

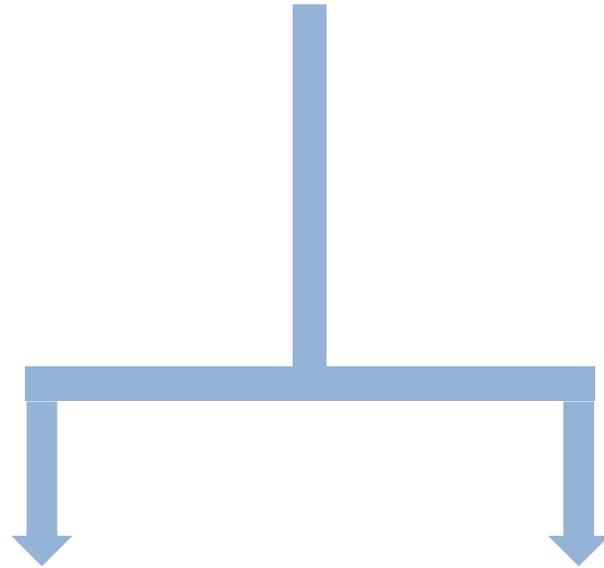
EEA perspective on soil data integration and exchange

Data integration

➤ Exchange of data fulfilling certain criteria (...)

Harmonization

- Conform to data exchange standards (ontology)
- Implement common nomenclature (profile descriptions, soil classification, etc.)
- Consider sampling and analytical standards
- Apply comparable indicator definitions, methods and thresholds



Joint data products
(e.g. EU soil map)

Original data may be altered
Defined criteria and products

Web-based data exchange (INSPIRE)

Original data intact
Great variety of products

Data integration

➤ (...) for a particular purpose/context

Quality
criteria

- Data descriptions (extended metadata)
- Uncertainty assessment
- Scalability (nested system, monitoring levels)
Quality control ↳ *requires harmonization*

Use cases

- Reporting under policies, targets and indicators
- Improvement of trans-national data bases/repositories
(e.g. European geographical soil data base)
- Calibration and validation
(dynamic models, pedotransfer functions (PTF), spatial predictions, etc.)

European soil data products/repositories

ESDAC

Soil geographical data bases
– polygons, raster, point

(soil typological units with soil type, topsoil/subsoil properties; derived soil profiles, soil functional maps, soil property maps)

Soil profile and analytical data bases
(SPADE-M, GSP Tier 1 and 2)

Soil monitoring
(LUCAS Soil)

Soil methods (PTF, PTR)

EEA-report.net/policies

LULUCF/AFOLU

(mineral soil and organic soil, CO₂, N₂O, CH₄)

NEC Art 9

(soil monitoring: terrestrial ecosystems: assessing the soil acidity, soil nutrients loss, nitrogen status and balance as well as biodiversity loss; **indicator set**, 2,946 sites)

