

Revision of Soil Indicator and Management of Contaminated Sites in Europe



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<http://ies.jrc.ec.europa.eu>

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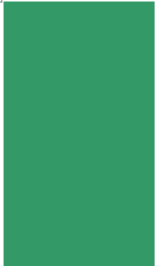
Supporting legislation



European
Commission



World Health
Organization
REGIONAL OFFICE FOR
Europe



CONTAMINATED SITES AND HEALTH



Science for Environment Policy

IN-DEPTH REPORT

**Soil Contamination:
Impacts on
Human Health**

September 2013
Issue 5



Environment

- 1. European Policy related to Soil**
- 2. Management of Contaminated Soils - EIONET**
- 3. Revision of the Land and Soil Indicator LSI003**

What is the Joint Research Centre?



The JRC is a Directorate General of the European Commission

European Council

European Parliament

European Commission
28 Commissioners

Commissioner (2014-2019)
Education, Culture, Youth and Sport
Tibor Navracsics



HORIZON 2020

DG
RESEARCH

DG
JRC

.....

DG
ENVIRONMENT

OTHER
DGs

**Scientific and technical support to EU
policy development and implementation**

Do we have a problem with soils?



Evidence of soil degradation in Europe



Major threats affecting soils in EU

- **Soil sealing:** some **1000 km² per year** = 270 ha/day are taken mainly from agriculture for urban and infrastructure development ... In 10 years an area of the size of Cyprus
- **Soil erosion: 1.3 million km²** in EU-27 estimated to be affected by soil erosion by water
- **Soil contamination:** estimate of **3.5 M sites** potentially contaminated with **0.5 M sites** really contaminated (2006) – 4.5 M sites, Ernst and Young study (2013)
- **Landslides:** Over 630,000 landslides currently registered in national databases. Estimated affected surface areas are: 7% Italian territory, 5% Slovakian territory, 1% Portuguese territory

The Soil Thematic Strategy

Overall objective is the protection of **soil functions** and **sustainable use** of soil, based on the following guiding principles:

Prevention of soil degradation

Restoration of degraded soils

Sets out the **four pillars** of EU soil policy



↓ **7 years**

REFIT Communication COM(2013) 685, 2.10.2013

Withdrawal of a proposal for a Soil Framework Directive

The Commission remains committed to the objective of the protection of soil and will examine options on how to best achieve this. Any further initiative in this respect will however have to be considered by the next college.

WHAT NEXT?

The Soil Framework Directive was withdrawn but...
Commission is still committed to achieve soil protection:

- **The Soil Thematic Strategy is still alive**
- **Resource Efficiency Roadmap** « by 2020 EU policies take into account their direct and indirect impact on land use in the EU and globally... with the aim to achieve no net land take by 2050; soil erosion is reduced and the soil organic matter is increased, with **remedial work on contaminated sites well underway** »
- The Commission is further developing the scientific knowledge-base (...) leading to a Communication on land use (in 2016).
- **7th EAP provisions on land and soil protection (2014-2020)**
- **Rio+20 Outcome Document 'The Future We Want' (2013)**
EU will strive to achieve a land degradation neutral world in the context of sustainable development.

Steps for a new initiative

- *Meeting of the Director General of DG ENV with the Directors General of Environment in September 2014 – gap analysis of soil legislations and policies needed*
- *A study on soil legislations and policy instruments will be launched in 2015 for knowledge update (IA done in 2006)*
- *For soil contamination regulatory context analysed in details (Ernst and Young study, 2013)*
- *Feed-back required from EIONET WG*
- *Need to improve knowledge e.g. on soil biodiversity, soil contamination etc.*
- *Lessons learnt exercise*
- *Network to be rebuilt – objective of EIONET meeting*
- *Dialogue with stakeholders – using existing platforms*

General Union Environment Action Programme (7th EAP) to 2020 'Living well, within the limits of our planet'



Priority objective 1:

