CLIMATE CHANGE MITIGATION
AND
THE ROLE OF INDUSTRIAL PARKS

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climate change mitigation

Flanders

• public co-financing (re)development industrial parks
  • guidelines design, issuing and park management
  • carbon neutral electricity consumption

eco-industrial parks (EIP)

• sustainable spatial use
• park management and services
• inter-company cooperation

apply EIP to carbon neutrality ambition
POSITION

intermediairy focus

• carbon emissions / energy
• development / management industrial park

additional opportunities

continuity

• technical
• spatial
• institutional
• temporal
SUSTAINABLE ENERGY USE

company’s position

• value chain (ex. use ABB-product 99% BKG-emissions)
• energy value chain (ex. electricity as secondary energy)

carbon neutral trias energetica

• need
• reduction energy use / reuse residual energy
• renewable energy / residual energy
• compensation carbon emissions
  • natural / artificial
SUSTAINABLE ENERGY USE INDUSTRIAL PARKS

general energy measures

- buildings (-70%)
  - layout
  - building techniques
  - fitting techniques
- processes (-20%)
  - machines/installations (-20% elek. door motoren bijv.)
  - maintenance / process control
  - waste heat / waste power (-5% tot -40%)
  - energy and emissions management / benchmarking (-5%)
general energy measures

• renewable energy (activity / environment)
  • electrical and thermal
  • supporting techniques as storage, heat pumps
  • tune energy use, electrification, imbalance

barriers

• symptomatic
• actual
SUSTAINABLE ENERGY USE INDUSTRIAL PARKS

developers / management

• symptomatic barriers
  • design / planning guidelines
  • utilities
  • knowledge / guidelines / audits
  • energy / emissions management
COMPANY LEVEL

carbon neutrality

- start / access
- carbon neutral electricity consumption
  - options
  - definition volume
  - reporting
  - control
  - enforcement
  - creativity
COMPANY LEVEL

*carbon neutrality*

- trias energetica
  - energy efficiency
  - *carbon neutral heat consumption*

- strategies
  - standards
  - support
  - reward / challenge
ENERGY CLUSTERING

clustered energy management

• Sappenleen Poperinge: 100 companies - $\sum 0,26 \text{ PJ}_{pr}$

• Herdersbrug Brugge: 90 companies - $\sum 0,8 \text{ PJ}_{pr}$

• Waggelwater Brugge: 16 companies - $\sum 0,1 \text{ PJ}_{pr}$
ENERGY CLUSTERING

service clustering
  • purchasing
  • maintenance
  • management

physical clustering
  • production
  • integration
  • distribution
ENERGY CLUSTERING

clustered energy production
• one or more installations (VPP)
• decoupling
• traditional and mixed parks

integration
• residual energy / individual production
• traditional parks
• mixed parks
ENERGY CLUSTERING

attainability
  
  • technical / spatial
  • financial
  • legal
  • social

developers / management
  
  • barriers
  • robust utilities
  • detection

activation companies
SPATIAL QUALITY

park

• company lots
• industrial park

landscape

• exergetic efficiency
• energy availability
• differentiation & interweaving
## GUIDELINE FOR CO\textsubscript{2} LEAN ENERGY PROVISION

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Design</th>
<th>Realisation</th>
<th>Issuing</th>
<th>Exploitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ambition: def. ambition support</td>
<td>check ambition</td>
<td></td>
<td></td>
<td>activate companies evolution</td>
</tr>
<tr>
<td><strong>location</strong></td>
<td>analyse &amp; select company types &amp; sites based on energy consumption and bearing capacity</td>
<td>tune design park &amp; building blocks</td>
<td>start company recruitment</td>
<td>issuing based on energy profile company &amp; location stimulate integration renewables</td>
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<tr>
<td><strong>utilities</strong></td>
<td>analyse potential for energy production, storage, supply &amp; exchange contact stakeholders</td>
<td>design park &amp; lots, planning guidelines</td>
<td>management structure &amp; realisation utilities</td>
<td>stimulate renewable energy production &amp; consumption stimulate/compel collective installations control prescriptions</td>
</tr>
<tr>
<td><strong>reduce</strong></td>
<td>analyse potential of rational energy use</td>
<td>design park &amp; lots, planning guidelines</td>
<td>multiple tenant buildings realise park</td>
<td></td>
</tr>
<tr>
<td><strong>inter-company cooperation</strong></td>
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<td></td>
<td>test potential cooperation activate companies in park management</td>
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Climate change mitigation and the role of industrial parks
Tom Maes - Real Corp 2011 - Essen

STAKEHOLDERS

support

industrial park developers and park management

companies
spatial planning
energy policy
climate policy
economic policy
DSOs / TSOs

institutional barriers

cooperation platforms

• specific industrial park management
• industrial parks management
MOMENTUM

interest
importance
  • sustainable energy provision
  • knowledge and expertise
  • market
action
  • financial / institutional continuity
  • innovation policy
  • discontinuity?
  • research
CLIMATE CHANGE MITIGATION
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THE ROLE OF INDUSTRIAL PARKS

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Research group Environmental and Spatial Management
Research topics: eco-industrial parks / energy management and planning / industrial ecology/...
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