EEA-indicator sets

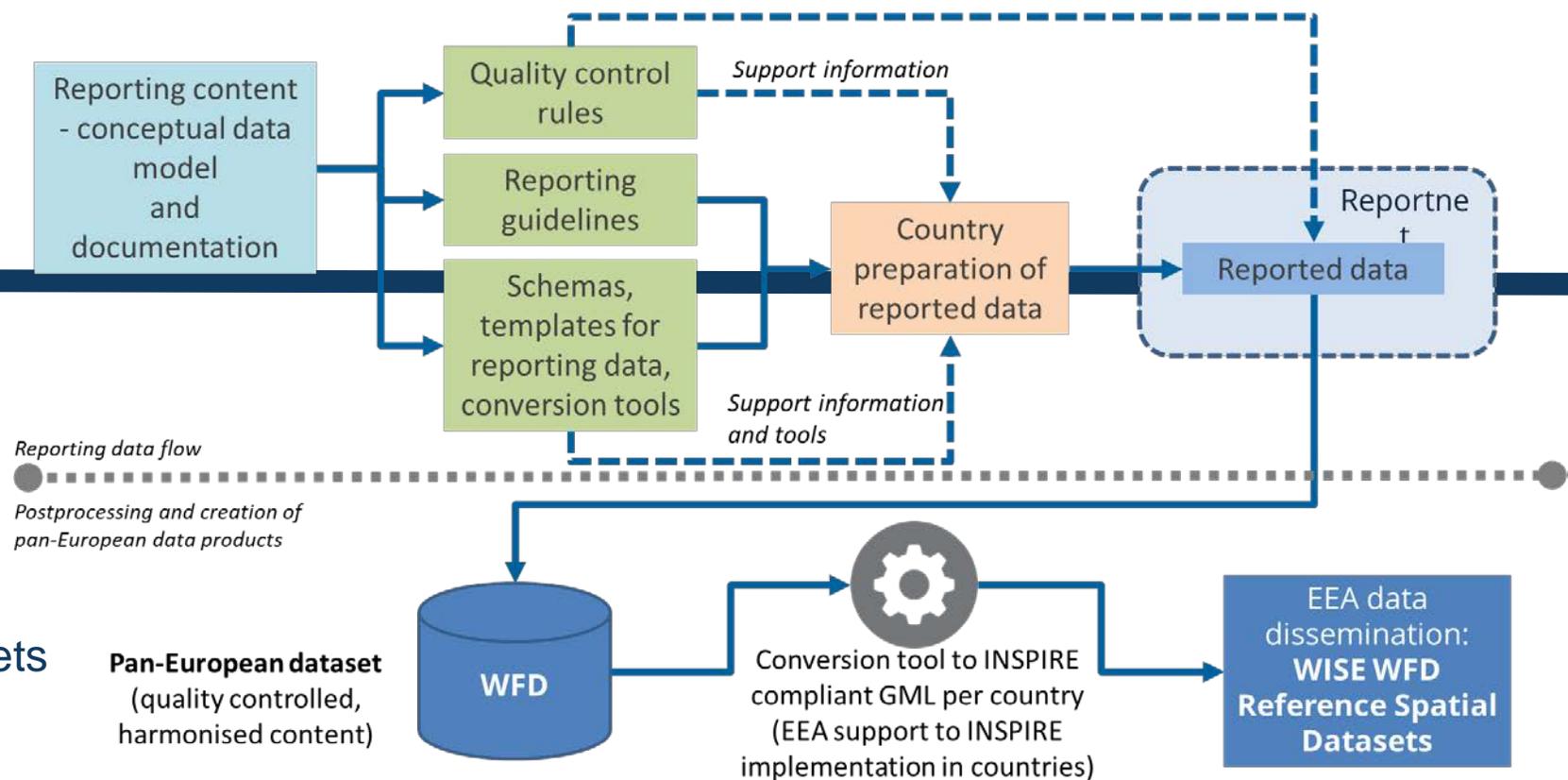
LSI 003 contaminated sites (six classes)

EEA-SDI/LISE

Soil sealing

ETC: Land degradation-related (soil) data sets

EEA SDI



- EEA catalogue of geospatial datasets
- More than 1400 datasets
- Reporting data flow using reportnet (water, industrial facilities, WISE, BISE, NEC, LULUCF) – incl. themes with INSPIRE-compliant GML datasets, e.g. noise
- Guidance materials for reporting
- Datasets stored in a file system and on a spatial database
- Open Source catalogue using customised GeoNetwork
- Wiki with EEA metadata profile, user guides, quality checks and registration process

Example of the reportnet WFD data flow



Interactive (“distributed”) soil data

Data sets by

Theme: **Soil**



Soil

701

Metadata records

170

Downloadable Data Sets

240

Viewable Data Sets

Spatial scope coverage:

- National
- Regional

All themes

91537

Metadata records

44811

Downloadable Data Sets

46439

Viewable Data Sets

INSPIRE use cases

EIONET INSPIRE workshop soil, 12 February 2020

Thematic maps

- Land irrigation suitability in Navarra (Spain)
- Development of methodologies for soil salinity surveillance in the middle Ebro basin (Spain)
- MARS (Monitoring Agriculture with Remote Sensing) project
- Restrictions for agricultural use based on mineral, the N-, and P saturation in the soil and (shallow) ground water.
- Calculation threshold trace elements
- Use of Soil Scape Viewer
- Establishment Less Favored Areas (France)

Contaminated sites

- Contaminated Land Register Austria
- Drinking water and soil contamination
- Ecology and contamination
- Property and contamination

