

# **JOINT RESEARCH CENTRE - FP7 - WP2007**

## **Action n° 22004 - SOIL - Soil Data and Information Systems**

*(SOIL)*

*Institute for environment and sustainability*

*Policy Theme:* 2 - Solidarity and the responsible management of resources

*Agenda No & Title:* 2.2 - Natural resources

*Web site address (URL):* <http://eussoils.jrc.it/index.html>

*Action Leader:* MONTANARELLA LUCA

*Customer/users (outside the European Commission):*

- EuroGeoSurveys
- European Environment Agency
- FAO
- ISRIC - World Data Centre for Soils
- UNEP

*Customer DGs (inside the European Commission):*

- Agriculture and Rural Development - AGRI
- EuropAid - AIDCO
- Development - DEV
- Enterprise and Industry - ENTR
- Environment - ENV
- Eurostat - ESTAT
- Regional Policy - REGIO

*Keywords:*

Soil Data Centre, Soil Thematic Strategy, Soil Framework Directive, Desertification

*Rationale:*

Soil data and information are relevant for a number of EU policy areas: agriculture, soil protection, water protection, nature protection, development policy, health and sustainable development. The EU Thematic Strategy for Soil Protection addresses these different policy areas in a coherent manner and proposes the way forward towards effective soil protection in Europe. Policy

relevant soil data and information will therefore play a crucial role in the policy development and implementation process. In addition, a number of global multilateral agreements also ratified by the European Community (UNFCCC, CBD, UNCCD) demand an increasing amount of soil data and information: climate change, biodiversity and desertification are global issues that are strongly related to soil degradation phenomena at the global scale. This Action will provide through the establishment of the European Soil Data Centre a single focal point for soil data and information for the Commission. It will therefore support the other Commission's services in the negotiations of the Thematic Strategy for Soil Protection and the proposal for a Soil Framework Directive through the EU Institutions and their subsequent implementation in the Member States. The Action will also facilitate the reporting and assessment obligations by Member States.

### ***Summary of the project:***

EU policy relevant soil information, from initial field data collection all the way to final reporting will be managed by this Action. This will be achieved by using the European Soil Data Centre (ESDAC) as the single soil information focal point. It will serve the Commission's needs in negotiating through the EU Institutions the new Thematic Strategy for Soil Protection (COM (2006)231) and the Soil Framework Directive (COM(2006)232) as well as their subsequent implementation in Member States. Advanced modelling techniques and scenario analyses will be used to provide soil information to end users in relation to the major threats to soil identified in the Thematic Strategy for Soil Protection (erosion, decline of organic matter, compaction, salinisation, landslides, sealing, contamination and loss of soil biodiversity). A strong scientific and technical support to the United Nations Convention to Combat Desertification (UNCCD) will be provided by promoting the reform of the Committee of Science and Technology (CST) of the UNCCD and by the development of an operational Global Soil Information System (GLOSI) for the regular assessment of global soil degradation processes.

This Action will provide a coherent approach to soil data collection and distribution for all different policy areas and initiatives relevant to the EU, while assuring high scientific quality, policy relevance and technical support as needed. The Action will focus on the following overarching objectives:

1. The establishment of the European Soil Data Centre (ESDAC) as a single focal point for all soil data and information in Europe.
2. The development of procedures and methods for data collection, quality assessment and control, data management and storage, data distribution to Commission and external users, fully complying with INSPIRE principles for spatial data infrastructures.

3. Research and development of advanced modeling techniques, indicators and scenario analyses in relation to the major threats to soil (erosion, decline of organic matter, compaction, salinisation, landslides, sealing, contamination, and loss of soil biodiversity), as identified in the Thematic Strategy for Soil Protection.
4. Supporting the other Commission's services with soil information and scientific as well as technical assistance in negotiating the Thematic Strategy for Soil Protection and the proposal for a Soil Framework Directive through the EU Institutions and their subsequent implementation at Community and Member State level.
5. Extension of the coverage of the European Soil Information System (EUSIS) towards a fully operational Global Soil Information System (GLOSIS), providing relevant soil information for the implementation of multilateral environmental agreements, like UNFCCC, CBD and UNCCD, and contributing to the ground segment of the Global Monitoring for Environment and Security (GMES).

