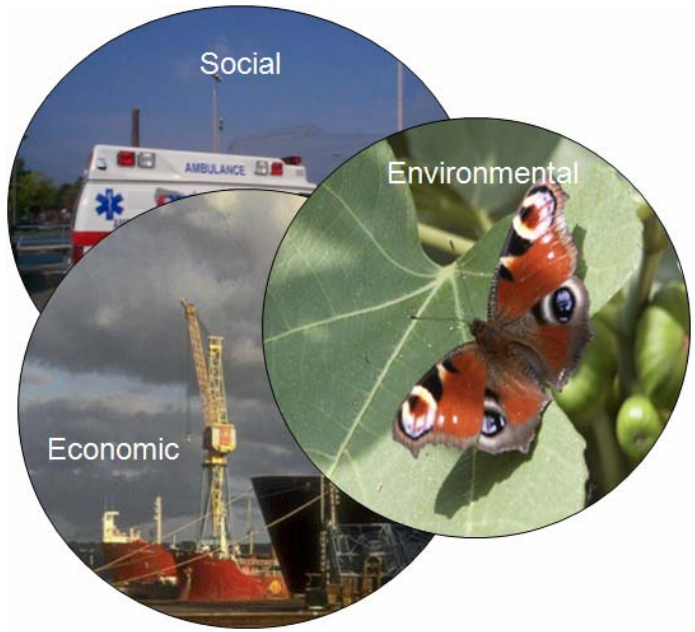
Moray Eco-industrial Park

Seminar:
Horizon Scotland, Forres
27th May 2008



The Opportunity

Brian Menzies
EnviroCentre

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Introduction & Content

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

Source: Ricoh

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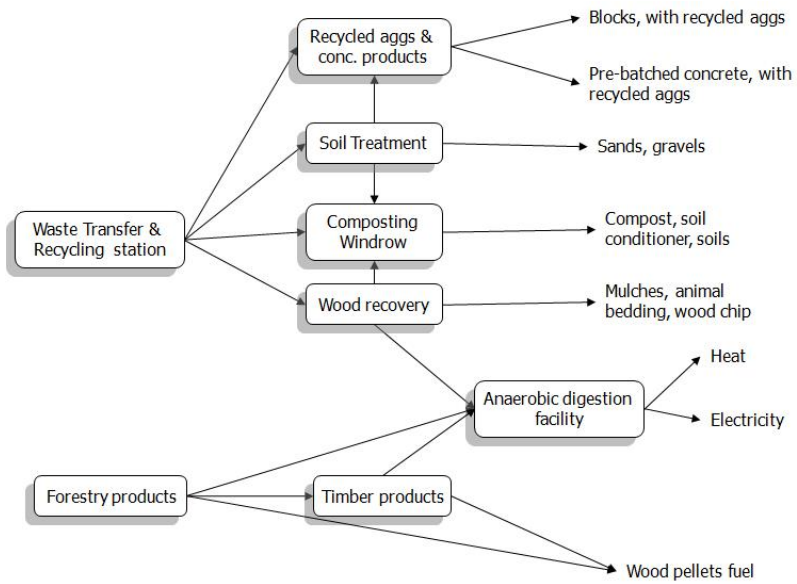
Delivering Industrial Symbiosis

Why it works:

- Creating internal markets
- Sharing resources to deliver materials resource efficiency
- Focal points for research, networking and market intelligence.
- Brownfield regeneration



