

Inventory of (potentially) contaminated sites: Implementation in Wallonia/BELGIUM

*International Conference Contaminated Sites
Bratislava – May 29-30th 2013*

Esther GOIDTS, PhD
Soil Protection Direction
Soil & Waste Department
DG Agriculture, Natural Resources & Environment





DIRECTION GÉNÉRALE OPÉRATIONNELLE
DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

Wallonie SPW
Service public de Wallonie

Outline

- 1 – Context & definitions
- 2 – Databases
- 3 – Inventory (& registers)
- 4 – Conclusions




DIRECTION GÉNÉRALE OPÉRATIONNELLE
DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

Wallonie SPW
Service public de Wallonie

Context & definitions

1 – Context & definitions



DIRECTION GÉNÉRALE OPÉRATIONNELLE
DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

Wallonie SPW
Service public de Wallonie

Context & definitions

1 - Inventories


Tool for land management

- land quality assessment
- land planning
- trigger for actions
 - ⇒ Soil investigations
 - ⇒ Soil remediation


Framework

- legal requirement at MS level
- political strategies

⇒ EU Soil Directive Framework project
⇒ COM Roadmap for resource efficiency



Implementation • variety of approaches



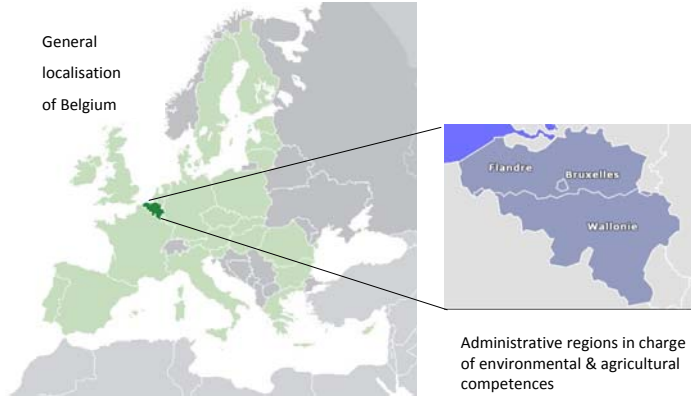
DIRECTION GÉNÉRALE OPÉRATIONNELLE
DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

Wallonie SPW
Service public de Wallonie

Context & definitions

2 - Context of Wallonia

General localisation of Belgium



Administrative regions in charge of environmental & agricultural competences

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

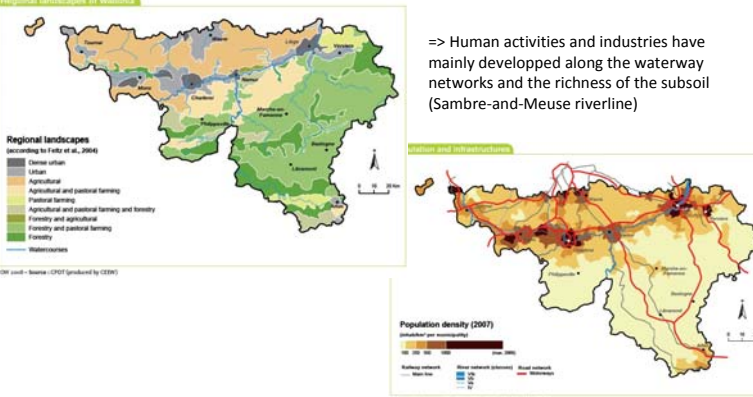
5

Wallonie

SPW

Context & definitions

Landscapes and human activity



=> Human activities and industries have mainly developed along the waterway networks and the richness of the subsoil (Sambre-and-Meuse riverline)

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT


6

Wallonie


SPW

Context & definitions

Long history of industrial activity



Angleur - 1855 (from CHST)



Seraing - 1926 (from AIDE)

- XVIIIth : coal and metal (iron) mining
- XIXth : 2d industrial world power

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

7

Wallonie

SPW

Context & definitions

Long history of industrial activity



- XXth : decline
- XXIth : reorientation towards high technologies

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

8

Wallonie

SPW

Context & definitions

3 - Definitions

Soil Decree (2008)

Potentially polluted field (~= « Potentially contaminated site » in EU terminology)

« Field where a soil pollution is suspected, especially because of the presence or existence in the past of an activity or installation identified or wastes likely polluting soil or because of the knowledge of a particular accident, not yet confirmed by analyses »

Annex III listing activities and installations likely polluting soils (231)

- ⇒ soil: superficial layer of terrestrial crust, including groundwater, and other present elements and organisms
- ⇒ pollution: presence on or in soil of pollutants detrimental or potentially detrimental, directly or indirectly to soil quality (contamination= presence of pollutants not necessarily detrimental to soil quality)