To protect, conserve and enhance the Union's natural capital

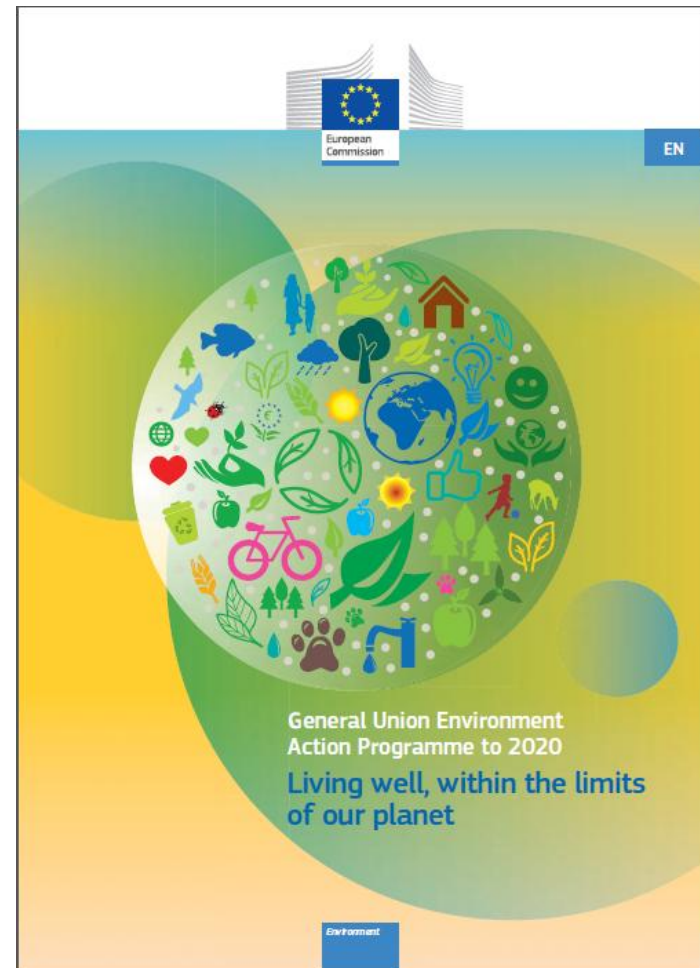


25. To reduce the most significant man-made pressures on land, soil and other ecosystems in Europe...



28. ..., the 7th EAP shall ensure that by 2020 (...) (e) land is managed sustainably in the Union, **soil is adequately protected and the remediation of contaminated sites is well underway**

From November 2013 until 2020



<http://bookshop.europa.eu/en/general-union-environment-action-programme-to-2020-pbKH0113833/>

2. Management of Contaminated Sites in Europe: EIONET

J R C R E F E R E N C E R E P O R T S



Progress in the management of Contaminated Sites in Europe

Marc van Liedekerke, Gundula Prokop,
Sabine Rabi-Berger, Mark Kibblewhite,
Geertrui Louwagie

2014

Report EUR 20219 EN

J R C R E F E R E N C E R E P O R T S



The State of Soil in Europe

*A contribution of the JRC
to the European Environment Agency's
Environment State and Outlook Report–SOER 2010*

A. Jones, P. Panagos, S. Barcelo, F. Bouraoui, C. Bosco,
O. Dewitte, C. Gardi, M. Erhard, J. Hervás, R. Hiederer,
S. Jeffery, A. Lükewille, L. Marmo, L. Montanarella,
C. Olazábal, J.-E. Petersen, V. Penizek, T. Strassburger,
G. Tóth, M. Van Den Eckhaut, M. Van Liedekerke,
F. Verheijen, E. Viestova, Y. Yigini

