



Brownfields and sustainable urban development

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'A nation that destroys its soils destroys itself.'

Franklin D. Roosevelt

Letter to all State Governors on a Uniform Soil Conservation Law, 1937

Introduction

■ Soil

- underpins 90% of all human food, fiber, and fuel
- is essential for water and ecosystem health
 - Only 3% fresh water
 - 2% is ice
 - of the remaining 1%, 90% is in the soil
- is a reservoir for genes and maintains landscapes and biodiversity
- is a carbon sink (second largest after oceans)
 - Europe's soils contain around 75 billion tonnes of carbon (loss of 0,1% of carbon = carbon emission of 100 million cars)

Introduction

- However: soil is under increasing pressure → mainly driven by human activity
- Soil threats
 - Soil erosion
 - Decline in soil organic matter
 - Soil compaction
 - Soil sealing
 - Soil contamination
 - Soil salinization
 - Desertification
 - Flooding & land slides
 - Decline in soil biodiversity



JRC TECHNICAL REPORTS

Soil threats in Europe

*Status, methods, drivers and
effects on ecosystem services*

Editors:
Jannes Stolte, Mehrezab Tesfai, Lillian Øygarden,
Sigrun Kvaerne (NIBIO),
Jacob Kiefer, Frank Verheijen (University of Aveiro),
Panos Panagos, Cristiano Ballabio (JRC),
Rudi Hessel (Alterra WUR)

2016



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Brownfields

- > 1993: Brownfields Economic Redevelopment Initiative (US)
 - 3 key elements in definition
 - An abandoned, idled or underused site
 - An industrial or commercial site
 - A contaminated or potentially contaminated site
 - Often located in or near cities
- Several other countries/regions adopted a similar definition
- Contamination often dates back to industrial development of 19th Century

Brownfields

- Status of local soil contamination in Europe (JRC, 2018):
 - In EU-28: possible existence of around **2.8 million sites** where polluting activities took/are taking place;
 - More than **650 000 registered sites** where polluting activities took/are taking place
 - ! Many differences between the management efforts of the respondents
 - Still a lot to be done
 - Clear relationship between political support (understood as the existence of legislation directly addressing soil contamination and remediation) and completion of registers of contaminated sites.

Brownfields

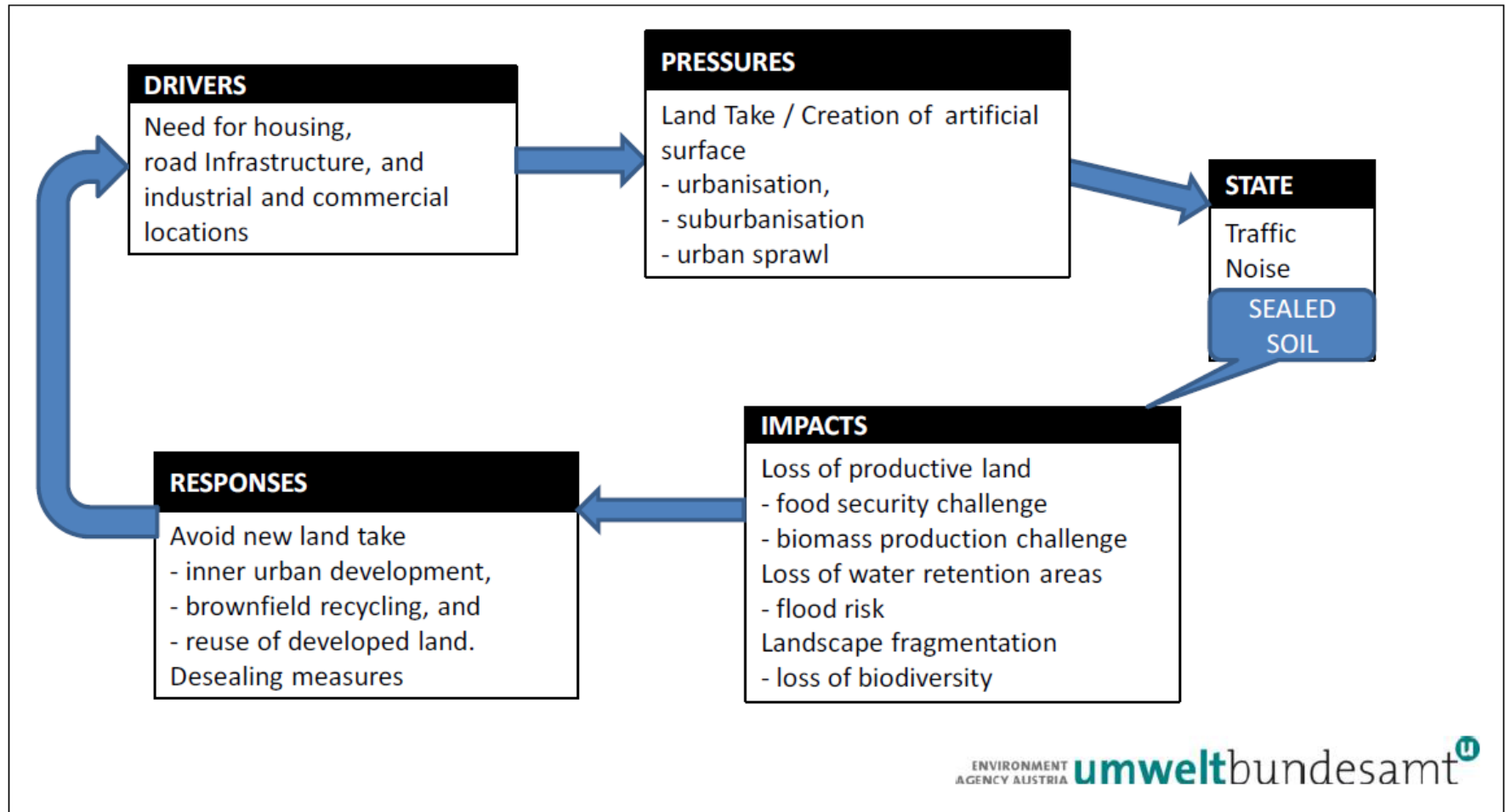
- Numerous reasons to redevelop brownfields:
 - Sustainable development → SDGs
 - Specific target 15.3:
 - *"By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world".*



