



Brownfield inventories integrating a simplified evaluation of environmental risks

Supporting redevelopment options including “green”
perspectives

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Context

Urban wastelands (brownfields)

10 years



- Opportunities for urban redevelopment
 - Housing, residential
 - Commercial, business
 - Alternative uses: Green spaces / corridors
- Potentially degraded environmental medium quality (soil/water/air) ?
 - From past land uses : industry and services, domestic, agricultural
 - From anthropogenic deposits (made-ground, e.g. industrial or mine wastes)





10 years

Context

- Reuse of brownfield in a circular economy

For a given portfolio of BF sites:

- How to anticipate the vulnerability of soil/water medium versus potential receptors ?
- How to assess the compatibility between future land use and soil/water quality ?

=>At site level: French national methodology on managing contaminated land (2017)

=>At regional level: is it possible to anticipate vulnerabilities/receptors or even assess possible compatibility as a screening/prioritizing exercise, e.g. NBS?

=> In need of methodological developments





Concept of a simplified environmental vulnerability/risk assessment

Based on the French national methodology for managing contaminated land

Sources



Identify (potential or existing) **pollution source**
(within which environmental medium)

Migration pathways

Evaluate **potential or existing migration pathways**
from the source to **exposed medium** (vulnerability)



Receptors

Evaluate if existing **receptors** than can be exposed
by **pollutant source** via **exposure pathways**

=> Systematic assessment with (mainly) publically available data for any brownfield recorded in a geospatial database

=> Adaptations according to regional context/specificities





Illustration on 2 territories

Willingness to stop land take/artificialisation on agricultural land usually to build new housings and/or economical activities

=> encourage to redevelop brownfields

Grand-Est

- Former industrial region under economic decline in the valleys/environment under pressure: e.g. contamination known in Alsace aquifer
- Regional stakeholders in need of better understanding which industrial brownfields are posing majors/minor threats on the environment in their current situation

Vendée

- a contrasted situation between coastal area with high demographic pressure and a hinterland facing economical difficulties (deindustrialization)
- Many types of brownfields, some without redevelopment projets => opportunities ? Most appropriate new land use (mix?) to encourage local authorities





Specificities of Grand Est project

- Framework: R&D project
 - Client: DREAL Grand Est within their mission on “Reclaiming degraded land “
 - In need of systematic characterization and prioritization process of all industrial brownfields within the region based on environmental issues
 - Evaluation of simplified risk assessment for each relevant medium (decision trees) : pollution potential, potentially exposure medium, in or nearby receptors : risk categories and recommendations are provided
- Results
 - GIS (QGIS) prototype tool since 2019 delivered to DREAL : for each BF: available summary of evaluations and recommendations for further actions
 - Methodological evolutions on going (e.g. air/soil media) and discussions with other regional institutions on transferring the methodological approach to a wider range of users / availability of input data