2012



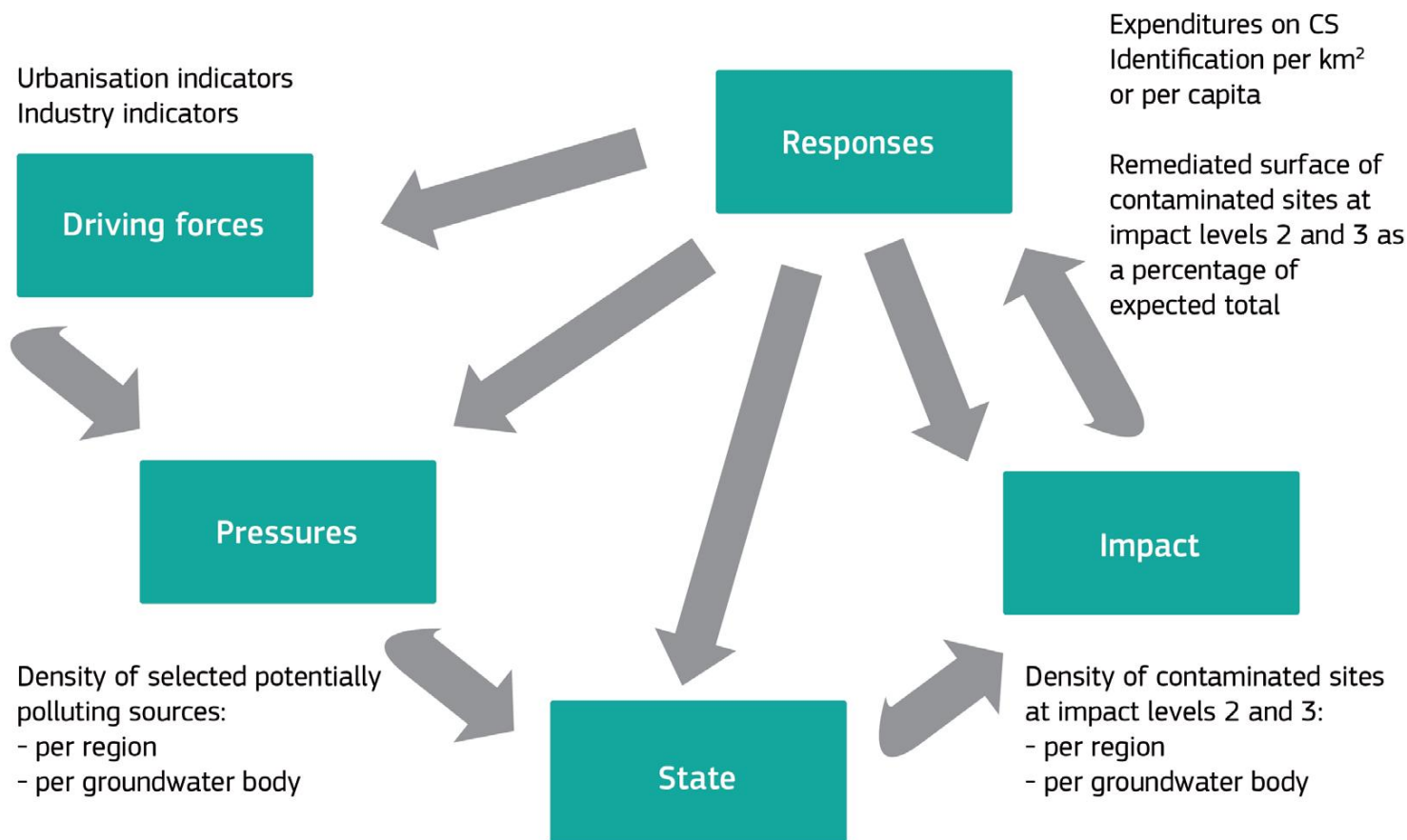
EEA indicators

- designed to answer key **policy questions**
- support **all phases** of environmental policy making (design, target setting, policy monitoring & evaluation, communication)

Typology depending on **the policy phase**:

- Type A: descriptive indicators (*What is happening to the environment and humans?*)
- Type B: performance indicators (*Are we reaching targets?*)
- Type C: efficiency indicators (*Are we improving?*)
- Type D: policy effectiveness indicators (*Are measures working?*)
- Type E: total welfare indicators (*Are we on the whole better off?*)

Driving forces – Pressure – State – Impact – Response (DPSIR) framework



Source: EEA, 2002

Key policy questions addressed

PQ1 What is the estimated extent of soil contamination?

PQ2 How much progress is being achieved in the management and control of local soil contamination?

PQ3 Which sectors contribute most to soil contamination?

PQ4 Which are the main contaminants affecting soil and groundwater in and around contaminated sites?

Indicator for the management of contaminated sites in Europe (38 countries)



The European Pollutant Release and



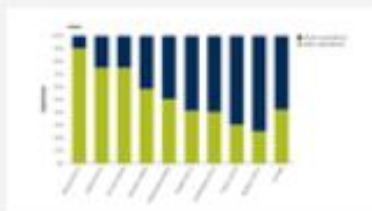
Funding mechanisms for orphan sites



Inventories for contaminated sites



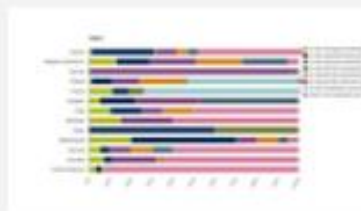
Progress per management step



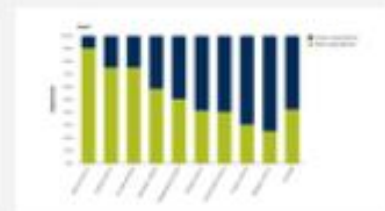
Estimated allocation of public and private