Brownfields

- Numerous reasons to redevelop brownfields:
 - Protection against environmental contamination and health risks
 - A lack of clean industrial sites
 - EU contains densely populated and built-up regions
 - Limit urban sprawl / Avoid new land take

Brownfields



JRC, 2016

Brownfields

- Advantages (compared with greenfields):
 - Often well located
 - Infrastructure available
 - Degraded areas come back to live
 - It brings people back to the city

Needs

- Brownfields are often economically *marginally viable* or even *non-viable sites*
- Brownfield redevelopment often requires public incentives
- ! Incentives need to be sustainable
 - “Any argument that all brownfield redevelopment is inherently sustainable is unjustified” (Eisen, 1999)
 - E.g. promote retention/partial reuse of buildings/infrastructure; promote reuse/recycling of buildings/infrastructure materials; promote spatial planning leading to brownfield instead of greenfield land; promote citizen participation in brownfield projects

EU funding instruments addressing soil contamination

Funding instruments	
European Regional Development Fund (ERDF)	It is for the sustainable development and structural adjustment of regional economies.
Cohesion Fund (CF)	It aims to decrease the differences between the EU's regional economic development, focusing on improving the urban environment, decontaminating brownfield sites and reducing air pollution.
LIFE+ programme	It is the EU's funding instrument for environment and climate actions.
Horizon 2020 (H2020) actions	It is a comprehensive funding mechanism of pan-European projects.
Common agricultural policy (CAP)	It is the set of legislation and practices adopted to provide a common, unified policy on agriculture.
European Social Fund (ESF) (**)	It is the European Union's main financial instrument for supporting employment in the EU Member States.

JRC, 2018

Needs

- International or EU policy framework?
 - No general international or EU framework (cf. Proposal Soil Directive)
 - However, several other European policies (industrial emissions, water, chemicals, waste, agriculture) have direct or indirect impact
- → Until today: policy level = national/regional level
 - Reason: historically seen as local problem (+ for EU: principle of subsidiarity)

Needs

- ! Collection of information
 - Inventory needed
 - E.g. through periodic investigations, investigations linked to certain key moments such as transfer of land, closure,...
 - → Flanders recently introduced obligation to investigate all high risk land (operator or owner)
 - Publicly accessible
- ! Integration of brownfield redevelopment and spatial planning
- Urgent redevelopment

Conclusions

- Brownfields = major threat
- BUT: redevelopment is a necessity to obtain sustainable urban development
- Still a lot to be done (investigations, inventories, remediation, integration into spatial planning,...)
- BUT: EU funding available → huge opportunity