methodologies for the Estimation of Sustainable Settlement Size</u>
2000-LS-4.4-M1	<u>Priority Environmental Research to Meet the Needs of the National Spatial Strategy - Preliminary Study of the Needs Associated with A National Ecological Network</u>
2000-MS-11-M1	<u>Environmental Management in the Extractive Industry</u>
2001-CD/S1-M2	<u>Acquisition of Essential Data for Assessments of Carbon Sequestration by Soils</u>
2001-CD/S2-M2	<u>Towards A National Soils Database</u>
2001-MS/LU1-M2	<u>Sustainability and Future Settlement Plans in Ireland</u>

EPA-Funded Research: Land Use, Soil and Transport

- 2001-PHD-2-M1 [Regulation and Assessment of N-Mineralisation in Grassland Soil](#)
- 2001-EEP-MS1-M2 [Policy Conflicts in Relation to Environment and Other Areas](#)
- 2001-RT-CD-1-M2 [Environmental Transport Interface \(ETI\) Capability Development Project](#)
- 2003-RE-DS1-M2 [Foresight Study on the Rural Environment in Ireland in 2025](#)
- 2004-CD-P1-M2 [A Protocol for Sustainable Peatland Management](#)
- 2004-SEA-FS-19 [The Development of Environmental Indicators and Other Methods for the Provision of Information As Required Under the EU Strategic Environmental Assessment Directive](#)
- 2005-CD-U1-M1 [Decision-Support Tools for Managing Urban Environment in Ireland](#)
- 2005-FS-28-M1 [Development of the Nematode *Steinernema Feltiae* As A Bio-Indicator for Soil Pollution](#)
- 2005-FS-32-M1 [Evaluation of Models \(PaSim, RothC, CENTURY, DNDC\) for Simulation of Grassland Carbon Cycling At Plot, Field and Regional Scale](#)
- 2005-PHD5-GIS-5 [Spatial Modelling of Sustainability Indicators and Policy Implications for Sustainable Development across Three Regions of Ireland](#)
- 2005-PHD5-S-4 [Quantifying Dissolved Carbon Losses from Soils: Effects of Land Use and Management Practices](#)
- 2005-S-DS-22-M1 [Digital Soil Information System for Ireland – Scoping Study](#)
- 2005-S-LS-8-M1 [Baseline Data, Response to Pressures, Functions and Conservation of Keystone Micro- and Macro-Organisms in Irish Soils Acronym: CréBeo](#)
- 2005-S-MS-26-M1 [Measurement and Modelling of Soil Carbon Stocks and Stock Changes in Irish Soils](#)
- 2005-SS-33-M1 [Critical Loads and Dynamic Modelling \(Target Loads\) for Ireland](#)
- 2005-UE-MS-44-M1 [Innovative Data Capture and Presentation Techniques in Support of the EU Environmental Noise Directive](#)
- 2006-PHD-S-21 [Assessing the Impact that Plant Species may have on the Diversity and Activity of Phosphate-Solubilising Soil Microbes](#)
- 2006-PHD-S-22 [Hierarchy for Land as a Receptor of Organic Wastes](#)

EPA-Funded Research: Land Use, Soil and Transport

- 2006-PHD-S-23 [*Molecular Studies of 13C and 15N Isotopically Enriched Soil Microbial Biomass; Influence on Carbon Cycling and Agriculture.*](#)
- 2006-PHD-S-24 [*Active Microwave Remote Sensing of Soil Moisture*](#)
- 2006-PHD-S-25 [*Identification of an Appropriate Legislative Regime for the Remediation of Contaminated Land in Ireland*](#)
- 2006-SS-54 [*A Literature Review on the Availability of Nitrate from Compost in Relation to the Nitrate Regulations SI 378 of 2006*](#)
- 2006-SS-56 [*A Literature Review on the Availability of Phosphate from Compost in Relation to the Nitrate Regulations SI 378 of 2006*](#)
- 2006-SS-P-53 [*The Potential for A Sustainable, Renewable and Eco Friendly Resource Using High Grade Reclaimed Virgin Wood Dust*](#)
- 2006-UE-MS-48 [*Pilot Programme for Establishing a Regional Eco-Business Recognition Mark*](#)

[*Back to EPA-Funded Research: Land, Soil Use and Transport*](#)

Lead Organisation:

Barnett & Associates, John

2000-MS-11-M1 [Environmental Management in the Extractive Industry](#)

Clean Technology Centre

2006-UE-MS-48 [Pilot Programme for Establishing A Regional Eco-Business Recognition Mark](#)

Compass Infomatics Ltd

2000-LS-4.4-M1 [Priority Environmental Research to Meet the Needs of the National Spatial Strategy - Preliminary Study of the Needs Associated with A National Ecological Network](#)

2005-UE-MS-44-M1 [Innovative Data Capture and Presentation Techniques in Support of the EU Environmental Noise Directive](#)

Cré - Composting Association of Ireland Teoranta

2006-SS-54 [A Literature Review on the Availability of Nitrate from Compost in Relation to the Nitrate Regulations SI 378 of 2006](#)

2006-SS-56 [A Literature Review on the Availability of Phosphate from Compost in Relation to the Nitrate Regulations SI 378 of 2006](#)

Dublin City University

2006-PHD-S-23 [Molecular Studies of ¹³C and ¹⁵N Isotopically Enriched Soil Microbial Biomass: Influence on Carbon Cycling and Agriculture.](#)

Earth-Wood

2006-SS-P-53 [The Potential for a Sustainable, Renewable and Eco Friendly Resource using High Grade Reclaimed Virgin Wood Dust](#)

EFTEC

2000-DS-1-M2 [Environmental Impacts and Parameters for Inclusion in the Economic Evaluation of Roads](#)

Institute of Technology Carlow

2005-FS-28-M1 [Development of the Nematode *Steinernema Feltiae* as a Bio-Indicator for Soil Pollution](#)

NUI Galway

2000-LS-3.2.4-M2 [Forest Operations - Quantification and Management of Erosion and Siltation](#)

Teagasc

2000-LS-2.1.6-M2 [Eutrophication from Agricultural Sources \(Phosphorus and Nitrogen\) - Environmental Soil P Test](#)

2001-CD/S2-M2 [Towards A National Soils Database](#)

2005-S-DS-22-M1 [Digital Soil Information System for Ireland – Scoping Study](#)

Trent University

2005-SS-33-M1 [Critical Loads and Dynamic Modelling \(Target Loads\) for Ireland](#)

Trinity College Dublin

2001-RT-CD-1-M2 [Environmental Transport Interface \(ETI\) Capability Development Project](#)

2004-SEA-FS-19 [The Development of Environmental Indicators and Other Methods for the Provision of Information As Required Under the EU Strategic Environmental Assessment Directive](#)