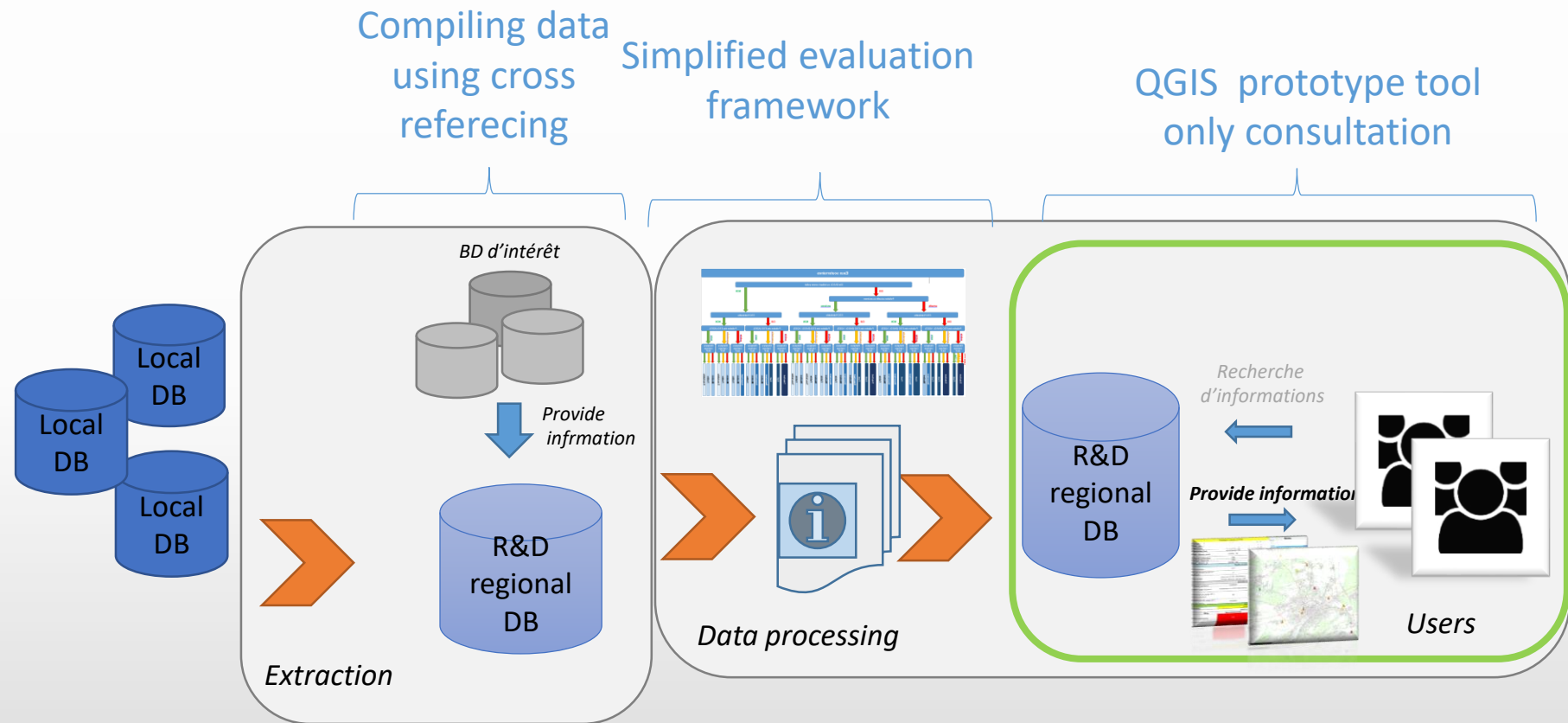
Specificities of Vendée project

- Framework: Brownfield inventory of Vendée (Observatoire des friches de Vendée)
 - Client: EPF Vendée within their mission on “Reclaiming degraded land”
 - Implementation of an interactive cartographic portal for EPF and local authorities
- BRGM mission: methodological developments
 - Industrial Brownfields: additional indicators for their “environmental” description : simplified evaluation of pollution potential, potentially impacted medium, hydrogeological context, nearby receptors
 - A complex method (decision trees) for implementing the indicators using national and regional data sources and set of recommendations (e.g. to assess further current compatibility or in the case of change of land use)
- Results
 - Observatoire effective since June 2018 (still under testing), accessible as a web service to EPF and local authorities within Vendée
 - Different sets of indicators (redevelopment potential, environmental issues, regulatory constraints, etc...) for each recorded Brownfield



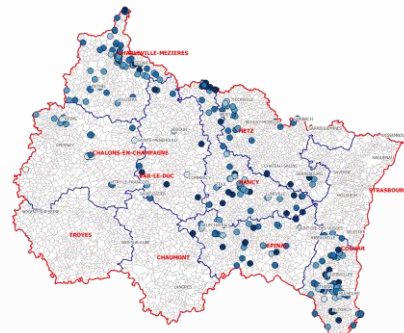
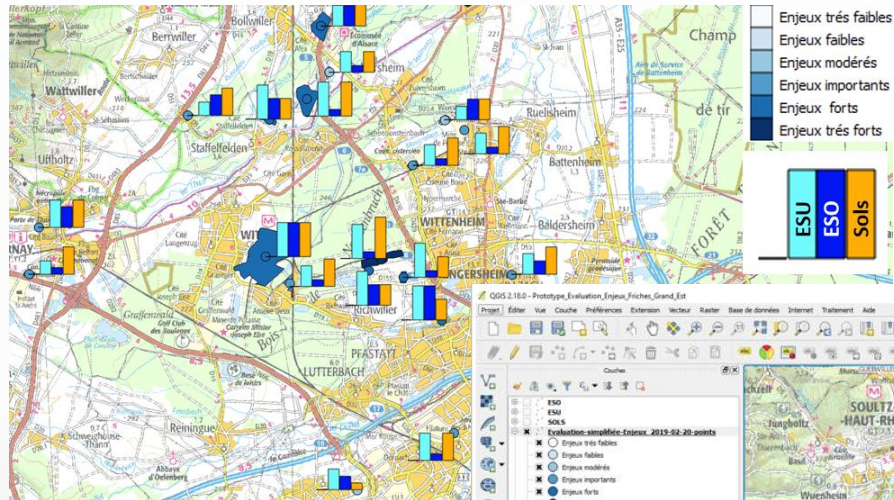