Norms based on risk assessment (Threshold value < polluted)

- ⇒ pollutant: product, preparation, substance, chemical compound, organism, or microorganism likely being responsible of a pollution
- ⇒ field: soil, delimited by a part, or one or several cadastral or not cadastral parcels, including buildings and installations incorporated in soil

Spatial resolution issue

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT
9

Wallonie SPW

Context & definitions Databases

2 – Databases

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT
10

Wallonie SPW

Context & definitions Databases

Sources of information (~registers)

1) Legal obligations

- 1967 • coal-producing site regulation
=> Coal-producing sites under rehabilitation
- 1978 • land planning decree
=> Economic wasteland, including brownfields
- 1985 • waste decree / environment code
=> Landfills, big activities / installations

Numerical data

- 1999 • protection at work regulation – gas station / environmental permit decree
=> Gas stations, all activities requiring environmental permit
- 2008 • soil decree
=> Potentially polluting activities/installations (annex III – 231)

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT
11

Wallonie SPW

Context & definitions Databases

Sources of information (~registers)

1) Legal obligations

- 1967 • coal-producing site regulation
=> Coal-producing sites under rehabilitation
- 1978 • land planning decree
=> Economic wasteland, including brownfields
- 1985 • waste decree / environment code
=> Landfills, big activities / installations

Old legal obligations

- unhealthy & dangerous establishments regulation
1810 - 1947
- cadastral law
~1830 - today
+ one-shot cadastral plan around 1860 (POPP)

1999 • protection at work regulation – gas station / environmental permit decree
=> Gas stations
1947 - 2002

- 2008 • soil decree
=> Potentially polluting activities/installations

=> The period from the industrial revolution of the XIXth century to the 2d world war is the major period for industrial activities in Wallonia

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT
12

Wallonie SPW


Context & definitions Databases

Sources of information (~registers)

2) Old topography maps

1770-1777

- Ferraris map



=> Not enough semantic details on installations/activities, although accurate land use drawings

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT 13

Wallonie SPW


Context & definitions Databases

Sources of information (~registers)

2) Old topography maps

1770-1777


- Ferraris map



1846-1854

- Vandermaelen map (VDM)

=> Especially focused on transportation networks (roads, rails & waterways), buildings including related activities, and not so much on general land use or topography: ideal for inventory purposes



DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT 14

Wallonie SPW

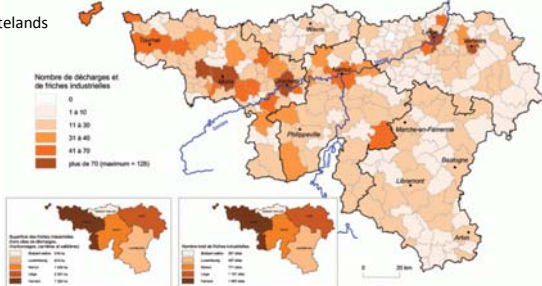
Context & definitions Databases

Sources of information (~registers)

3) Questionnaires to local authorities

2002

industrial wastelands & landfills



2013

=> collecting informations + informing local authorities for their access to means (tools and funds) and procedures to follow

570 < area (ha) < 7350 250 < n < 2000 => mainly located in Hainaut & Liège provinces (west and eastern parts)

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT 15

Wallonie SPW

Context & definitions Databases Inventory (& registers)

3 – Inventory (& registers)

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT 16

Wallonie SPW

Context & definitions Databases Inventory (& registers)

1 - Definition

Soil decree (2008)

Soil Status Database - SSDB (~= « *Inventory* » in EU terminology)

« SSDB inventories, for each cadastral parcel and for non cadastral properties, the following available data within administration: identity of real rights holder(s), data from (potentially) polluted fields inventories, data from soil investigations, soil control certificates of investigated or remediated fields and documents attesting conform remediation, references of operating permissions and environmental permits of activities and installations potentially polluting soils, references of remediation plans » => *the inventory is made of several registers*

- ⇒ SSDB is established progressively and managed by administration, and can be extended to other informations by the government
- ⇒ SSDB access is ruled by the government, without prejudice to public access to environmental data, which especially organises direct access to obligations holders, public authorities, acquisition comitees, notaries, soil experts and control organisms
- ⇒ Rectifications of SSDB can be asked by real rights holder(s) or by operators if necessary

SSDB use: administration judgement for permit delivery/cessation of activity/bankruptcy, trigger for soil investigations, information for sellers/purchasers through notaries, prioritization of sites remediation, ...