University College Cork

2001-EEP-MS1-M2 [Policy Conflicts in Relation to Environment and Other Areas](#)

2005-FS-32-M1 [Evaluation of Models \(PaSim, RothC, CENTURY, DNDC\) for Simulation of Grassland Carbon Cycling At Plot, Field and Regional Scale](#)

2005-S-MS-26-M1 [Measurement and Modelling of Soil Carbon Stocks and Stock Changes in Irish Soils](#)

2006-PHD-S-21 [Assessing the Impact that Plant Species may have on the Diversity and Activity of Phosphate-Solubilising Soil Microbes](#)

2006-PHD-S-24 [Active Microwave Remote Sensing of Soil Moisture](#)

2006-PHD-S-25 [Identification of an Appropriate Legislative Regime for the Remediation of Contaminated Land in Ireland](#)

University College Dublin

2003-RE-DS1-M2 [Foresight Study on the Rural Environment in Ireland in 2025](#)

2004-CD-P1-M2 [A Protocol for Sustainable Peatland Management](#)

University College Dublin (continued)

- 2005-CD-U1-M1 [Decision-Support Tools for Managing Urban Environment in Ireland](#)
- 2005-PHD5-S-4 [Quantifying Dissolved Carbon Losses from Soils: Effects of Land Use and Management Practices](#)
- 2005-S-LS-8-M1 [Baseline Data, Response to Pressures, Functions and Conservation of Keystone Micro- and Macro-Organisms in Irish Soils Acronym: CréBeo](#)
- 2006-PHD-S-22 [Hierarchy for Land As A Receptor of Organic Wastes](#)

University of Limerick

- 2000-LS-4.3-M1 [Priority Environmental Research to Meet the Needs of the National Spatial Strategy - Methodologies for the Estimation of Sustainable Settlement Size](#)
- 2001-CD/S1-M2 [Acquisition of Essential Data for Assessments of Carbon Sequestration by Soils](#)
- 2001-MS/LU1-M2 [Sustainability and Future Settlement Plans in Ireland](#)
- 2001-PHD-2-M1 [Regulation and Assessment of N-Mineralisation in Grassland Soil](#)
- 2005-PHD5-GIS-5 [Spatial Modelling of Sustainability Indicators and Policy Implications for Sustainable Development Across Three Regions of Ireland](#)

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

Project Leader:

Aherne, Dr Julian

2005-SS-33-M1 [Critical Loads and Dynamic Modelling \(Target Loads\) for Ireland](#)

Boyle, Mr Stephen Gerard

2005-FS-28-M1 [Development of the Nematode *Steinernema Feltiae* As A Bio-Indicator for Soil Pollution](#)

Byrne, Mr Kenneth Adrian

2005-FS-32-M1 [Evaluation of Models \(PaSim, RothC, CENTURY, DNDC\) for Simulation of Grassland Carbon Cycling At Plot, Field and Regional Scale](#)

Carton, Dr Owen

2000-LS-2.1.6-M2 [Eutrophication from Agricultural Sources \(Phosphorus and Nitrogen\) - Environmental Soil P Test](#)

Convery, Prof. Frank J.

2005-CD-U1-M1 [Decision-Support Tools for Managing Urban Environment in Ireland](#)

Curry, Prof. James

2004-CD-P1-M2 [A Protocol for Sustainable Peatland Management](#)

Daly, Dr Karen

2005-S-DS-22-M1 [Digital Soil Information System for Ireland – Scoping Study](#)

Duffy, Mr Noel

2006-UE-MS-48 [Pilot Programme for Establishing A Regional Eco-Business Recognition Mark](#)

Fay, Dr Deirdre

2001-CD/S2-M2 [Towards A National Soils Database](#)

Fitzpatrick, Mr Brian

2006-SS-P-53 [The Potential for A Sustainable, Renewable and Eco Friendly Resource Using High Grade Reclaimed Virgin Wood Dust](#)

Foster, Mr Percy

2006-SS-54

[A Literature Review on the Availability of Nitrate from Compost in Relation to the Nitrate Regulations SI 378 of 2006](#)

2006-SS-56

[A Literature Review on the Availability of Phosphate from Compost in Relation to the Nitrate Regulations SI 378 of 2006](#)

Hayes, Prof. Michael

2001-CD/S1-M2

[Acquisition of Essential Data for Assessments of Carbon Sequestration by Soils](#)

Jones, Prof. Mike

2004-SEA-FS-19

[The Development of Environmental Indicators and Other Methods for the Provision of Information as Required Under the EU Strategic Environmental Assessment Directive](#)

Kelleher, Dr Brian

2006-PHD-S-23

[Molecular Studies of ¹³C and ¹⁵N Isotopically Enriched Soil Microbial Biomass; Influence on Carbon Cycling and Agriculture.](#)

Kiely, Prof. Gerard

2005-S-MS-26-M1

[Measurement and Modelling of Soil Carbon Stocks and Stock Changes in Irish Soils](#)

Leonard, Dr Cecily

2001-PHD-2-M1

[Regulation and Assessment of N-Mineralisation in Grassland Soil](#)

Magette, Dr William L.

2006-PHD-S-22

[Hierarchy for Land As A Receptor of Organic Wastes](#)

Mannion, Prof. Joseph

2003-RE-DS1-M2

[Foresight Study on the Rural Environment in Ireland in 2025](#)

McIntyre, Dr Owen

2006-PHD-S-25

[Identification of an Appropriate Legislative Regime for the Remediation of Contaminated Land in Ireland](#)

Moles, Mr Richard

2000-LS-4.3-M1

[Priority Environmental Research to Meet the Needs of the National Spatial Strategy - Methodologies for the Estimation of Sustainable Settlement Size](#)

Ó Gallachóir, Dr Brian

2001-EEP-MS1-M2 [Policy Conflicts in Relation to Environment and Other Areas](#)

O'Gara, Prof. Fergal

2006-PHD-S-21 [Assessing the Impact that Plant Species may have on the Diversity and Activity of Phosphate-Solubilising Soil Microbes](#)

O'Mahony, Dr Margaret

2001-RT-CD-1-M2 [Environmental Transport Interface \(ETI\) Capability Development Project](#)

O'Regan, Dr Bernadette

2001-MS/LU1-M2 [Sustainability and Future Settlement Plans in Ireland](#)

2005-PHD5-GIS-5 [Spatial Modelling of Sustainability Indicators and Policy Implications for Sustainable Development Across Three Regions of Ireland](#)

Ó Ríain, Mr Gearóid

2000-LS-4.4-M1 [Priority Environmental Research to Meet the Needs of the National Spatial Strategy - Preliminary Study of the Needs Associated with A National Ecological Network](#)