Integration in a GIS tool in Grand Est

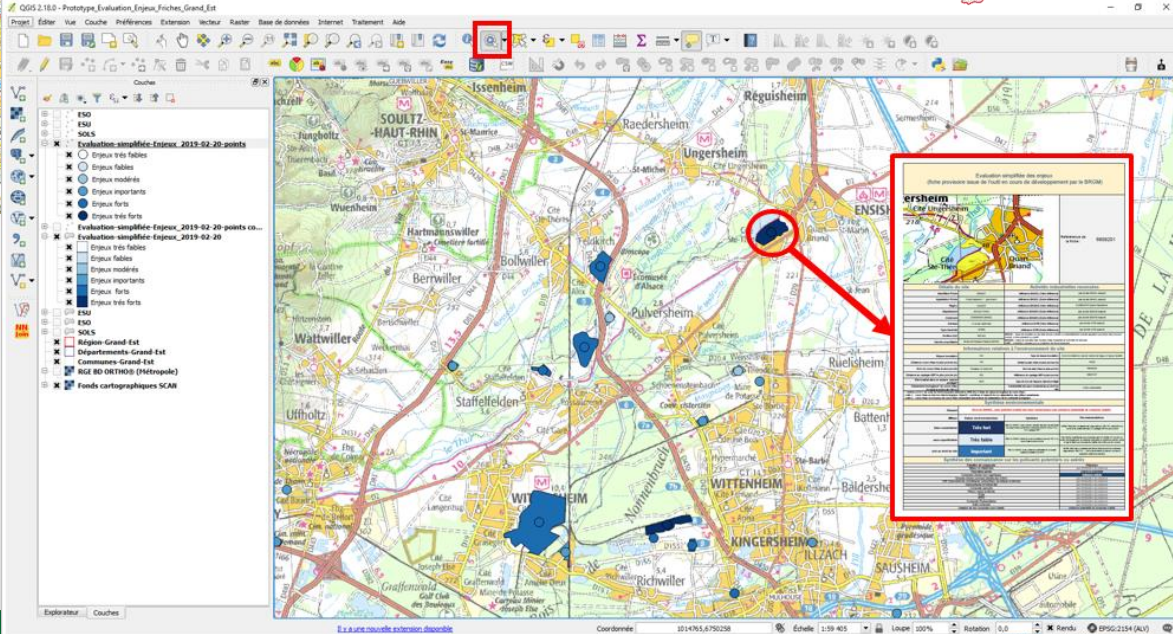




Integration in a GIS tool in Grand Est



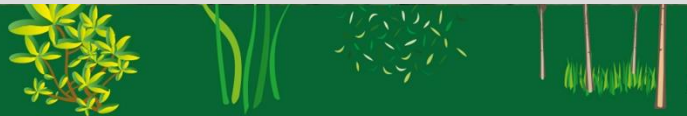
837 Sites were assessed



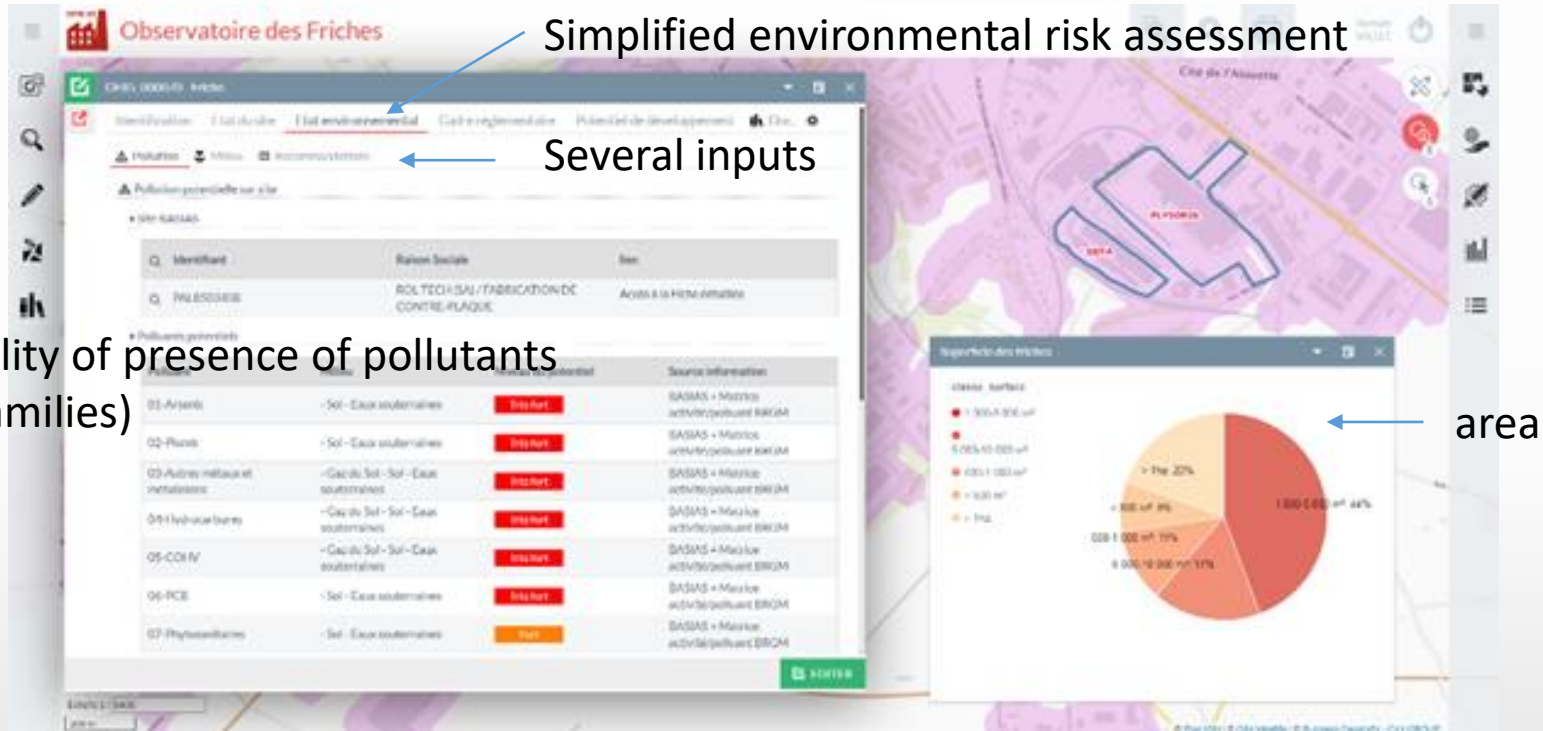
285 Sites with info on possible pollution



Integration in a Web tool in Vendée



Example of consultation of a site



- Examples of recommendation:

- Anticipate a potential pollution hazard: Yes/No/Unknown
- Type of pollution: potential, proven, residual, natural anomaly
- Need for soil Investigation to verify compatibility between soil quality and intended uses



Perspectives with regards to « green » (re)development

- Tools developed for being used at a regional level as screening/prioritizing approaches, for example:
 - Screening sites with possible major/minor issues
 - Supporting decision process for funding aids
 - Identifying sites and potential/known constraints for a given redevelopment (e.g. greening options)
- Automatic recommendations allow assessing the potential of brownfields according to
 - redevelopment options (urban agriculture, forest, green spaces)
 - possibilities and/or need to restore soil/environment quality
 - Links with soil/waste land multi-fonctionnalité (landscape, economic, climatic, sanitary, cultural, water resource, biodiversity...).

It does not replace a preliminary investigation according to National Methodology



Thank you for your attention!

Projet R&D Friches Grand Est BRGM DREAL Grand Est

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