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT
17

Wallonie SPW

Context & definitions Databases Inventory (& registers)

2 – method of implementation


1) Identification of databases (~registers) and their link with the inventory

- from legal obligations, maps, questionnaires, ...
- based on a common terminology (see definitions)

2) Assessment of their relevance and their quality, then integration process

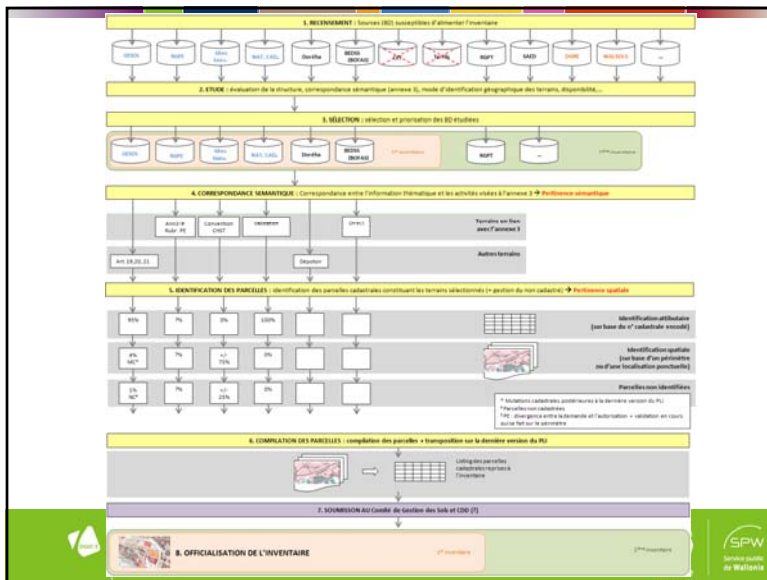
- Exhaustive georeferenced DB (cadastral matrix, existing DB on polluted sites, ...)
- DB requiring pre-processing (environmental permits DB, historical maps/plan, ...)
- DB difficult to exploit (no detailed georeferencing available, restricted access, ...)

⇒ DB need to be subject to integration which is characterised by technical constraints, especially spatial resolution issues (common spatial referential at the cadastral parcel level needed)



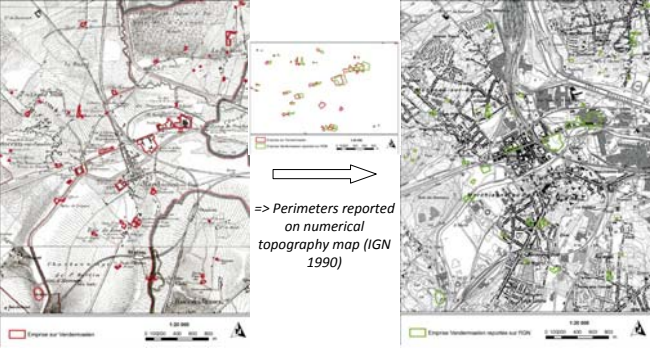
DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT
18

Wallonie SPW



Context & definitions Databases Inventory (& registers)