Identified sites



Most frequently applied remediation



Progress in management of

Source: EEA <http://www.eea.europa.eu/data-and-maps>

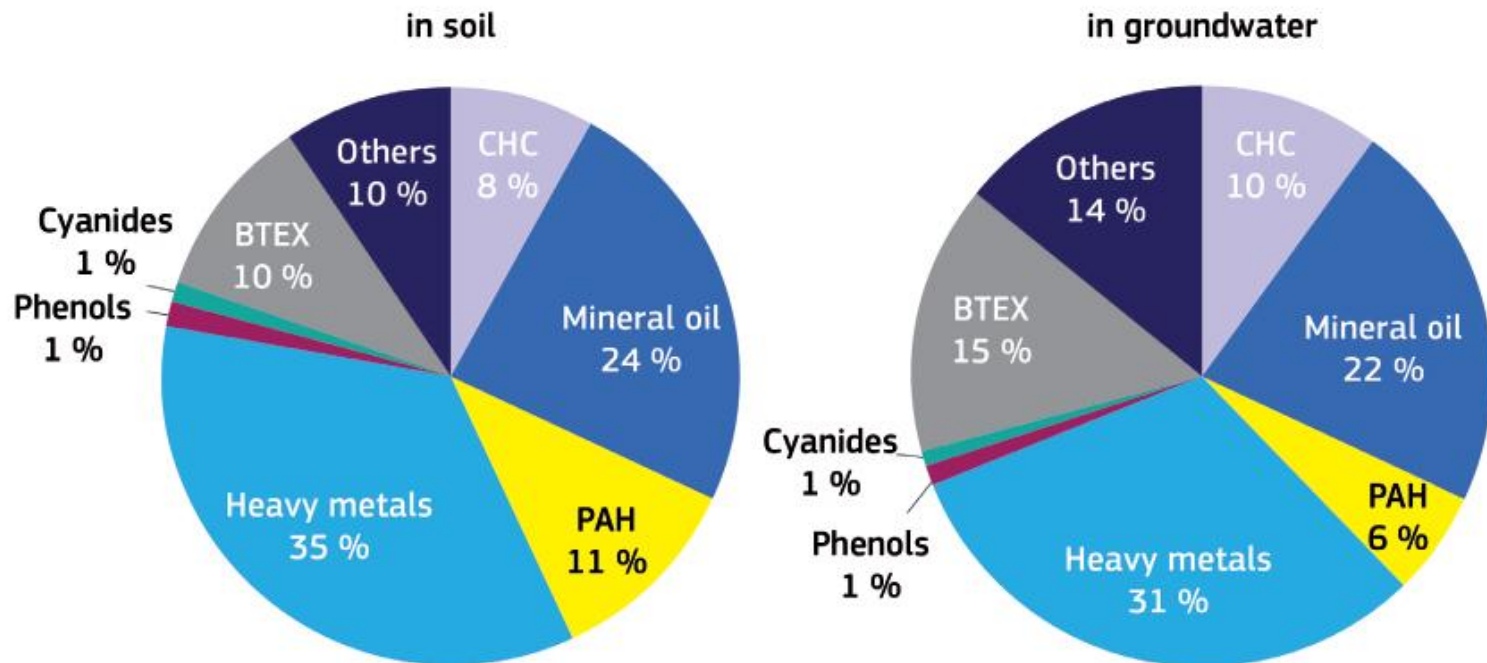
Reference Report on the management of contaminated sites in Europe (JRC, 2014)

- There are an estimated 2.5 million potentially contaminated sites in Europe, where soil contamination is suspected and detailed investigations are needed.
- Of the circa 115 000 contaminated sites that have already been identified in Europe, nearly half of them (46%) have already been remediated.
- Contaminated sites are mainly managed using 'traditional' techniques such as excavation and off-site disposal, which together account for about one third of management practices.
- Mining activities, metal industries and gasoline stations are the most frequently reported sources of soil and groundwater contamination. However, the range of polluting activities varies considerably from country to country.
- The most frequently occurring contaminants are mineral oils and heavy metals.

