

ESDAC

Implementation Plan 2007 – 2009

31 May 2007

1. Introduction

In order to ensure the provision of robust data and information on the state of the environment for the development of environmental policies at European Union level, the European Commission's DG Environment (ENV), DG Joint Research Centre (JRC) and Eurostat, together with the European Environment Agency (EEA), together called "Group of four" (Go4), have decided at the end of 2005 on the establishment of "Environmental Data Centres". These data centres will work in support of DG ENV, which will formulate its data requirements.

As part of a joint system and covering the thematic aspects of soil and soil related applications within the EU, the Environmental Soil Data Centre (ESDAC) will be established within the JRC. ESDAC will constitute the primary focal point for DG ENV for data and information on soil related issues, fulfilling DG ENV's data and information needs. The role and features of ESDAC will evolve over time in line with the ongoing development and implementation of the envisaged Shared Environmental Information System (SEIS).

This document describes the roadmap for the implementation of ESDAC in the period 2007 – 2009 and details the tasks, resources and actions needed for this purpose.

2. Status of the document

This document sets out the roadmap for ESDAC development over the years 2007-2009. It attributes responsibilities and estimates resource needs. Given the early stage of the EU Soil Protection Strategy and the related Soil Framework Directive, the ESDAC implementation plan is designed in a very flexible approach, allowing for future adjustments depending on the outcome of the Parliament and Council deliberations of the future legislation on soil protection for Europe.

3. Objectives

The specific objective of ESDAC is to establish a thematic centre for soil related data and information in Europe, in support to the needs of DG ENV following the technical arrangement of the Go4. ESDAC will become the single focal point for policy relevant soil data and information at EU level by hosting relevant EU soil products (by which is meant datasets, documents, services and other types of information such as maps and graphs) and by providing web-based tools for the access to and the update of information located at the ESDAC.

ESDAC will reach this goal based on the extensive experience gained by the JRC in establishing a functional system of soil data and information in support of European policy requirements. Starting from the available data within the JRC and the other Commission services, a multi-scale system of soil information will be designed and tested in several pilot areas. The system will allow for the incorporation of information from National and Regional soil data nodes (National and Regional soil

data providers) fully complying with the INSPIRE principle of delocalized data systems in a networked approach.

European views for various content aspects of soil (like functional maps for Europe) will be produced by JRC/EEA and quality-controlled and hosted in the ESDAC.

4. ESDAC Principles

Organizational Principles

The development of ESDAC is generally based the following principles:

- The key principle is "Report or submit data once (to a central place) and use many¹; use of harmonised data reporting tools"
- ESDAC will integrate with State-of-the-Environment (SoE) work for Europe and be compliant with future EU soil protection legislation (and where appropriate other) reporting data flows.
- ESDAC will be one node in a system consisting of distributed data nodes: as a soil data node, it will hold soil data at European level, while other soil data nodes at regional, national or global level will focus on data of different scales.
- Users can build own services and connect their data to ESDAC or access ESDAC data (interoperability)
- ” Responsibility: For delivery of timely data in high quality data should be stored and delivered by the organization which is responsible for data collection, update, and quality.”

The ESDAC is developed in close relationship to the INSPIRE Directive and ESDAC will be integrated into the broader context of spatial information sharing, in order to ensure the application of the following principles:

- Shared information system
Environmental Data should be stored at different nodes and information should be shared between all participating nodes.
- Interoperable system
For the sake of information sharing and exchange all participating nodes have to be interoperable, data should be exchangeable and services should be able to access and process data from different nodes.
- Follow subsidiarity principle
Data should be maintained at the most appropriate level and shared between all other levels.
- Transparent (open)
It should be possible to discover easily data and services. Users should be able to determine data's fitness for use and the conditions of usage should be clearly described.

¹ Data should be collected once, maintained at most appropriate level and shared between all levels.

In order to realize ESDAC based on these principles, the JRC will meet at least once a year with DG ENV, EEA and ESTAT in order to discuss progress, communicate requirements and delineate tasks and responsibilities. Ideally, this should happen at the end of year when JRC needs to establish its Work Programme for the coming year.

It is expected that many requirements for ESDAC will be in relation to data issues for the SFD (e.g. methodologies for submission of risk area data/maps, issues on data quality assurance and analysis, evaluation of data). ESDAC will take these on board.

Technical principles

The main aim of the ESDAC is to become the single focal point for policy relevant soil data and information at EU level by hosting relevant EU soil products (by which is meant datasets, documents, services and other types of information such as maps and graphs) and by providing web-based tools for the access to and the update of information located at the ESDAC. Two main types of users of ESDAC are envisaged: public users who would have access to all public data and privileged users who would also have access to protected data; some privileged users may have rights to update information contents. The user access policy will be aligned with Go4 developments related to the “DC common architecture”, the SEIS and INSPIRE.

The ESDAC will be in principle decentralized, meaning that aggregated data and information will reside physically on ESDAC servers located at the JRC, while the original data will stay with the data owner. Provisions will be made so that the product, which may be accessed elsewhere, will be visible in the ESDAC through its metadata. Quality control of the original data is under responsibility of the data provider; if ESDAC intends to aggregate such data in value-added products, it will conduct an additional quality check in line with its QA/QC policies.