2005-UE-MS-44-M1 [Innovative Data Capture and Presentation Techniques in Support of the EU Environmental Noise Directive](#)

Osborne, Prof. Bruce

2005-PHD5-S-4 [Quantifying Dissolved Carbon Losses from Soils: Effects of Land Use and Management Practices](#)

Ozdemiroglu, Ms Ece

2000-DS-1-M2 [Environmental Impacts and Parameters for Inclusion in the Economic Evaluation of Roads](#)

Paul, Mr Tim

2000-MS-11-M1 [Environmental Management in the Extractive Industry](#)

Rodgers, Dr Michael

2000-LS-3.2.4-M2 [Forest Operations - Quantification and Management of Erosion and Siltation](#)

Schmidt, Dr Olaf

2005-S-LS-8-M1

[Baseline Data, Response to Pressures, Functions and Conservation of Keystone Micro- and Macro-Organisms in Irish Soils Acronym: CréBeo](#)

Whelan, Dr Pádraig

2006-PHD-S-24

[Active Microwave Remote Sensing of Soil Moisture](#)

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Environmental Impacts and Parameters for Inclusion in the Economic Evaluation of Roads
(2000-DS-1-M2)*

LEAD ORGANISATION

EFTEC

START DATE

01/11/2000

CONTACT

Ms Ece Ozdemiroglu

STATUS

Completed (**ERTDI Report 8**)

PROJECT TYPE

Desk Study

TOTAL BUDGET (€)

26,607.36

PROJECT DESCRIPTION

Under section 50 of the Roads Act, 1993, and regulations made thereunder, environmental impact statements are required in respect of any proposed road development consisting of:

- The construction of a motorway;
- The construction of a bus way;
- Any prescribed type of proposed road development consisting of the construction of a proposed public road or the improvement of an existing public road.

The objective of this desk study is to review current practice in relation to assigning monetary values to environmental impacts and to examine the feasibility of attributing monetary values to environmental impacts in the cost benefit analysis of road improvement schemes. This study takes the cost-benefit analysis (CBA) as its starting point. CBA can be defined as the systematic counting of all costs and benefits that will accrue to all members of society if a particular project is adopted. This study will present a detailed account of the economic evaluation of the environmental impacts of road schemes based on the theoretical literature and practical experience. There will also be a review of methods that can be used to express costs and benefits in non-monetary terms.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

Eutrophication from Agricultural Sources (Phosphorus and Nitrogen) - Environmental Soil P Test (2000-LS-2.1.6-M2)

LEAD ORGANISATION

Teagasc

START DATE

01/01/2001

CONTACT

Dr Karen Daly

STATUS

Completed (ERTDI Report 14)

PROJECT TYPE

Large-scale study

TOTAL BUDGET (€)

62,311.13

PROJECT DESCRIPTION

Ireland employs the Morgan's soil P test to measure plant available P, for agronomic advise using a sampling depth of 10cm, to rapidly estimate the quantity of plant-available P in soil. The interpretation of soil test results for P has focused on predicting the likelihood of a crop response to P added in fertilizers, manures or other soil amendments, rather than predicting the potential for P loss from fields to water.

The objective of this research is to develop an environmental soil P test that reflects the process of P loss from soil to water in the field during rainfall events. The research will determine the effect of varying soil sample depths, employing different soil P extractants, and also an investigation into different solution to soil ratios. Field studies will also be conducted to determine the relationship between soil test P levels in soil and both dissolved reactive P and suspended solids in overland water.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

Forest Operations - Quantification and Management of Erosion and Siltation

(2000-LS-3.2.4-M2)

LEAD ORGANISATION

NUI Galway

START DATE

01/12/2004

CONTACT

Dr Michael Rodgers

STATUS

Ongoing

PROJECT TYPE

Large-scale study

TOTAL BUDGET (€)

273,169.45

PROJECT DESCRIPTION

Forest erosion rates of 100Mg/ha year can be caused by ground preparation, drainage channels, harvesting and reforestation activities, forest roads and fire. Erosion of soil and its export to aquatic zones, which includes environmental damage, can be controlled through the use of best management practices, which include suitable ground preparation and drainage techniques, proper road construction and maintenance, and the use of silt traps and buffer zones strategically located. The aim of the study is to quantify the nature and extent of soil erosion in a representative Irish catchment where current forestry practices are employed, and to evaluate and to make recommendations on – where appropriate – current best management practices in controlling erosion losses.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

Priority Environmental Research to meet the Needs of the National Spatial Strategy - Methodologies for the Estimation of Sustainable Settlement Size (2000-LS-4.3-M1)

LEAD ORGANISATION

University of Limerick

START DATE

01/03/2001

CONTACT

Prof. Richard Moles

STATUS

Completed (ERTDI Report 4)

PROJECT TYPE

Large-scale study

TOTAL BUDGET (€)

46,835.34

PROJECT DESCRIPTION

An important issue in relation to urban form and settlement patterns is the issue of settlement size. In relation to the question of sustainable development patterns, the question of the 'ideal size' for a sustainable town is of great interest. Larger settlements generally provide for shorter trips and better potential for public transport, however increasingly settlement size may result in congestion that can undo the benefits.

The aims and objectives of the project are:

- To provide an assessment of the current state of international/national knowledge about the relationship between settlement size and sustainable development;
- To review the use and value of current planning and development mechanisms employed in towns and villages in Ireland;
- To select appropriate criteria to identify suitable indicators which are sensitive to settlement size, are capable of measurement and are relevant to the Irish situation;
- To develop a range of indicators that are sensitive to environmental cost/impacts of different forms of settlement with emphasis on, *inter alia*, transport mechanisms, per capita energy consumption, housing patterns and population density;
- To evaluate different settlement sizes on the basis of the selected indicators by examining towns in Ireland in terms of performance and sensitivity to the indicators;
- To provide theoretical analysis and recommendations with regard to future settlement planning and environmental management policies for the major stakeholders and policy makers in Ireland, and mechanisms for implementing these policies, in the context of the National Development Plan, the National Spatial Strategy and sustainable development;
- To provide a final report describing the context of the project, the methodology adopted and the recommended guidelines for best practice in town planning, and
- To develop a recommended strategic approach to future settlement patterns within the context of sustainable development.

It is expected that the output will be in the form of a simple theoretical model of the relationship between settlement size and indicators such as population density, commuting distances, travel demand, availability of services, waste water treatment and water supply and waste collection and management. The project will also address the question of sustainable settlement size from a more theoretical angle by identifying critical parameters in relation to sustainability and how these are affected by settlement size.

