Sustainable Regional Land Resources Management

Institute for Infrastructure and Resources Management
Institute for Urban Development und Construction Management
Institute for Real Estate Management
Institute of Finance

- Site Revitalisation

UBA - FKZ 205 77 252

Prof. Dr.-Ing. Robert Holländer
IIRM - Institute for Infrastructure and Resources Management
1. Project Aim and Project Structure
2. Approach
3. Analysis
4. Integrated Assessment
5. Exemplary Results (Case Study Leipzig)
Assess Conditions of Brownfield Re-Vitalisation
(exemplified through sites of German Railways Group)

• Comparing brownfield and greenfield developments
  a. Model Regions
  b. Location Types
• Analysis of land use patterns
  a. Spatial
  b. Economic
  c. Environmental
• Integrated Assessment
• Recommendations
Approach

2 Modell regions
5 Location types
8 Municipalities
### Approach: Location Types

<table>
<thead>
<tr>
<th>Location Types</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prosperous large city (except city centre)</td>
</tr>
<tr>
<td>2</td>
<td>Less prosperous large city</td>
</tr>
<tr>
<td>3</td>
<td>Peripherally located small or medium-sized town</td>
</tr>
<tr>
<td>3a</td>
<td>In between (interspace) zones with starting conurbations</td>
</tr>
<tr>
<td>3b</td>
<td>In between zones of less density or peripheral regions with starting conurbations</td>
</tr>
<tr>
<td>4</td>
<td>Medium sized town outer central area</td>
</tr>
<tr>
<td>5</td>
<td>Suburban area = „greenfield“</td>
</tr>
</tbody>
</table>
Approach: Analysis

Inner city brownfield portfolio

Spatial Analysis

Selection of model sites

Identification of re-use proposals

Economic Analysis

Environmental Analysis

Integrated assessment
Spatial analysis

Brownfield portfolio

Macro analysis
(Identification of development focuses/regional level)

Check formal and informal restrictions

Interviews with local authorities

On-site analysis
(functional and urban context)

Micro analysis
(model site)

Re-Use Proposal
Economic Analysis

Real Estate Feasibility

• Real Estate Market

• Actors and economic incentives:
  DB - Investor – Municipality

• Government aids and subsidies

RES invest

Brownfield
Environmental Analysis

- Traffic implications in the environment (emissions and space)
- Ecological structure of the region
- Environmental compartments (soil, water, climate/air)
- Biota (flora, fauna and man)
Assessment: Economic Viability

NCV - Investor

NCV - Municipality

economic advantage
economic disadvantage
Eco-Efficiency = \frac{\text{value of product or service}}{\text{environmental effect or resource consumption}}
Case Study Leipzig

Former Railway Yard  Leipzig-Plagwitz

Location Type 1

Site (DB AG):
190,000 ha

Former railway yard:
Few buildings
Railway tracks

Western part of Leipzig
URBAN II area
Vicinity
housing areas and commercial zones
Leipzig brownfield re-use proposal:

Miscellaneous land use

- Northern part: commercial buildings, research and development

- Southern part: detached houses
Leipzig (greenfield)

Alternative greenfield development:

- Detached houses
Economic Analysis: Leipzig

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Scenario</th>
<th>Brownfield</th>
<th>Greenfield</th>
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</thead>
<tbody>
<tr>
<td><strong>NCV before revitalisation / project development</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Owner / DB AG</td>
<td>present</td>
<td>-263.908 €</td>
<td>3.243 €</td>
</tr>
<tr>
<td>Municipality</td>
<td>present</td>
<td>0 €</td>
<td>0 €</td>
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<tr>
<td><strong>NCV after revitalisation / project development</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Investor</td>
<td>expected</td>
<td>-1.406.233 €</td>
<td>-1.443.314 €</td>
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<td></td>
<td>worst case</td>
<td>-3.540.277 €</td>
<td>-3.678.350 €</td>
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<tr>
<td>Municipality</td>
<td>expected</td>
<td>1.737.039 €</td>
<td>1.700.339 €</td>
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<td>worst case</td>
<td>606.535 €</td>
<td>570.395 €</td>
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</table>

Time scale: 10 years
Brownfield
Comparison before and after development

Environmental Site Value Leipzig

Soil structure

Soil quality

Groundwater recharge

Groundwater quality

Air quality and emissions

Fresh air exchange

Fresh air formation

Biotope quality

City and landscape quality

Present use

Re-use proposal

Holländer et al. 27.04.2007
CABERNET2007
Sustainable Land Resource Management
Environmental Site Value Leipzig

Greenfield
Comparison before and after development

Soil structure
City and landscape quality
Biotope quality
Fresh air formation
Fresh air exchange
Groundwater recharge
Groundwater quality
Air quality and emissions

Present use
Re-use proposal

Holländer et al. 27.04.2007
CABERNET2007
Sustainable Land Resource Management
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Eco-Efficiency Brownfield

Environment Site value

<table>
<thead>
<tr>
<th>Value (Municipality)</th>
<th>(-)</th>
<th>(-)</th>
<th>(+/-)</th>
<th>(+)</th>
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<tr>
<td>NCV Investor:</td>
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<td>NCV Owner:</td>
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<td>-263.908 EURO</td>
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Eco-Efficiency Greenfield

Environmental Site value

Value (Municipality)

NCV Owner: 3.243 EURO
NCV Investor: -1.443.314 EURO
NCV Investor: -3.678.350 EURO

Greenfield - present
Greenfield - exp
Greenfield - exp (worst case)
Thank you

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