**Objectives :**

- Objective 05.1: Support the development of the ACP Observatory by providing the relevant soil information (in collaboration with Action MONDE)
- Objective 05.2: Contribute to the activities of the International Polar Year 2007-2008
- Objective 05.3: Support the implementation process of the UN Convention to Combat Desertification (UNCCD) with the necessary scientific and technical information (in collaboration with Actions NAHA and MONDE)
- Objective 6. **Support to Enlargement and Integration** within the frame of ESDAC
- Objective 7. **Exploratory research**
- Objective 7.1: Exploratory research on Digital Soil Mapping
- Objective 7.2: Exploratory research on forest/soil interaction
- Objective 02.1: Develop a sampling procedure for the verification of Soil Organic Carbon levels in soils in support to the Kyoto Protocol implementation process (in collaboration with Action GHG-AFOLU)
- Objective 02.2: Standardization of soil variables for the European Soil Data Centre (ESDAC)
- Objective 03.1: Complete a new soil erosion risk assessment for Europe, also contributing to the further development of relevant IRENA indicators
- Objective 03.2: Develop and implement a new soil quality indicator in support of the Indicator Reporting on the Integration of Environmental Concerns into Agriculture Policy (IRENA)(In collaboration with Action Agri-Env)
- Objective 03.3: Indicators and assessment on the organic matter status in soils and scenario analyses of the potentials for the changes of the soil

- organic matter in the EU by using spatial modeling of SOC/SOM with available data within the ESDAC (in collaboration with Action FOREST)
- Objective 03.4: Assessment of soil physical degradation
  - Objective 03.5: Assessment of the status of Europe's soil in relation to the decline of biodiversity
  - Objective 03.6: Assessment of salinisation in European soils
  - Objective 03.7: Assessment of heavy metals in European soils
  - Objective 03.8: Develop methodologies for landslide risk area mapping in Europe
  - Objective 04.1: Support to the Commission's services responsible for the negotiation and implementation of the Thematic Strategy for Soil Protection and the proposal for a Soil Framework Directive through the EU Institutions with appropriate scientific and technical input
  - Objective 04.2: Integration and co-ordination of the contributions relevant to the Thematic Strategy for Soil Protection coming from other JRC Actions
  - Objective 01.1: Consolidate the European Soil Bureau Network (ESBN) as a major source of soil data for the European Soil Data Centre (ESDAC)
  - Objective 01.2: Expand the base of soil data providers by including other institutions (EuroGeoSurveys, EIONET, US-EPA, ISRIC, FAO, PEER, National Soil Data Centers)
  - Objective 01.3: Promote the implementation of an INSPIRE-compliant nested system of soil data centers including the World Soil Data Centre (ISRIC), European Soil Data Centre (JRC), National Soil Data Centers (Member States) and Regional Soil Data Centers (Regions)
  - Objective 01.4: Operate the EU Soil Portal by implementing the ESDAC Technical Platform to host soil data and information at European Level, according to specifications made in the ESDAC system description (in collaboration with Actions FOREST and INSPIRE)
  - Objective 01.5: Population of the ESDAC Technical Platform with available soil data and information, including forest soil data from the BIOSOIL project (in collaboration with Action FOREST)

***Deliverables :***

- 2007-06-30 Deliverable 01.1.1: Framework contract for soil data supply to the European Soil Data Centre (ESDAC) signed
- 2007-12-31 Deliverable 01.1.2: Report on 4 meetings of the European Soil Bureau Network Steering Committee organised during 2007
- 2007-12-31 Deliverable 01.1.3: Report on meeting of the European Soil Bureau Network plenary assembly organised during the first semester 2007
- 2007-12-31 Deliverable 01.2: Memorandum of Understanding with EuroGeoSurveys implemented