Soil Monitoring

- State of soil in Europe

Agri-Environmental Indicators

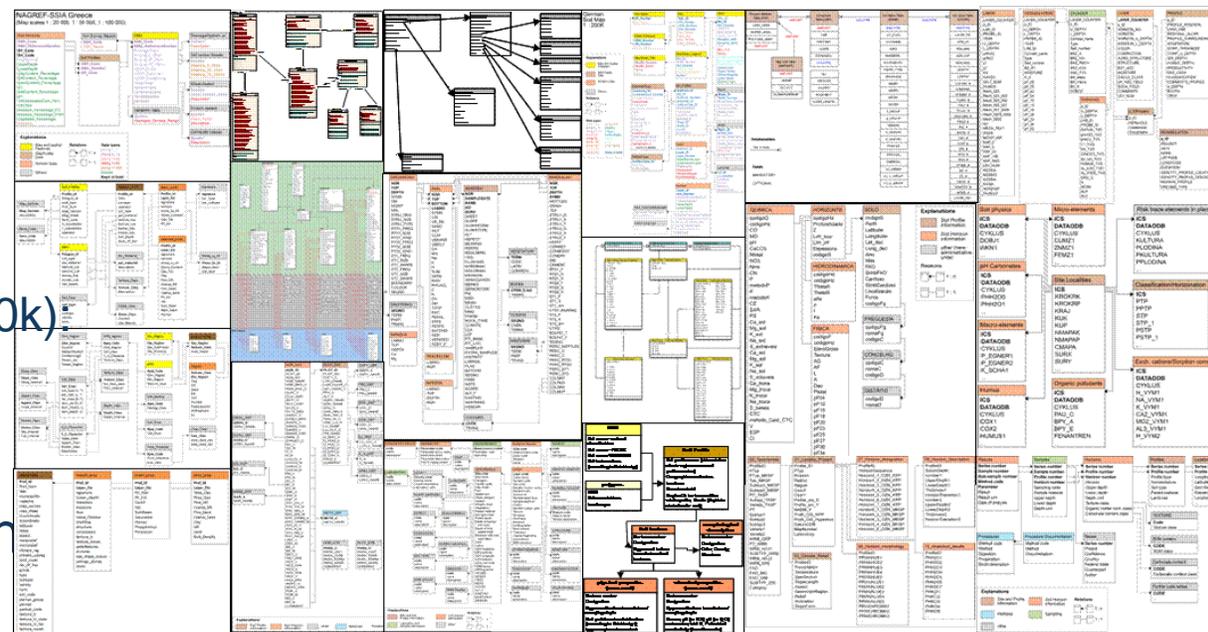
- Soil Erosion
- Soil Quality
- Progress in management of contaminated sites (LSI003)



MS-level harmonization activities in GS Soil

GS Soil Project

- Harmonization test cases
 - WRB and soil maps: 10 MS, 1 cross-border
 - Harmonization of map content (mostly 1:100k-1:250k)
16 MS
 - Harmonization of soil properties (texture class)
- Examples and testing soil conceptual modelling (soil profiles)
- Repository of technical term definitions and explanations (incl. multilingual thesaurus)
- Analysis of nested soil mapping systems
- Harmonization check lists (soil profile data sets, soil map data sets)



ENVASSO: Analysis of soil profile and map data bases

See also: eSOTER and GSP GSOCmap cookbook on SOC mapping for harmonized spatial predictions, and Landmark for soil functional parameters sets

Key messages

- EEA uses available soil data (LUCAS Soil, GEMAS, ICP Forests), models and national and legislative guidance values to test and populate soil-related (and other) indicators in support of EU policies
- This work is largely developed by ETCs (also part of EIONET), and in close cooperation, guidance and quality assurance by MS experts (2022ff: EIONET Group Land Systems, with a Thematic WG Soil, following up on NRC Soil)
- ETC tasks as well as integrated assessments (ZPA monitoring, soil condition report, SOER) are closely coordinated with ESDAC/EUSO and MS representatives
- Data products and knowledge exchanges with countries need to be deepened technically (see ESP Pillars 4 and 5: European INSII members and EUROSOLAN), to
 - improve Europe-wide mapping of soil functional parameters (based on improved basic geospatial soil data, e.g. soil type maps)
 - develop and agree on new applied methods (e.g. soil quality rating for land evaluation, and others needed for ecosystem-related assessments)
 - develop jointly guidance materials for improving and applying INSPIRE use cases (incl. monitoring), and improved cross-border harmonization