Example: pre-processing of VDM map



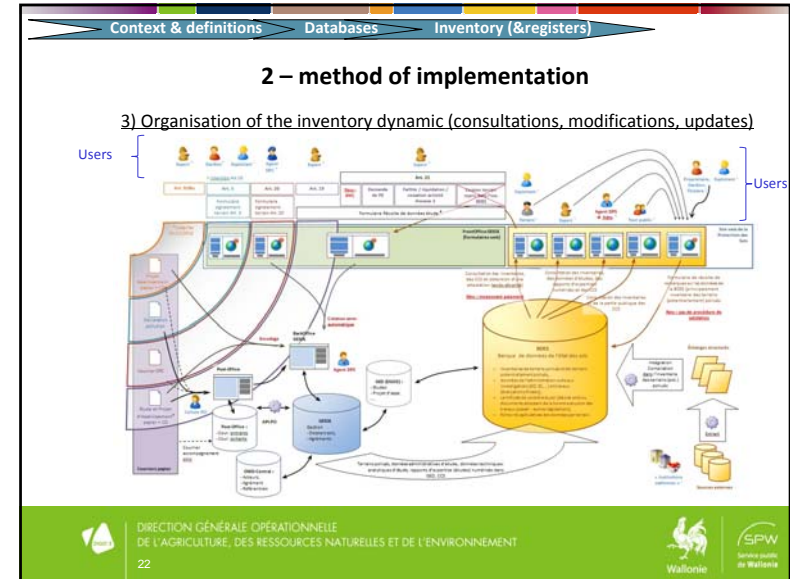
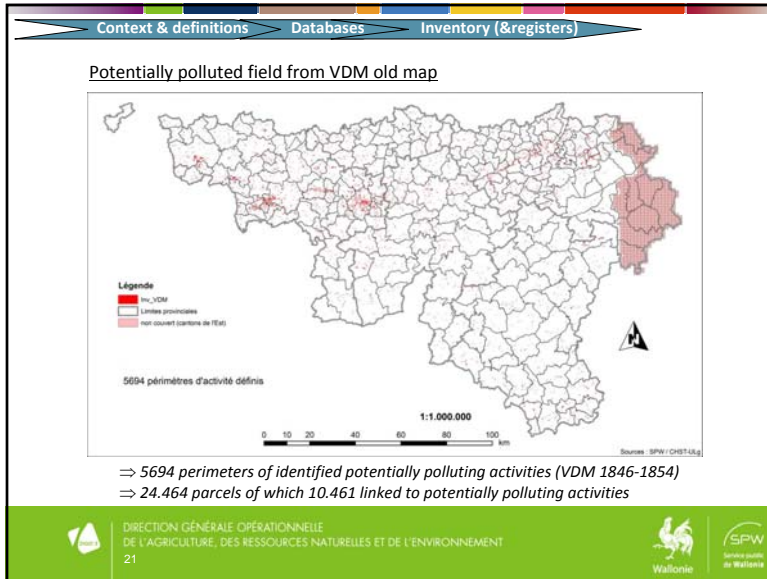
⇒ Perimeters reported on numerical topography map (IGN 1990)

⇒ Perimeters identified and digitized on VDM map

⇒ Perimeters linked to recent cadastral parcels (Cadmap 2012)

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT
20

Wallonie SPW



Context & definitions Databases Inventory (®isters)

2 – method of implementation

3) Organisation of the inventory dynamic (consultations, modifications, updates)

- online cartographic interface and access filters (front office)
- updates (back office)

⇒ DB need to have the information at the cadastral parcel resolution as the inventory will be a trigger for actions (investigations) on the site

Research tool

Link to other databases

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT
23

Wallonie SPW

Context & definitions Databases Inventory (®isters)

3 – first results (2012) before spatial integration

Legal framework / Driver	Starting date of database	n sites		Potentially contaminated		Contaminated	Remediated
		low estimate	high estimate	low estimate	High estimate		
Soil decree	5/12/2008	62	62			62	0
Environmental permit decree	11/3/1995	419	5765	419	5765	0	0
Protection at work – gas stations	4/3/1999	2006	2286	1310	1590	429	267
Waste decree	1985 - 26/6/1996	1301	1301	368	368	255	678
Economic wasteland (brownfields included) within land planning decree	1978 - 27/11/1997	1967	4217	1342	3592	248	377
Historical studies (Vandemaelen map – CHST 2012)	1846 - 1854	0	5694	0	5694		
Total		5.755	19.325	3.439	17.005	994	1322

⇒ the average density of potentially contaminated site is of 2 to 10 sites per 10 km²
 ⇒ between 1/8 and 2/3 of these sites were found contaminated after investigations
 ⇒ more than half of those contaminated sites are remediated

Spatial integration in process to avoid redundancy of sites

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT
24

Wallonie SPW

Context & definitions Databases Inventory (& registers) Conclusions

4 – Conclusions

25

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

Wallonie SPW Service public de Wallonie


Context & definitions Databases Inventory (& registers) Conclusions

- ✓ inventory is a main tool for polluted land management
=> *it requires a legal basis in order to fulfill its role (trigger for actions)*
- ✓ various databases can be of high relevance for the inventory (from legal obligations, topography maps, questionnaires, ...)
=> *however, they need to be integrated based on a common terminology and spatial reference resolution (this might require pre-processing or excluding some databases)*
- ✓ for 2012 the number of potentially polluted sites in Wallonia ranges between 3439 and 17.009 sites
=> *density between 2 and 10 potentially polluted sites per 10 km²*
=> *2316 sites are under management (investigated or remediation)*
=> *estimates need to be refined for spatial redundancy*
- ✓ inventory is a dynamic process (consultation, modifications, updates)
=> *IT developments are non negligible*

26

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

Wallonie SPW Service public de Wallonie



Thank you for your attention !

27

DIRECTION GÉNÉRALE OPÉRATIONNELLE DE L'AGRICULTURE, DES RESSOURCES NATURELLES ET DE L'ENVIRONNEMENT

Wallonie SPW Service public de Wallonie

Soil Protection Direction
esther.goidts@spw.wallonie.be