ESDAC’s major tasks will be the collection and interpretation of data and information needs, the subsequent collection and compilation of data, checking and improving of data quality and making data available to the users. Additionally, when required, it will also perform assessments of the stored data and information.

In order to be interoperable with other emerging services, metadata will be created according to a metadata model in line with agreed international standards and possible applications will be developed as interoperable as possible.

The ESDAC will be as “open” as legally possible, meaning that if data and information resident in the ESDAC can legally be published, the system will do. Even when a product is protected for access by only privileged users, efforts will be made in order to present its metadata to the user.

In the future, ESDAC could become one soil data centre in a group of co-operating soil data centres including the World Soil Data Centre (ISRIC), National Soil Data Centres (at Member State level) and Regional Soil Data providers, providing policy relevant soil information for different scales. The ESDAC will adapt in order to be interoperable with these centres.

5. Development of ESDAC – preparation and construction phase

Preparation Phase (2006)

During 2006, the JRC LMNH Unit defined the ESDAC to the largest possible extent and took stock of its soil data holdings and other European and national level soil data held at JRC, other DG's of the European Commission and EEA.

The technical component of ESDAC was defined in relation to the current soil data and information service that the JRC LMNH Unit is operating through the European Soil Portal (<http://eusoils.jrc.it>); this service is to be seen as a pre-cursor of ESDAC. This service makes available four types of products: data, documents, data-based applications and scanned maps. Most data are derived products from the European Soil Database, other result from projects at EU-level (e.g. SPADE, PESERA). The documents are reports written in the context of JRC institutional work, many in collaboration with partners of the ESNB. The applications are mainly web mapping applications that use soil data. The scanned maps form an archive of soil-related maps. Along with the management of these data and information, a Help Desk is operated for data distribution and solving problems and answering questions related to the use of the data. While this data and information service performs well, a number of improvements must be made. These improvements are to be developed during 2007, resulting in a system that will be able to hold current and future data holdings.

A collaboration agreement between JRC and the World Data Centre for Soil (at ISRIC) was signed. A Memorandum of Understanding (MoU) between JRC and FAO is under preparation. Both agreements aim at collaboration on a number of specific soil issues at European level. Another more general MoU between JRC and EuroGeoSurveys has been made and could be exploited.

A framework contract for soil data provision is under preparation to allow the JRC to acquire in a flexible manner soil data from a consortium of soil data providers.

Construction Phase (2007-2009)

During 2007-2009, various actions are to be taken in order to make ESDAC a reality:

- implementation of the ESDAC technical platform
- population of ESDAC with currently available data and information
- integration in ESDAC of BioSoil and other future data elaborated by JRC (to be discussed with EFDAC)
- integration of LUCAS data (developed by Eurostat)
- collection of requirements for new data and information from DG ENV; organization of data collection and integration in ESDAC
- definition of a mechanism for the transfer of results (data and information) from soil related EU projects to ESDAC (with DG ENV and DG RTD)
- definition of the working link between EEA and ESDAC in relation to “contaminated land/sites” (collection of requirements for new data and information from EEA; SoE Report requirements, pan-european requirements)

- implementation of the collaboration with ISRIC, FAO and EuroGeoSurveys
- development of a system to host data reported by Member States, in relation to the soil FWD
- if specifically required by DG ENV: European reporting to international conventions

6. Integration of Datasets in ESDAC

The following table lists the datasets and information that are envisaged to enter ESDAC in 2007-2009:

Table 1: Overview and timetable for integration of datasets

No.	Data origin	Responsible Go4 partner	Timetable for inclusion	Comments
1	JRC in-house data/info	JRC	Already available	-
2	BioSoil data	JRC	End 2008	Data delivered by BioSoil project; to be discussed with EFDAC
3	LUCAS	JRC/ESTAT	From 2007, as data become available	Data delivered by Eurostat
4	Data and information elaborated for DG ENV	JRC	Elaboration during 2007; integration during 2008 and 2009	Data requirements specified by DG ENV
5	Data and information from EU projects	JRC	From 2007, as results become available.	Once the mechanism for transfer is defined (in collaboration with DG ENV and DG RTD)
6	Data from EEA	JRC/EEA	From 2007, as data become available.	Once the mechanism for collaboration and transfer is defined
7	Data stemming from collaboration with Word Data Centre for Soil	JRC	2008	-
8	Data stemming from collaboration with FAO	JRC	2008	-
9	Data stemming from collaboration with EuroGeoSurveys	JRC	2008	-

As a first step, this table lists the current data providers for ESDAC. "Data from EEA" includes contributions from EIONET for data related to soil contamination. The mechanism for data provision is still to be defined. In a second step, based on DG ENV requirements, new data providers will be identified and their involvement will be secured.

7. Work Plan, tasks and commitments

Based on the above, a very rough plan of work is proposed.