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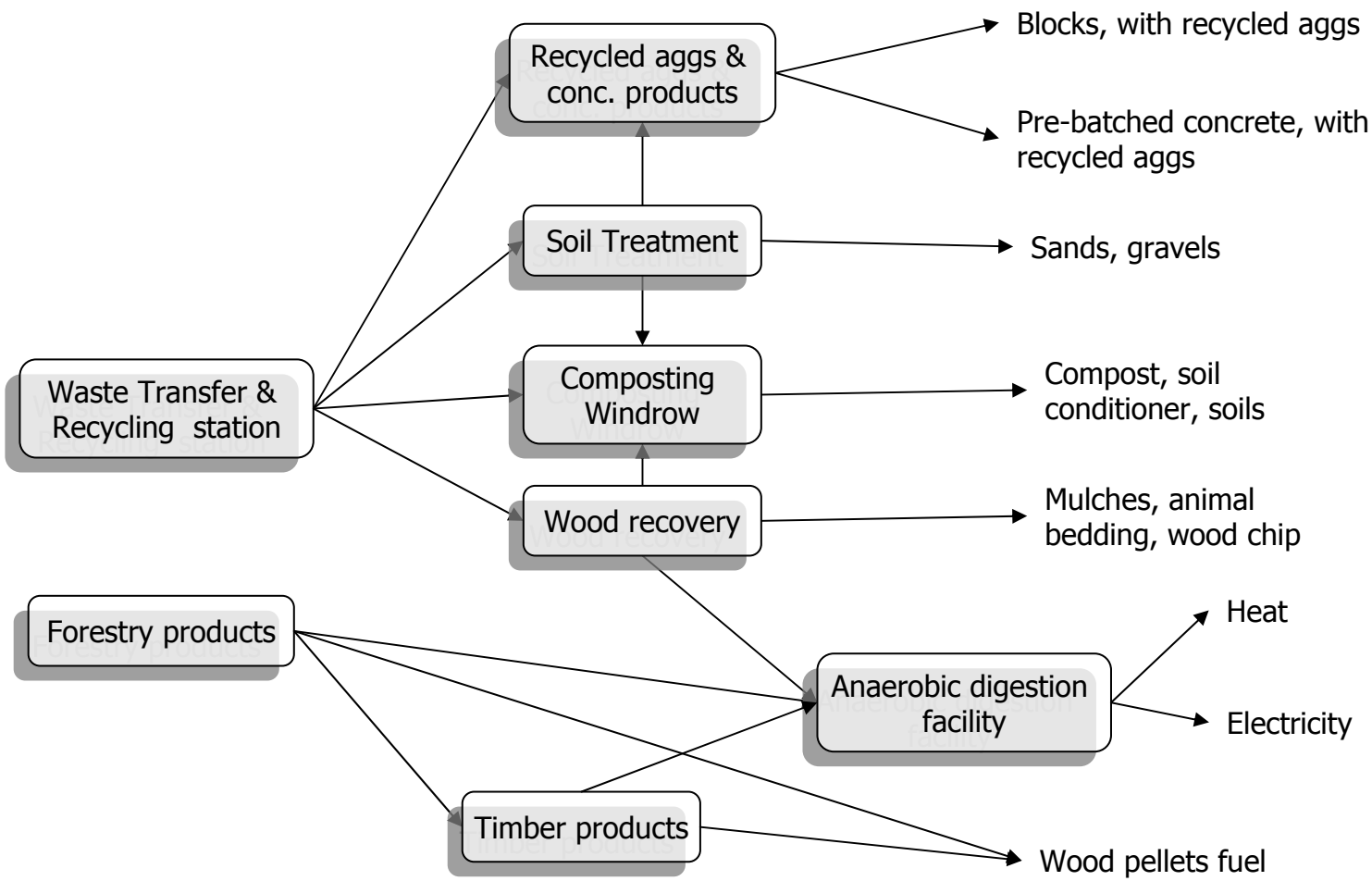
Examples of Symbiosis



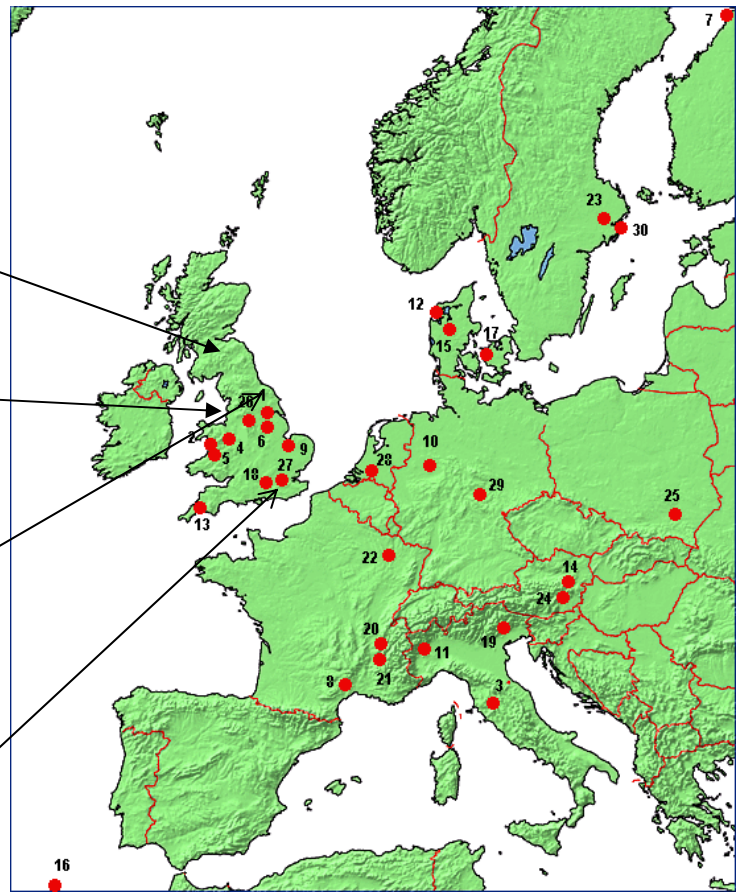
UK & Scotland Examples

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

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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

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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

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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 (37,320m^3).
- 58 of 100 ha – to be developed with buildings & hard-standing.