[*Back to EPA-Funded Research: Land, Soil Use and Transport*](#)

PROJECT TITLE

Priority Environmental Research to meet the Needs of the National Spatial Strategy - Preliminary Study of the Needs Associated with a National Ecological Network (2000-LS-4.4-M1)

LEAD ORGANISATION

Compass Infomatics Ltd

START DATE

01/11/2000

CONTACT

Mr Gearóid Ó Ríain

STATUS

Completed (ERTDI Report 5)

PROJECT TYPE

Large-scale study

TOTAL BUDGET (€)

134,472.88

PROJECT DESCRIPTION

The study was carried out between November 2000 and September 2001 by Compass Informatics, Dublin, assisted by consultant ecologists and planners. The outcome is be a GIS generated map showing a preliminary ecological network for Ireland along with a report on the concepts of ecological networks and the issues regarding implementation of the approach in Ireland.

The project website provides a forum for discussion of the ecological, IT and planning issues related to this concept and makes available the discussion papers commissioned to support the study along with the final report. The web address is www.econetireland.net

What are Ecological Networks? As its name suggests an ecological network seeks to optimise relationships between sites and populations to maximise biodiversity. It complements the more traditional site or species based approach. It is actively promoted at the European level by the European Centre for Nature Conservation to support the Pan-European Biological and Landscape Diversity Strategy and is less directly related to the implementation of Article 10 of the Habitats Directive.

An ecological network emphasises the value of core areas of prime biodiversity value. The ecological network concept considers their potential to act as reservoirs of biodiversity and the need for buffers to maximise their value. Most applied research on ecological networks has focused on linkages or corridors facilitate species and population dispersal. These linkages could be continuous or discontinuous, so-called 'stepping stones'. The impact of barriers to linkages leads to the analysis of the potential impacts of large-scale developments to fragment areas and populations. Ecological networks have been elaborated for regions and countries in Europe where there are strong traditions of spatial and regional planning. The recommendations from these studies have implications for land use and planning policy and the development of new 'core' areas.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Environmental Management in the Extractive Industry
(2000-MS-11-M1)*

LEAD ORGANISATION

John Barnett & Associates

START DATE

01/02/2001

CONTACT

Mr Tim Paul

STATUS

Completed (ERTDI Report 33)

PROJECT TYPE

Medium-scale study

TOTAL BUDGET (€)

97,037.19

PROJECT DESCRIPTION

This project is specifically targeted at reviewing environmental management practice in the extractive industry for non-scheduled minerals (sand & gravel, and rock) and associated value-added products (concrete, asphalt, dimension stone, *etc.*). Best practice guidelines for use by operators and regulators will be prepared and disseminated.

The scope of the project has been developed to achieve the following specific objectives:

- Provide an assessment of the current aggregate and dimension stone resources within Ireland and an estimate of current and future demand for aggregates, dimension stone, concrete products and road making materials over the next 5, 10 and 20 years;
- Provide a database of the inventory of extractive industry operations;
- Review current environmental management practices for the industry in Ireland and within Europe;
- Review the use and value of current planning and development controls for the industry;
- Review the use and value of the current EIA / EIS process and provide recommendations for improving this process;
- Develop and recommend best environmental management guidelines for the aggregates, dimension stone, concrete product and road making material sectors in Ireland, based on best international practice;
- Provide recommendations with regard to future planning and environmental management policies for the industry in Ireland, and mechanisms for implementing these policies, in the context of the National Development Plan, the National Spatial Strategy and sustainable development;
- Provide a final report describing the background to the project, the methodology adopted and the recommended best environmental management guidelines for the industry, and
- Disseminate the recommended best environmental management guidelines to industry, local authorities, statutory bodies, professional bodies and government agencies – publications, EPA web site, workshops and seminars, lectures, *etc.*

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Acquisition of Essential Data for Assessments of Carbon Sequestration by Soils
(2001-CD/S1-M2)*

LEAD ORGANISATION

University of Limerick

START DATE

01/12/2001

CONTACT

Prof. Michael Hayes

STATUS

Completed (Report pending)

PROJECT TYPE

Capability Development

TOTAL BUDGET (€)

322,132.55

PROJECT DESCRIPTION

The project will focus on determining the compositions and structures of the organic components in selected soil types. Where feasible, this will involve studies of soil samples from the same soil types that have been in long-term cultivation and in long-term grassland. One of these sites will be in the Teagasc Research Farm at Oak Park, Carlow, where Professor Jones will measure CO₂ evolution patterns. The same will apply for the grassland and upland peat sites in Cork where Professor Kiely's CO₂ evolution experiments are located. It is expected that it will be possible to relate the compositions of the soil organic components to their resistances to biodegradation. The compositions of the organic matter in the drainage waters will be studied, and this will allow deductions to be made about the nature and amounts of organic matter lost in drainage waters.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Towards a National Soils Database
(2001-CD/S2-M2)*

LEAD ORGANISATION

Teagasc

START DATE

01/10/2002

CONTACT

Dr Deirdre Fay

STATUS

Completed (Report pending)

PROJECT TYPE

Capability Development

TOTAL BUDGET (€)

446,539.00

PROJECT DESCRIPTION

This project will establish within 36 months a national soils database and archive, containing results from chemical and biological analyses to assess the quality of Irish soils.

As part of the preparation for the field work and detailed project planning a workshop will be organised to discuss soil quality and national monitoring programmes with a range of stakeholders and international experts. One thousand soil samples representative of three quarters of the country which have not been sampled to date, will be collected, analysed for a range of chemical and microbiological parameters. The analytical results generated will be combined in a database with those available from the other quarter (South East) of the country and will be subjected to statistical and geo-statistical analysis to determine the quality of Irish soils and for the comparison of soil quality to land use, soil type, geology, *etc.* A baseline database and maps of soil chemical properties that will be a foundation for a national soils database. A national archive and catalogue of soil samples will be established and maintained.