The results of the questionnaire compiled by the JRC.

The questionnaire was sent to 39 European countries;
27 countries returned the questionnaire.

Most frequently applied occurring contaminants



National Targets

| | | |
|-------------|------|--|
| Austria | 2025 | Identification of CS completed |
| Denmark | 2016 | Site identifications and preliminary investigations are completed nationwide |
| Estonia | 2030 | All contaminated areas to be remediated or sustained |
| Romania | 2020 | Environmental remediation of the majority of polluted areas |
| Switzerland | 2025 | Remediation or containment of historic soil contamination |

3. Revision of the indicator LSI003 Management of Contaminated Sites in Europe

1st EIONET NRC soil ad hoc WG on CS & Brownfields meeting (10-11 March 2015)

16 Member Countries represented + DG ENV , JRC and EEA

1. Proposals for the revision of the indicator "Progress in the management of contaminated sites in Europe"
2. EIONET meeting conclusions and follow-up actions

Proposals for the revision of the indicator "Land and Soil Indicator" LSI003

Proposal 1.- To consider as baseline the year 2001 when CSI015 was established. In case the country started building a national programme after 2001 a different baseline – year will be specified by this country.

Proposal 2.- New expressions were proposed to replace the parameters PCS, CS and Remediated Sites (RS)

The new expressions are ranked from 1 to 6 as following:

- 1. Sites where polluting activities took place (e.g. based on Annex 2 of proposed SFD, but usually based on country-specific list) - (rather than 'Sites registered');*
- 2. Sites in need of investigation/still to be investigated – clear suspicion of contamination (not relevant to all countries, in some countries there is a transition from situation 1 to situation 2 following risk assessment);*
- 3. Sites that have been investigated, but no remediation needed (unless land use change, i.e. fit for current use);*
- 4. Sites that need remediation or RRM (risk-reduction measures, including natural attenuation if monitored) – see definition remediation of Common Forum;*
- 5. Sites under/with on-going remediation (probably common for all countries);*
- 6. Sites remediation completed (probably common for all countries);*

Proposals for the revision of the indicator "Land and Soil Indicator" LSI003

- Proposal 3.-** New "sites where polluting activities took place" be counted separately from the "Baseline" and reported separately...
- Proposal 4.-** To ask the 11 EIONET countries, for which it is not clear if they keep a comprehensive national/regional or local inventory for contaminated sites, in which way are they monitoring the progress in the management of contaminated sites.
- Proposal 5.-** With no common European legislative framework on soils, there is no formal working group to develop a harmonised approach to setting environmental standards for soil quality. The Chair invited the experts to share the information and methodology available in their countries.
- Proposal 6.-** For 22 EIONET countries it is not clear if they have established policy targets relating to the management of contaminated sites. They will be invited to submit their targets relating to the management of contaminated sites.



Way forward of the EIONET Soil

- To recollect information for the revision of the (new) indicator LSI003 Countries are invited to submit questions to EC-JRC by e-mail to **ana.paya-perez@ec.europa.eu** until **31 July 2015**
- A story book of "good/bad/successful stories of soil land restoration" will be jointly published by Commission DG ENV, JRC and EEA as contribution of the "*EIONET Soil Group on Contaminated Sites and Brownfields*" to the International Year of Soil. Countries to send by e-mail to **ana.paya-perez@ec.europa.eu** up to 10 stories, summarized in maximum of 6 pages including graphics and pictures. Submissions are accepted **until 30th June 2015**.
- **Next meeting of EIONET NRC Soil** on 14-15 of October 2015 in Copenhagen (DK).

Success Stories of Soil Restoration

Submissions are accepted **until 30th June 2015**

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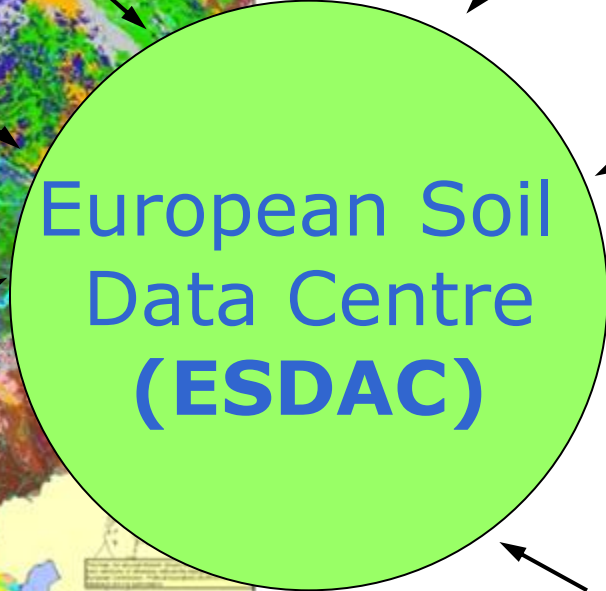
(Galicia, NW Spain; Macías-García et al. 2009)