- 2007-12-31 Deliverable 01.3: Prototype of a Multiscale Soil Information System (MEUSIS) as a technical solution for a nested grid-based soil information system design
- 2007-12-31 Deliverable 01.4: ESDAC Technical Platform operational and web based soil portal maintained and improved
- 2007-12-31 Deliverable 01.5: ESDAC system populated with available soil data
- 2007-05-31 Deliverable 02.1: Submission of Paper: Detecting the Changes of Organic Carbon in Mineral Soils
- 2007-12-31 Deliverable 02.2.1: Report on: "Is a standardization of soil variables for ESDAC feasible?"
- 2007-11-30 Deliverable 02.2.2: Guidelines of laboratory methods for soil analyses according European standards
- 2007-06-30 Deliverable 03.1.1: Reports and maps derived from the new soil erosion by water assessment for Europe
- 2007-06-30 Deliverable 03.1.2: Reports and maps derived from the new wind erosion assessment for Europe
- 2007-12-31 Deliverable 03.1.3: Wind erosion risk online service for Europe based on weather data and a nested soil data system
- 2007-12-31 Deliverable 03.1.4: Data set with average field sizes/directions for EU
- 2007-12-31 Deliverable 03.2: Report on definition of a new soil quality indicator to be proposed for agro-environmental reporting
- 2007-11-30 Deliverable 03.3.1: Report: SOM status indicators in the EU
- 2007-06-30 Deliverable 03.3.2: Updated soil organic carbon status map of Europe
- 2007-12-31 Deliverable 03.3.3: Report on feasibility of estimating SOC under climate change scenarios
- 2007-12-31 Deliverable 03.3.4: Reports and maps derived from the assessment of carbon sinks in European soils
- 2007-02-28 Deliverable 03.3.5: Book: "Carbon Sink Enhancement in Soils of Europe: Data, Modelling, Verification"
- 2007-06-30 Deliverable 03.4: Reports and maps derived from the new soil compaction estimates for European soils
- 2007-06-30 Deliverable 03.5: Report on case study on soil biodiversity in the Province of Pavia
- 2007-06-30 Deliverable 03.6: Reports and maps derived from the new pan-European assessment of soil salinisation
- 2007-06-30 Deliverable 03.7: Updated maps of heavy metals distribution in European soils
- 2007-12-31 Deliverable 03.8: Report on exploratory workshop "Landslide risk area mapping in Europe" jointly organized with EuroGeoSurveys
- 2007-12-31 Deliverable 04.1.1: First draft of guidelines on the identification of risk areas for erosion, organic matter decline, salinisation, compaction and landslides foreseen in the proposal for a Soil Framework Directive

- 2007-12-31 Deliverable 04.1.2: First draft of guidelines on data (and metadata) quality, utilisation of historical data, methods, access, and data-exchange formats for the implementation of the future Soil Framework Directive
- 2007-12-31 Deliverable 04.1.3: Progress reports on the development of a new European Soil Database, based on a 1:250,000 scale (as data is gathered and provided by Member States), in particular in terms of maps of risk for the different soil threats in the EU
- 2007-09-30 Deliverable 04.1.4: In co-operation with Eurostat, evaluation of the main results of the exploitation of the data collected during the different surveys performed under the LUCAS project
- 2007-12-31 Deliverable 04.1.5: Software for educational purposes on CD-ROM
- 2007-12-31 Deliverable 04.1.6: Published Soil Guide for Schools in all 25 official EU languages
- 2007-12-31 Deliverable 04.1.7: National editions of the Soil Atlas of Europe in French, German and Italian
- 2007-12-31 Deliverable 04.1.8: Printed 1:250,000 scale soil map of Slovenia with explanatory notes
- 2007-12-31 Deliverable 04.1.9: Soil Atlas of Europe - web version
- 2007-04-30 Deliverable 04.2: Build up a platform in order to systematically integrate the objectives of the Thematic Strategy for Soil Protection in the future JRC Work Programmes and assess gaps
- 2007-12-31 Deliverable 05.1: First draft of the Soil Atlas of Africa
- 2007-12-31 Deliverable 05.2.1: Final draft of the Northern Circumpolar Soil Atlas
- 2007-06-30 Deliverable 05.2.2: Report on the establishment of a European Working Group on Northern Soils
- 2007-12-31 Deliverable 05.3: Reports and meetings in preparation of the UNCCD COP-8
- 2007-12-31 Deliverable 07.2: Report on study on the relationship between forest soil analytical data and leaf analysis data
- 2007-12-31 Deliverable 06.1: Production of a Soil Information System of the Danube river basin (DVD) with soil layers (raster images) at two resolutions: 250 m (basic) and 1 km (generalized) (in collaboration with Action NAHA)
- 2007-09-30 Deliverable 06.2: Book: Land Resources of Belarus, Moldova, Russia and Ukraine
- 2007-12-31 Deliverable 07.1.4: Report on "How to model pedogenesis in Europe? Are quantitative rules possible?"
- 2007-12-31 Deliverable 07.1.1: A user-guide/handbook "User manual for spatial prediction of soil variables at pan-European levels"
- 2007-12-31 Deliverable 07.1.2: Report and map of predicted soil texture for Europe at 100 m resolution
- 2007-07-31 Deliverable 07.1.3: Report on the typology of the soil-forest continuum

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