Objectives/Targets:

- To conduct a national workshop to elicit the views of those interested in long term soil monitoring sites, the use of soil quality indicators and the establishment of national soil archives. (TEAGASC)
- To collect and prepare about 1,000 top (0-10 cm) soil samples (each ca 1 litre by volume). Sampling location will be from predetermined defined positions on the national grid (7.07 km spacing) and the collection together with the 300 soil samples already collected will constitute a national soil archive. These soils will be analysed for a range of chemical parameters including heavy metals, nutrients and carbon. (TEAGASC)
- To comprehensively evaluate the microbial biodiversity and community structure of a range of Irish soils for the first time and to establish a baseline, using selected species indicators, for the study of the effects of agronomic impacts on this diversity. This will be achieved through determination and characterisation of the microbial biodiversity of a large section of the 1,000 collected soil samples described above using genetic fingerprinting approaches. Consideration will be given to some strategic re-sampling of soils in the South East following completion of the main soil-sampling programme. (NUIG)

To prepare three soil reference standards for analytical quality control that will assist ongoing soil analyses for other soil parameters, by users of the soil archive. The reference samples could be used for inter-laboratory calibration.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

***Sustainability and Future Settlement Plans in Ireland
(2001-MS/LU1-M2)***

LEAD ORGANISATION

University of Limerick

START DATE

01/03/2002

CONTACT

Dr. Bernie O'Regan

STATUS

Completed (Report pending)

PROJECT TYPE

Medium-scale study

TOTAL BUDGET (€)

326,123

PROJECT DESCRIPTION

This project aims to build upon the pilot ERTDI study *Methodologies for the Estimation of Sustainable Settlement Size* and provide a more detailed and inclusive analysis of the relationship between Irish settlements and sustainable development. The project is considering in more detail the functioning and location of settlements, relationships among settlements, and the selection of sustainability indicators, which are most appropriate for contemporary and future Irish settlements.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

**Regulation and Assessment of N-Mineralisation in Grassland Soil
(2001-PHD2-M1)**

LEAD ORGANISATION

University of Limerick

START DATE

01/11/2001

CONTACT

Dr Cecily Leonard

STATUS

Completed

PROJECT TYPE

Doctorate

TOTAL BUDGET (€)

76,783.19

PROJECT DESCRIPTION

Plant nitrogen is made available through nitrogen mineralization, a biological process that soil fertility depends on in the absence of mineral fertiliser N. However, N-mineralization assays have not indicated crop production satisfactorily, and current methods may not reflect soil microbial conditions. Objectives of this study are to investigate microbial conditions and thereby improve assay relevance to grassland production. Evidence suggests that carbonaceous substrates that regulate N-mineralization by bacteria in the laboratory may do so in soil (Leonard, 2001).

Possible effects of available C on N-mineralization in grassland soil will be investigated under controlled laboratory conditions and during the grazing rotation. Lengthy current in situ and rapid in vitro mineralization procedures will be compared in relation to soil available C and grassland production, to clarify relationships and evaluate assays more effectively. Leonard, C. 2001 Soil Properties that influence grassland production: their identification, production-indicator potentials and explanatory mechanisms.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Policy Conflicts in Relation to Environment and Other Areas
(2001-EEP-MS1-M2)*

LEAD ORGANISATION

University College Cork

START DATE

01/03/2003

CONTACT

Dr Brian Ó Gallachóir

STATUS

Completed (Report pending)

PROJECT TYPE

Medium-scale study

TOTAL BUDGET (€)

145,046.00

PROJECT TITLE

*Environmental Transport Interface (ETI) Capability Development Project
(2001-RT-CD-1-M2)*

LEAD ORGANISATION

Trinity College Dublin

START DATE

01/08/2003

CONTACT

Dr. Margaret O'Mahony

STATUS

Ongoing

PROJECT TYPE

Capability Development

TOTAL BUDGET (€)

670,070.00

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Foresight Study on the Rural Environment in Ireland in 2025
(2003-RE-DS1-M2)*

LEAD ORGANISATION

University College Dublin

START DATE

30/11/2003

CONTACT

Prof. Joseph Mannion

STATUS

Completed (**ERTDI Report 8**)

PROJECT TYPE

Desk Study

TOTAL BUDGET (€)

50,000.00

PROJECT DESCRIPTION

Under section 50 of the Roads Act, 1993, and regulations made thereunder, environmental impact statements are required in respect of any proposed road development consisting of:

- the construction of a motorway;
- the construction of a busway, and
- any prescribed type of proposed road development consisting of the construction of a proposed public road or the improvement of an existing public road.

The objective of this desk study is to review current practice in relation to assigning monetary values to environmental impacts and to examine the feasibility of attributing monetary values to environmental impacts in the cost benefit analysis of road improvement schemes.

This study takes the cost-benefit analysis (CBA) as its starting point. CBA can be defined as the systematic counting of all costs and benefits that will accrue to all members of society if a particular project is adopted.

This study will present a detailed account of the economic evaluation of the environmental impacts of road schemes based on the theoretical literature and practical experience. There will also be a review of methods that can be used to express costs and benefits in non-monetary terms.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

***A Protocol for Sustainable Peatland Management
(2004-CD-P1-M2)***

LEAD ORGANISATION

University College Dublin

START DATE

01/05/2005

CONTACT

Prof. James Curry

STATUS

Ongoing

PROJECT TYPE

Capability Development

TOTAL BUDGET (€)

1,371,676.00

PROJECT DESCRIPTION

Project statement

1. This project will review and synthesise current information on social, economic, environmental and institutional aspects of peatland utilisation and management, will conduct research in areas where knowledge gaps have been identified, and will develop a protocol for the sustainable management of peatlands in Ireland, within three years, at a cost of €1,128,800.

Objectives and targets

2. The project will address all four dimensions (Social, Economic, Environmental and Institutional) specified in the Technical Description document (D1/2004).

The overall objectives will be:

- To quantify the main features of the peatland resource, notably extent and volume, biodiversity, hydrology, carbon balance, contribution to greenhouse gasses (Subprojects 2, 3);
- To assess vulnerability to environmental pressures and threats arising out of various kinds of exploitation (drainage, mining, forestry, agriculture, etc.) (Subprojects 2,3);
- To assess socio-cultural, economic, institutional and policy issues (Subproject 4);
- To integrate and synthesise the results of literature-based and field studies, and
- To develop a protocol for the wise use/sustainable management of the peatland resource.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

The development of environmental indicators and other methods for the provision of information as required under the EU Strategic Environmental Assessment Directive (2004-SEA-FS-19)

LEAD ORGANISATION

Trinity College Dublin

START DATE

03/10/2004

CONTACT

Prof. Mike Jones

STATUS

Ongoing

PROJECT TYPE

Fellowship

TOTAL BUDGET (€)

115,500.00

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Decision-Support Tools for Managing Urban Environment in Ireland
(2005-CD-U1-M1)*

LEAD ORGANISATION

University College Dublin

START DATE

01/02/2006

CONTACT

Prof. Frank Convery

STATUS

Ongoing

PROJECT TYPE

Capability Development

TOTAL BUDGET (€)

1,215,191.00

PROJECT DESCRIPTION

This project will produce decision support tools that will allow decision-makers in Ireland at local and national levels to assess the economic and environmental dimensions of change in urban areas in an integrated fashion. This will allow assessment of both 'business as usual' and new infrastructure and development initiatives.

