Moray Eco-industrial Park

Seminar:
Horizon Scotland, Forres
27th May 2008

The Opportunity

Brian Menzies
EnviroCentre
Introduction & Content

- Delivering industrial symbiosis
- UK and Scottish examples
- Issues and opportunities
- Current economic development picture
- Potential partnering approaches
- Potential next steps

Source: Ricoh
Delivering Industrial Symbiosis

Why it works:
- Creating internal markets
- Sharing resources to deliver materials resource efficiency
- Focal points for research, networking and market intelligence.
- Brownfield regeneration
UK & Scotland Examples

North Lanarkshire: EnviroPark

Ince Marsh: EnviroPark

No. 26: Urban Mines Sustainable Growth Park, Yorkshire

No. 27: Dagenham Dock Eco-Industrial Park, London

http://www.hull.ac.uk/geog/research/EcoInd/html/europe.html
Sustainable Growth Park, Yorkshire

• Outline Planning Permission - October 2007
• Companies asked to register interest
• 22 acre site, with 25 acre neighbour developed to manage municipal waste

Source: Urban Mines – Artist’s Impression

[Diagram of the site with a map and an artist's impression of the development.]
Dagenham Dock: Sustainable Industrial Park

- 133 acre site
- World class research in resource use efficiency
- Recovery and recycling initiatives with business clusters
- Information sharing and exchanging waste products
- Coordinating operations and procurement activities

Source: Barking & Dagenham Council
Ince Marshes: Sustainable Resource Recovery Park

- 7.7 ha resource recovery village.
- 2.5 ha for associated business centre.
- 1 ha for water treatment facility.
- 42 ha of non-process land - includes major compensatory flood storage provision (37,320m³).
- 58 of 100 ha – to be developed with buildings & hard-standing.

Source: Peel Holdings
North Lanarkshire: EnviroPark

- Overview of businesses - growth aspirations, opportunities & constraints
- Opportunities for inward investment
- Size and nature of growth potential – support needed
- Scenarios & future economic benefits
- Establish demand for clusters

Source: North Lanarkshire Council
North Lanarkshire: Key Stakeholders

Key stakeholders – companies with:

- Growth & diversification objectives that can’t be met with current site constraints
- Significant growth potential
- Plans to develop green job opportunities

Source: Connect 3
North Lanarkshire: Key Outcomes & Opportunities

Stakeholder views:
• Site constraints a key issue and opportunity
• Real interest in energy recovery partnerships
• Interest in distributing and receiving heat
• Industrial symbiosis – resource recovery park approach of interest
• **Specification needed?**
EnviroPark Specification

Developed to include:

- Different site sizes for various resource recovery scenarios
- Descriptions of costs for varying levels of sustainable design
- The potential for renewable heat and energy generation on site

Source: DTI
EnviroPark Outcomes

- Considerable growth experienced - future constraints thru’ lack of site space
- Clear potential to create an environmental business park
- Direct economic potential: 360 FT jobs - additional regional turnover of approx. £70 million.

Source: UK MCA.
The Moray Context

- Core industries:
  - Whisky
  - Agriculture
  - Food and drink
  - Manufacturing

- An eco-industrial park supporting:
  - One industry?
  - Range of industries?
  - The growth of a “new” industry?

Source: http://www.yourmoray.org.uk/
Earnings

Median gross weekly earnings of full time workers of adult rates (April 2005)

Data taken from Scottish Government Economic Statistics 2007
Employment

Employment rate (% of adults of working age) (October 2005-September 2006)

Data extrapolated from Scottish Government Economic Statistics 2007
Moray Eco-industrial Park: Potential Issues

- Public sector priorities
- Identification of private sector needs
- Moving from vision to the development of a pragmatic plan
- Prioritising options
Employment & Investment Opportunities

• Needs analysis:
  – Engagement with organisations in the Moray area
  – Engagement with organisations outside Moray to encourage inward investment

• Capacity building:
  developing a high-tech research base with a sustainable future
Low/Zero Carbon Eco-industrial Park?

• Minimising environmental impacts
  – Demonstrating best practice
  – Walking the talk

• Policy & planning drivers e.g. Draft Climate Change Bill, SPP6 and PAN 84

• Low running costs and income generation

• Demonstration projects

Source: Scottish Government
Low/Zero Carbon Considerations

ENERGY CONSUMPTION - MORAY

<table>
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<tr>
<th>Summary per employee (Industry)</th>
<th>KWh</th>
<th>KW</th>
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<tbody>
<tr>
<td>Coal</td>
<td>102</td>
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<tr>
<td>Petroleum products</td>
<td>5,267</td>
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<td>Natural gas</td>
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<td>Electricity (grid)</td>
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<td>Renewables &amp; waste</td>
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<td>TOTALS</td>
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DTI data, 2004
Mass Balance

Inputs
• Raw materials
• Imports

System Boundary

Reuse/Recycling

Outputs
• Disposal
• Exports
• Products

Change In Stock

Emissions

Source: Biffaward (modified)
Resource inputs:
• Biomass
• Waste

Socio-economic inputs:
• Vehicle & Plant maintenance
• Human capital

Resource outputs:
• Renewable energy
• Reduced waste, haulage, CO₂

Socio-economic outputs:
• Capacity building (R&D, skilled workers)
• Improved business turnover, profitability
• Culture change

R & D Centre

Construction company

Food & drink company

Combined Heat & Power Company

Anaerobic Digestion Facility

Heat for business operations e.g. greenhouses

Heat

Wood waste

Food waste

Heat for business and offices
### Size Requirements

**Simplified example used earlier:**

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<th>Facility</th>
<th>Ha</th>
<th>Tonnage</th>
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<tr>
<td>CHP</td>
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<td>100,000</td>
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<td>Construction</td>
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<tr>
<td>Food</td>
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<td>R&amp;D</td>
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<tr>
<td>Greenhouses</td>
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<td></td>
</tr>
<tr>
<td>Other</td>
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<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>8.6</strong></td>
<td></td>
</tr>
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</table>
Potential Partnering Approaches

- Providing demand for “local” industries
- Developing synergies with other Scottish programmes e.g. Energetica
- Developing a R&D base for biomass technology, demonstration projects
Whisky Industry

- 10,000 jobs in Scotland
- Indirect employment in Scotland (20,000 jobs):
  - Cereal producers / suppliers
  - Bottling and packaging companies
  - Energy producers
  - Distribution and haulage companies
  - Business services (including advertising)
  - Capital goods manufacturers

Source: Scotch Whisky Association
Cross-sectoral opportunity: Biomass

- Biomass technologies important synergies with:
  - Timber industry
  - Farming
  - Food waste

- Technologies involving:
  - CHP
  - Anaerobic digestion
  - etc

Balcas Invergordon, construction of wood pellet facility, April 2008 (Source: Balcas)
Renewable Energy Opportunities

Encouraging business start-ups, growth, diversification in:

- Energy efficiency
- Wind, wave, tidal
- Biomass/biofuels
- Solar
- Ground source heat pumps
- Run of river hydro

Source: www.tidalenergy.eu
Source: Pelamis Wave Power Ltd
Source: Arup
Eco-industrial Park: Potential Next Steps?

- Understand overall objectives – e.g. more sustainable growth, diversification, green job creation?
- Develop preferred ways of doing this e.g. large cluster, small clusters
- Identify potential industry/R&D sectors of interest
- Identify potential stakeholders inside and outside Moray
- Identify potential sites
- Establish criteria for engagement e.g. enabling existing business growth through lower cost, larger site, symbiosis etc
- Stakeholder engagement

Source: UNEP
Thank you

Questions?