European Commission
(EU funded soil related projects)

Data from specific in-house JRC
actions (e.g. ESDB, SOTER)

Member States

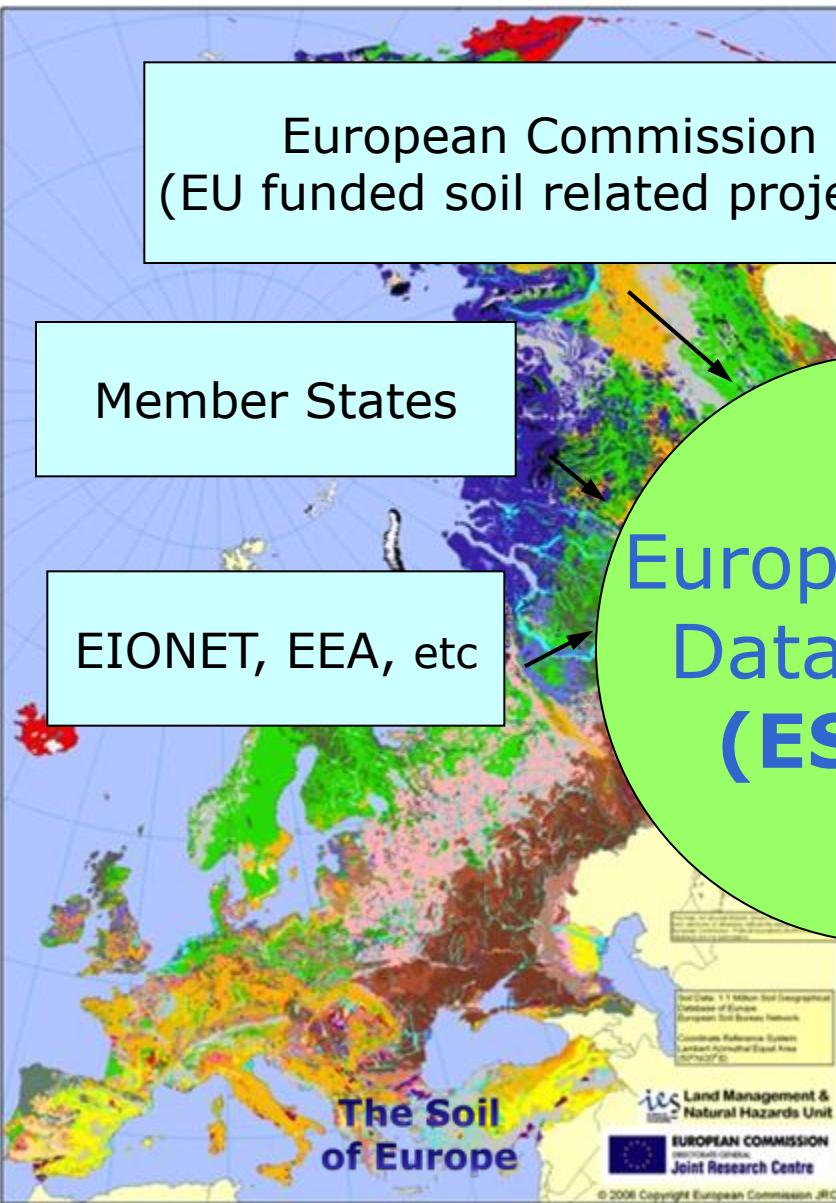
EIONET, EEA, etc



Data from related JRC
and EC actions
(e.g. LUCAS, BIOSOIL)

Network of soil centres
(e.g. ESNB)

Collaborative research
(e.g. EuroGeoSurveys, FAO, ISRIC)



Thank you for your attention!

2015

International
Year of Soils



<http://eusoils.jrc.ec.europa.eu/>