It will be applied initially to the Greater Dublin Region (Dublin city, Dún Laoghaire-Rathdown, Fingal, Kildare, Louth, Meath, South County Dublin, Wicklow) and sub-areas within; thereafter it will extended island-wide. The Moland model is a state of the art land-use model developed in the Netherlands (U. of Maastricht and RIKS) for the EU Joint Research Centre (JRC) in Ispra which models demographic, economic and transportation interactions that feed into a land use sub model. A pilot project 2000 has already been applied to the Dublin region by JRC and ERA Maptec. Extensions and elaborations of the MOLAND model and links to other relevant models to integrate environmental dimensions including air quality and noise (theme 1) urban diversity and green spaces (theme 2), climate change in an urban context (theme 3), urban sprawl and urban transport (theme 4) applied to support decision-making of participating local authorities (theme 5) will be tested.

The project will be managed by Urban Institute Ireland (UCD) where core modelling and GIS expertise will be also be housed, and involving: expertise from a number of Schools in UCD; a range of academic partners from National University of Ireland Maynooth, Trinity College Dublin; government agencies, including the Dublin Transportation Office, Bord Gáis Éireann, National Roads Authority and private and other non-governmental sector including ERA Maptec and Dublin Zoo.

International support and bench marking will be provided by leading research peers. Outputs will include a range of Working Papers, refereed papers on various aspects of the research, a book, a digital Atlas, and a manual and a decision-making tool that will assist decision-makers to assess the implications of 'business as usual' and different policy interventions, mechanisms for engagement with the public on biodiversity awareness and related issues, and a template for making both small area specific and macro analyses.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Development of the Nematode *Steinernema feltiae* as a Bio-indicator for Soil Pollution
(2005-FS-28-M1)*

LEAD ORGANISATION

Institute of Technology Carlow

START DATE

06/02/2006

CONTACT

Mr Stephen Gerard Boyle

STATUS

Ongoing

PROJECT TYPE

Fellowship

TOTAL BUDGET (€)

151,896.00

PROJECT DESCRIPTION

This project proposes to test the hypothesis that soil pollution, and specifically Chromium VI, causes accumulation of mutations in the β -tubulin genes of the soil, and naturally occurring in Ireland, nematode *Steinernema feltiae*. Molecular data will be combined with observations on reproductive potential, as this might become compromised by mutations in the β -tubulin genes, due to the vital role that β -tubulin plays in sperm motility and cell division.

This proposal, therefore, deals with

- (1) investigating the potential of *S. feltiae* as biological indicator, and
- (2) studying the β -tubulin genes of *S. feltiae* as biomarkers for soil metal pollution.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

Evaluation of Models (PaSim, RothC, CENTURY, DNDC) for Simulation of Grassland Carbon Cycling at Plot, Field and Regional Scale (2005-FS-32-M1)

LEAD ORGANISATION

University College Cork

START DATE

15/12/2005

CONTACT

Mr Kenneth Adrian Byrne

STATUS

Ongoing

PROJECT TYPE

Fellowship

TOTAL BUDGET (€)

155,266.96

PROJECT DESCRIPTION

The proposed research will evaluate a number of process based models (PaSim, RothC, CENTURY, DNDC) of CO₂ cycling in grasslands at a range of scales from plot to field and regional scale. The models will be driven by hourly/daily meteorological data, soil and land cover parameters. The plot and field scale runs will be calibrated (for NEE) using an existing data base (Dripsey, Co. Cork) of plot scale chamber NEE and field scale eddy covariance NEE data. This exercise will identify the most suitable model which will then be further used in the regional scale simulation.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

Spatial modelling of Sustainability Indicators and Policy Implications for Sustainable Development Across Three Regions of Ireland (2005-PHD5-GIS-5)

LEAD ORGANISATION

University of Limerick

START DATE

01/09/2005

CONTACT

Dr. Bernadette O'Regan

STATUS

Ongoing

PROJECT TYPE

Doctorate

TOTAL BUDGET (€)

75,000.00

PROJECT DESCRIPTION

This research will spatially reference 175 sustainability indicators using GIS, for 80 settlements across three regions of Ireland. Data already generated by an EPA project for the regions of Sligo, Limerick, and the Midlands on environmental and socio-economic indicators will be analysed. By spatially referencing these data we will be able to identify sustainability 'black spots' where policy and resources would be most effectively targeted at multiple spatial scales across the study areas. The resultant interactive GIS will allow visual comparison of sustainability across regions, identification of regional tradeoffs between certain indicators, highlight sustainability issues at local scale and using an iterative approach, provide policy makers with a powerful tool to examine the likely implications of alternative policies.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Quantifying Dissolved Carbon Losses from Soils: Effects of Land Use and Management Practices
(2005-PHD5-S-4)*

LEAD ORGANISATION

University College Dublin

START DATE

03/01/2006

CONTACT

Prof. Bruce Osborne

STATUS

Ongoing

PROJECT TYPE

Doctorate

TOTAL BUDGET (€)

72,000.00

PROJECT DESCRIPTION

There is major uncertainty in the estimates of carbon storage in soils due to significant losses of carbon via ground water. Land use and management will influence ground water carbon losses but they are rarely quantified and direct comparisons between land-uses have not been made. To address these uncertainties, we will measure ground water carbon losses for three of Ireland's major land use categories, arable, grassland and forest, as well as examining the influence of different land management systems. By utilizing ongoing measurements of carbon dioxide exchange, we will provide an improved assessment of carbon sequestration potential of managed ecosystems.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Digital Soil Information System for Ireland – Scoping Study
(2005-S-DS-22-M1)*

LEAD ORGANISATION

Teagasc

START DATE

28/02/2006

CONTACT

Dr Karen Daly

STATUS

Completed (Report pending)

PROJECT TYPE

Scoping study

TOTAL BUDGET (€)

60,000

PROJECT DESCRIPTION

Using a combination of existing and new data for instrumented catchments located in two The status of soil information in Ireland consists of many variable and incomplete datasets and in light of existing and emerging EU policies, there is now a national requirement for a comprehensive soil information system and a completed detailed digital soil database for Ireland with associated map at a scale of 1:250,000. This scoping study will research and compile an inventory of all existing digital and mapped soil information in Ireland and propose methodologies for the development of an IT specification for a Soils Information Systems (SIS) and a digital map of Ireland at a 1:250,000 scale.

The study will research and report the costs, quality assurance and outstanding data required to provide a comprehensive methodology for a soil information system and a digital map of Ireland (1:250,000).

An analysis of risks involved in acquiring, accessing and developing the data and techniques required for a soil information system and national soil database (and 1:250,000 map) will be carried out as part of this study, and recommendations toward achieving these datasets shall be put forward.

