Holistic Management of Brownfield Regeneration - HOMBRE

Maaike Blauw
Hans van Duijne

www.zerobrownfields.eu

AquaConsoil April18, Barcelona
Soil challenge

Soil degradation a world wide challenge!

Soil Sealing in EU:
-loss of important soil functions
-1990-2000: 375 ha/day lost

Ref. COM (2012) 46

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Since 1950:
surface area cities increased 78%, only 33% population

- Urban expansion 1-2 % per year
- Urban sprawl around metropolitan regions
- Decreasing settlement density

→ More and more brownfields

Source: EEA
Brownfields

Cabernet* has defined for **brownfields as sites which**:

- have been affected by former uses of the site or surrounding land;
- are derelict or underused;
- are mainly in fully or partly developed urban areas;
- may have real or perceived contamination problems; and
- require intervention to bring them back to beneficial use.

**Classes of Brownfields:**

A Sites - Driven by private funding
B Sites - Funded through public-private co-operation
C Sites - mainly public sector or municipality projects

(*) Concerted Action on Brownfield and Economic Regeneration Network

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The HOMBRE project

More dividend from Brownfield regeneration for environment, economy and society

Through:

• Better understanding why, how, where and when BF’s are formed
• Better operations, better implementation of state of the art technologies
• Better planning and more attractive communication technologies
• More creative solutions for long-term land use of current and potential future BF’s.
Starting point for Zero BF: CircUse land use cycle

- Reintroduction
- Planning
- Use
- Cessation of use
- Abandonment
- interim use

Rejection of sites which are unsuitable for new uses on a long-term basis

Fläche im Kreis, 2005

instrument mix:
- legal, planning, and economic instruments
- cooperative steering approaches

Exceptional: Release of new sites for construction in the green belt
However, different perspectives...

circular land use
occupation perspective
(for specific site)

Risk of BF formation
if not *managed* well
...different perspectives...

circular development
project developer management perspective
(goes from one site to the next)
Zero Brownfields Perspective

circular land management & monitoring cycle
long term –perpetual–administrative management perspective
(for specific site or portfolio of sites)

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HOMBRE believes an important lever to bring BF back into beneficial use is to assess, enable and optimize their own potential for delivering useful services and goods and hence provide

**new opportunities**

For the BF itself and its surroundings

**DELIVER GOODS AND SERVICES THROUGH INTEGRATED PROCESSES AND LAND USE**
Technology Combinations for More Sustainable BF Regeneration

Technology Trains

Technology Trains are integrated processes. They start with the remediation/restoration of a site and end with new site maintenance / operation / management.

A MEAN TO BRIDGE THE GAP BETWEEN A SITE IN ITS CURRENT STATE AND A SPECIFIC OBJECTIVE FOR LAND-USE (IN THIS CASE A REDEVELOPMENT PROJECT WITH SPECIFIC OBJECTIVES PLANNED BY STAKEHOLDERS).

A MEAN TO PROVIDE SERVICES (VALUE) IN THE REGENERATION PROCESS:
- REMEDIATION / REGENERATION PHASE
- NEW LAND-USE (OPERATION, MAINTENANCE, MANAGEMENT)

IN SOME CASES WHERE NO PROJECT HAS BEEN PROPOSED, AN UNLOCKER TO LONG TERM BF (TYPICALLY C-SITES)
Technology Trains
Soft re-use

More creative solutions for long-term land use of current and potential future BF’s.
SOFT RE-USES → SERVICES

Temperature regulation
Urban climate - comfort

CO2 absorption
Climate change

Landscape improvement
amenities

Biomass production
Bio-energy

Green cover
Flood mitigation

Carbon sequestration
Climate change

Nutrient buffering capacity
Soil improvement

Contaminant stabilization
= risk management

Low inputs
Maximize effects

HOMBRE’s FOCUS

ACTIONS

EFFECTS / BENEFITS
→ SERVICES
The Brownfield Navigator (BFN)

• Helps stakeholders to navigate towards a successful BF regeneration
• Assess key aspects (environmental, economic, social)
• Different scales
• Combination of DSS-GIS-Effect tools

• Early warning
• Stakeholder participation
• Inspiration for successful regeneration
# Process

<table>
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<tr>
<th>Step</th>
<th>Identification</th>
<th>Scoping</th>
<th>Opportunities</th>
<th>Assessment</th>
<th>Evaluation &amp; monitoring</th>
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<td><strong>1</strong></td>
<td>Results</td>
<td>Tools in BFN</td>
<td>Scale</td>
<td>Results</td>
<td>Tools in BFN</td>
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<tr>
<td></td>
<td>Assessment of the regeneration potential.</td>
<td>Default list necessary data. Definition of A, B &amp; C sites.</td>
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<tr>
<td><strong>2</strong></td>
<td>Results</td>
<td>Tools in BFN</td>
<td>Scale</td>
<td>Results</td>
<td>Tools in BFN</td>
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<td>Vision on the location (or cluster of locations).</td>
<td>Default list success criteria for sustainable redevelopment of BF.</td>
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<td><strong>3</strong></td>
<td>Results</td>
<td>Tools in BFN</td>
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<td><strong>4</strong></td>
<td>Results</td>
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<td>Scale</td>
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<td>Scale</td>
<td>Results</td>
<td>Tools in BFN</td>
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</tbody>
</table>

[Image: www.zerobrownfields.eu]
**HOMBRE Cases**

- **Solec Kujawski**, Poland
  Urban & post-industrial (80ha)

- **Terni**, Italy
  Industrial (10 ha)

- **Genoa**, Italy
  Industrial, Urban (22ha)

- **Turceni – Jiu**, Romania
  Mining, rural (250 ha)

- **Gelsenkirchen**, Germany
  Former coal mine (22ha)

- **Halle** (Saale), Germany
  Urban (3ha)

- **Markham Vale**, UK
  Mining, Urban area

- **Rejuvenate II cases**
  Crop based sites, Sweden

[Link: www.zerobrownfields.eu]
Thank you

Questions please!

MAAIKE.BLAUW@DELTARES.NL

Other HOMBRE presentations at AquaConsoil:

• EcogROUT, a sustainable in-situ carbonate based grouting technology. Session A1

• Insights into factors limiting intrinsic biodegradation of chlorinated etheneS at ATES. Session D1.3

• Conceptual site or project models for sustainability assessment. Session D3.3

• Special session 7: Synergies on the land use cycle (HOMBRE and TIMBRE session)