During 2007, the JRC-IES will develop the ESDAC technical component and will populate it with data and information that are available. JRC-IES will discuss requirements with DG-ENV and decide which data and information are to be acquired and elaborated in the short term (2007-2009). JRC-IES will initiate its collaboration with the World Data Centre for Soil, with FAO and with EuroGeoSurveys. The results of this will progressively feed into ESDAC. JRC will continue to develop the JRC BioSoil project and monitor LUCAS developments at Eurostat. JRC-IES will define its working relation with EEA concerning soil. A mechanism for soil data transfer from EEA to ESDAC will be specified and implemented (this will be the subject of a meeting between JRC, EEA and DG ENV on 18 September 2007).

During 2008 and 2009 new data requirements will be discussed yearly between JRC, DG ENV, EEA and ESTAT; JRC will set-up the necessary processes to obtain the required data. EEA will feed its results into ESDAC, under supervision (QA/QC) by JRC. Also, results from EU-funded projects will then be integrated, following an agreement between DG ENV and DG RTD. Furthermore the inclusion of soil data related to IRENA has to be discussed between DG ENV and DG AGRI.

8. Resource needs

JRC

In accordance with the Technical Arrangements between DG ENV, ESTAT, JRC and EEA on Environmental Data Centres as agreed on 14 November 2005, the JRC is the data centre for soil. This places the main responsibilities and the need for adequate resource allocation towards the JRC within the construction phase.

During this phase staff resources for the scientific and technical coordination as well as for IT support is needed. Despite the necessary hard- and software additional resources have to be available for the supply of soil data to the European Commission (framework contract to collect on an ad hoc basis data from various sources depending on the specific requests by the various users within the Commission as well as within the Go4).

Resources for the operational phase (from 2010 onwards) have to be financed from operational budget lines, not available at the JRC.

DG ENV: *to be completed by DG ENV*

Eurostat: *to be completed by ESTAT*

EEA: *to be completed by EEA*

9. Outstanding items:

- Link to DG RTD projects to be formalized by DG ENV

- Link to DG AGRI activities (IRENA) to be formalized by DG ENV
- Link to DG ENTR activities (GMES) to be formalized by DG ENV

Annexes:

Annex I

Requirements from DG ENV (Letter: ENV.B1/CO/en D(2005) 26146)

NOTE TO THE ATTENTION OF MR IAN CLARK

HEAD OF UNIT ENV-G3

Subject: Technical agreement between ENV, ESTAT, JRC and EEA on Environmental Data Centres- data requirements for soil data centre

Please find enclosed the data requirements we would like to transmit to the soil data centre. These requirements have to be read in conjunction with the comments made to the JRC for their Work Programme 2006.

Within the Work Programme 2006, especially within the Action MOSES, several of the data collection needs of DG ENV will likely be fulfilled. Over the year 2006 and onwards, it would be important for DG ENV to receive from the JRC:

- timely and targeted scientific and technical support to DG ENV on issues that may arise in the context of the negotiation of the proposal for a Soil Framework Directive through Council and Parliament.
- scientific and technical support for the development 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.
- scientific and technical support for the development 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.
- the results of the progress 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.
- in cooperation with EUROSTAT, the evaluation of the main results of the exploitation of the data collected during the different surveys performed under the LUCAS project.

We understand that, as the establishment and functioning of the data centre progresses, we will be able to provide more specific requirements in the near future, also on the basis of the discussions to take place during the adoption of the future Soil Framework Directive and the ongoing discussions in the context of the adoption of the INSPIRE proposal.

Annex II

Inventory of available data

JRC	<i>European Soil Regions</i>	Soil regions of Europe (scale 1:5,000,000)
	<i>European Soil Database (ESDB) and derived products</i>	Soil geometry and attribute data for Eurasia obtained through harmonization of national soil data (scale 1:1,000,000)
	PESERA	Soil erosion map for Europe (1k cells)
	OCTOP	Organic Carbon map for Europe (1k cells)
	<i>Various datasets at 1:250,000</i>	Italy, Albania, Odra basin, Meuse basin
	<i>Various soil profile datasets (point data)</i>	Soil Profile Analytical Databases for Europe (SPADE), Danube basin
	<i>European Digital Archive of Soil Maps (EuDASM)</i>	Archive of >5000 scanned soil related maps for all continents.
	Forest Focus, BioSoil	Forest soil (point)data
	SINFO	ESDB data expanded for the Crop Growth Monitoring System (CGMS)
ESTAT	Soil data from LUCAS project	
EEA, EIONET, ETC/TE	Data on progress in management of contaminated sites for EU	
	Compiled data related to the following indicators : Soil sealing, Diffuse contamination ("Heavy metal accumulation" and "Sewage sludge	
EC	Data from various EC funded soil related projects (e.g. ENVASSO (Environmental Assessment of soil for monitoring)	
Member States	Currently : existing soil data documented in EUR Reports "Soil Resources in Europe"	
	Future : possibly "risk area" data for major soil threats identified in context of Soil Thematic Strategy and Soil Framework Directive	