The approach of the work will involve building an inventory of existing soil data and in consultation with national and international soil experts, developing methodologies to complete a comprehensive soil database and soil information system for Ireland.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

Baseline Data, Response to Pressures, Functions and Conservation of Keystone Micro- and Macro-Organisms in Irish Soils (Acronym: CréBeo) (2005-S-LS-8-M1)

LEAD ORGANISATION

University College Dublin

START DATE

15/01/2006

CONTACT

Dr Olaf Schmidt

STATUS

Ongoing

PROJECT TYPE

Large-scale study

TOTAL BUDGET (€)

604,399.40

PROJECT DESCRIPTION

The overarching objectives of the proposed project are to increase scientific knowledge and research capability in soil biodiversity in Ireland and to inform the development of sustainable soil protection strategies.

This large-scale project is based on a framework of four themes which will be addressed in four integrated, complimentary sub-projects:

- First, the project will provide baseline data on the distribution, diversity and indicator values of micro- and macro-organisms of potential keystone status (soil bacteria, mycorrhizal fungi, nematodes, earthworms) in a sub-set of the National Soils Database Project reference sampling locations;
- Second, the pressure effects of applications of exogenous organic material (biosolids) to soils on these organisms will be studied in field experiments;
- Third, a number of experiments will be conducted to investigate the functions of selected keystone species (ammonia oxidising bacteria, saprotrophic fungi, mycorrhizal fungi, earthworms) in soil ecosystem processes, and
- Fourth, the need for protecting specific habitats, where soil-dwelling ants could be threatened, will be established. Integration and dissemination actions are planned, including a research seminar, end-of-project workshop and scientific publications. Being supported by nine scientists from three universities and Teagasc, this project will provide advanced training in soil biodiversity research for three research students and one post-doctoral researcher.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

**Measurement and Modelling of Soil Carbon Stocks and Stock Changes in Irish Soils
(2005-S-MS-26-M1)**

LEAD ORGANISATION

University College Cork

START DATE

01/01/2006

CONTACT

Prof. Gerard Kiely

STATUS

Ongoing

PROJECT TYPE

Medium-scale study

TOTAL BUDGET (€)

293,604.00

PROJECT DESCRIPTION

This project has two sections:

- (1) Take a representative set of soil samples, at sixty locations, consisting of 50 mineral soil sites and 10 peat sites (0 to 50cm depth) and quantify the soils with regard to Soil Organic Carbon (SOC), carbon fractionation (slow, active and passive), bulk density, texture and integrate and extrapolate this new, more detailed data to the National Soils Database (NSD) of 1300 samples (done at 0 to 10cm depth). The NSD (carried out by Teagasc/EPA) is scheduled to be available by March 2006 and we will use statistical modelling techniques to add value to this by extending its knowledge of soils from its current depth of at 0 to 10cm to greater depth at 0 to 50cm.
- (2) Test the widely used Soil Organic Matter (SOM) models, including CENTURY, RothC, PaSim and DNDC to determine the most suitable model to quantify the Irish SOC stocks. We will calibrate the models using the three temporal datasets on SOC (1965, 1996 and 2006) and model possible changes to the SOC stocks under contemporary and future management and climate change scenarios. We will further model the carbon stocks at the more detailed farm scale using the research farm/catchments at Dripsey (Cork), Morepark (Cork) and Solehead (Tipperary). The reporting from this project of both the experimental work of (1) and the modelling work of (2) will inform policy on carbon in soils and how it is related to agricultural activities.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

Innovative Data Capture and Presentation Techniques in Support of the EU Environmental Noise Directive (2005-UE-MS-44-M1)

LEAD ORGANISATION

Compass Informatics Ltd

START DATE

01/01/2006

CONTACT

Mr Gearóid Ó Ríain

STATUS

Ongoing

PROJECT TYPE

Medium-scale study

TOTAL BUDGET (€)

217,659.00

PROJECT DESCRIPTION

The role of advanced ground and air-based spatial video and photography, along with interactive display of noise maps and spatial imagery, will be developed and proven in support of the EU Environmental Noise Directive (END) (2002/49/EC). Data gaps have been identified that must be filled to fully meet the noise modelling and mapping requirements under the Directive.

The techniques, once developed and proven through this project, will also be of use in efficiently meeting the Directive requirements and will indeed be applicable in other environments and other applications - including urban and regional planning, transportation monitoring, water and natural environment management and conservation. An additional weakness in allowing Ireland to comply in full spirit to the Directive is the lack of dissemination systems that present noise maps in a meaningful manner, that present action plans to the public and professional user alike, and can also integrate the spatial and aerial imagery that will be captured under the project.

The project team will develop a demonstration system and proven procedures for providing web-based public information systems. This work will also provide guidance on how such a system that assist organisation and national reporting. The project duration will allow the approaches to be well developed and tested yet allowing the deliverables to be actively used by the organisations required to report under the Environmental Noise Directive.

The team consists of

- an end-user in the form of the National Roads Authority, liaising with other relevant urban local authorities;
- a private sector company, in the form of the innovative Compass Informatics, and
- a 3rd level research body in the form of the National Centre for Geocomputation, National University of Ireland, Maynooth.

Significant input to the project in the form of staff, data and software licences will be provided at no cost to the project by the NRA.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Assessing the Impact that Plant Species may have on the Diversity and Activity of Phosphate-Solubilising Soil Microbes
(2006-PHD-S-21)*

LEAD ORGANISATION

University College Cork

START DATE

01/10/2006

CONTACT

Prof. Fergal O’Gara

STATUS

Ongoing

PROJECT TYPE

Doctorate

TOTAL BUDGET (€)

90,000.00

PROJECT DESCRIPTION

Phosphate contamination of surface and groundwater by agricultural run-off is a significant pollution problem in Ireland. Microbial communities in the soil play a key role in solubilising inorganic phosphate, thereby reducing leaching and making P available to plants. Knowledge of how different plant species and varieties shape the microbial community, and influence the phosphate-solubilising microbiota could facilitate strategies to reduce phosphate pollution.

This training project, which integrates with ongoing related research, applies classical and molecular methods, focusing on culturable and non-culturable bacteria and fungi, to assess how specific plants affect diversity and activity of the microbes that solubilise inorganic phosphate.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Hierarchy for Land as a Receptor of Organic Wastes
(2006-PHD-S-22)*

LEAD ORGANISATION

University College Dublin

START DATE

05/02/2007

CONTACT

Dr William L. Magette

STATUS

Ongoing

PROJECT TYPE

Doctorate

TOTAL BUDGET (€)

74,665.00

PROJECT DESCRIPTION

'The land', of which soil is the fundamental component, has a multi-functional role in society. For example, soil serves as a medium for food production, but also can serve as a receptor for organic wastes (*e.g.*, animal manure, wastewater biosolids, biodegradable municipal wastes). The use of soil as a food-producing medium and organic waste receptor may not always be compatible, however. The project will examine possible conflicts between these two seemingly divergent uses to develop a hierarchy for the use of land as a waste receptor.

[*Back to EPA-Funded Research: Land, Soil Use and Transport*](#)

PROJECT TITLE

Molecular Studies of ¹³C and ¹⁵N Isotopically Enriched Soil Microbial Biomass; Influence on Carbon Cycling and Agriculture (2006-PHD-S-23)

LEAD ORGANISATION

Dublin City University

START DATE

18/09/2006

CONTACT

Dr Brian Kelleher

STATUS

Ongoing

PROJECT TYPE

Doctorate

TOTAL BUDGET (€)

90,000.00

PROJECT DESCRIPTION

A major component of soil-organic-matter (SOM) is microbially derived and molecularly uncharacterised. Knowledge of SOM transitions is vital to understanding carbon cycling, agricultural practice implications, Irelands carbon trading responsibilities, interactions with anthropogenic chemicals and novel compound potential. In this study, we propose to advance structural understanding of the microbial component of SOM. This will be accomplished by growing ¹³C and ¹⁵N isotopically enriched soil microbial biomass. Isotopic enrichment greatly enhances NMR sensitivity. Advanced multi-dimensional NMR, GC-MS and HPLC methods will be applied, for the first time, to study these complex mixtures and influence of this CO₂ sink on natural processes.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

*Active Microwave Remote Sensing of Soil Moisture
(2006-PHD-S-24)*

LEAD ORGANISATION

University College Cork

START DATE

06/11/2006

CONTACT

Dr Pádraig Whelan

STATUS

Ongoing

PROJECT TYPE

Doctorate

TOTAL BUDGET (€)

79,650.00

PROJECT DESCRIPTION

This research will address the potential of ENVISAT ASAR (Advanced Synthetic Aperture Radar) data in extracting information on soil moisture for local scale hydrological and agricultural applications using a semi-empirical soil moisture inversion algorithm.

The technique proposed in this research will be based on a multi temporal analysis; to derive relative changes in soil moisture between different ASAR data acquisitions rather than the absolute soil moisture values. The use of multi-temporal radar data makes it possible to retrieve spatial moisture patterns within a study area by applying statistical methods to the time series of images.

[*Back to EPA-Funded Research: Land, Soil Use and Transport*](#)

PROJECT TITLE

Identification of an Appropriate Legislative Regime for the Remediation of Contaminated Land in Ireland (2006-PHD-S-25)

LEAD ORGANISATION

University College Cork

START DATE

08/01/2007

CONTACT

Dr Owen McIntyre

STATUS

Ongoing

PROJECT TYPE

Doctorate

TOTAL BUDGET (€)

75,000.00

PROJECT DESCRIPTION

A detailed analysis the various legal mechanisms available for ensuring remediation of contaminated land (including the allocation of the costs of remediation), taking account of recent and likely future legal developments at the national and European Union levels. An exploration of legislative options, taking account of the limitations imposed by constitutional law and of the current and impending requirements of European Union law, of recent experience in comparable jurisdictions, and of preferred policy outcomes, including the minimisation of risks to the environment and human health, the encouragement of brownfield redevelopment, and the equitable and appropriate distribution of costs and benefits. An assessment of the potential role of innovative regulatory tools, including voluntary environmental agreements, joint compensation mechanisms, and mandatory insurance.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

Pilot Programme for Establishing a Regional Eco-Business Recognition Mark (2006-UE-MS-48)

LEAD ORGANISATION

Clean Technology Centre

START DATE

01/10/2006

CONTACT

Mr Noel Duffy

STATUS

Ongoing

PROJECT TYPE

Medium-scale study

TOTAL BUDGET (€)

131,969.00

PROJECT DESCRIPTION

The overall aim of this action research is to investigate the applicability, costs and benefits in an Irish context, of an adaptation of an Austrian model for an environmental recognition mark, with the view of establishing a model that will be widely applicable.

The objectives of the project are to pilot a self-help programme for business in a defined urban area: Macroom town and hinterland. The *EcoBusinessPlan* is a successful business support model developed in Vienna by the local authority to enhance environmental and economic performance, through the medium of limited consultancy and workshop based training. This underpins the granting of a recognition mark by the local authority. It was identified in a study commissioned by Forfás and conducted by the project proposer as having potential application in Ireland.

This approach will be modified to take account of the Irish situation, with the assistance of Macroom-E, a limited company established by a partnership of Cork County Council, Macroom Urban District Council, Lee Valley Enterprise Board, South Cork Enterprise Board and Enterprise Ireland to stimulate environmentally related business in the area, with advice from the *EcoBusinessPlan* programme managers in the Vienna Local Authority.

The expertise of the Clean Technology Centre in developing a recognition mark: Green Fáilte Award and auditing and supporting enterprises, *e.g.* the CGPP Hotels Programme, will be combined with the previous study of networking status and applicable environmental management tools in this region, already conducted by the CTC.

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

Small-Scale Studies:

PROJECT TITLE

*Critical Loads and Dynamic Modelling (Target Loads) for Ireland
(2005-SS-33-M1)*

LEAD ORGANISATION

Trent University

PROJECT TYPE

Small-scale study

CONTACT

Dr Julian Aherne

TOTAL BUDGET (€)

6,348.00

PROJECT TITLE

*A Literature Review on the Availability of Nitrate from Compost in Relation
to the Nitrate Regulations SI 378 of 2006
(2006-SS-54)*

LEAD ORGANISATION

Cré - Composting Association of
Ireland Teoranta

START DATE

02/01/2007

CONTACT

Mr Percy Foster

STATUS

Ongoing

PROJECT TYPE

Small-scale study

TOTAL BUDGET (€)

6,348.00

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)

PROJECT TITLE

A Literature Review on the Availability of Phosphate from Compost in Relation to the Nitrate Regulations SI 378 of 2006 (2006-SS-56)

LEAD ORGANISATION

Cré - Composting Association of Ireland Teoranta

START DATE

02/01/2007

CONTACT

Mr Percy Foster

STATUS

Ongoing

PROJECT TYPE

Small-scale study

TOTAL BUDGET (€)

6,348.00

PROJECT TITLE

The Potential for a Sustainable, Renewable and Eco-Friendly Resource using High Grade Reclaimed Virgin Wood Dust (2006-SS-P-53)

LEAD ORGANISATION

Earth-Wood

STATUS

Ongoing

CONTACT

Mr Brian Fitzpatrick

TOTAL BUDGET (€)

6,340.00

PROJECT TYPE

Small-scale study

[Back to EPA-Funded Research: Land, Soil Use and Transport](#)