Source: Peel Holdings

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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

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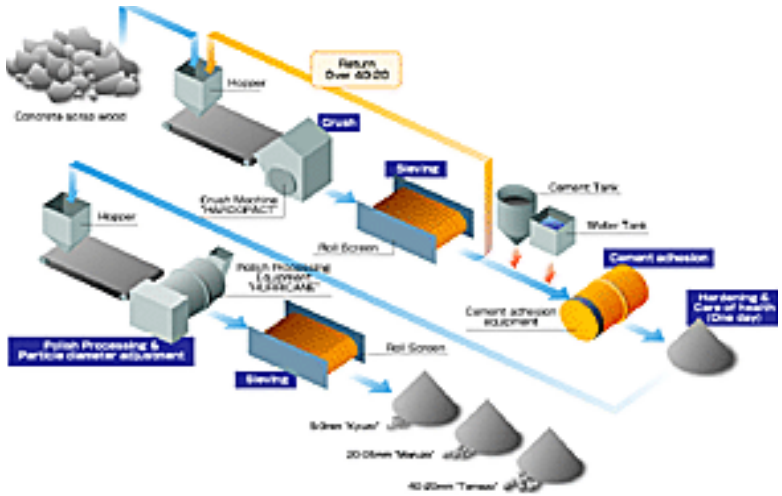
North Lanarkshire: Key Stakeholders

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

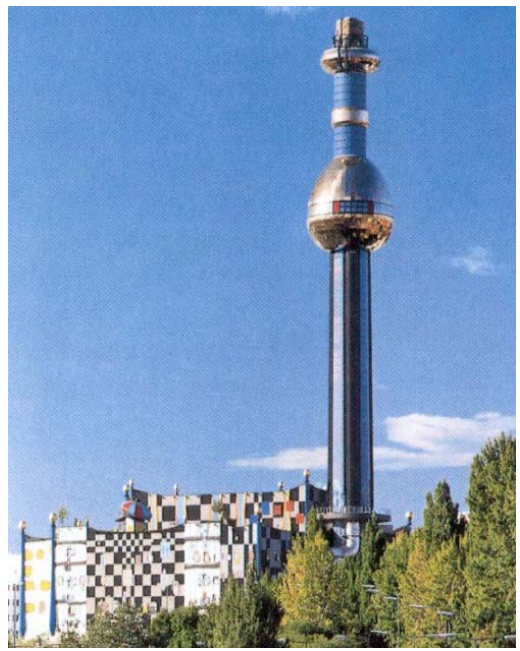


Source: Connect 3

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?**



District Heating Plant, Austria
(Source: SEPA)

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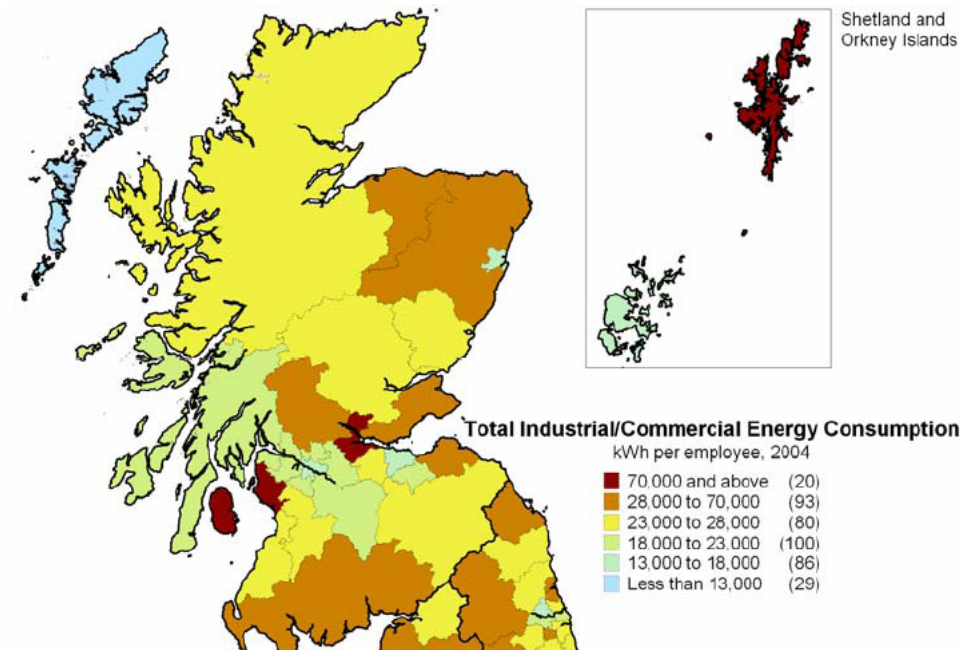
EnviroPark Specification

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

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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.

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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/

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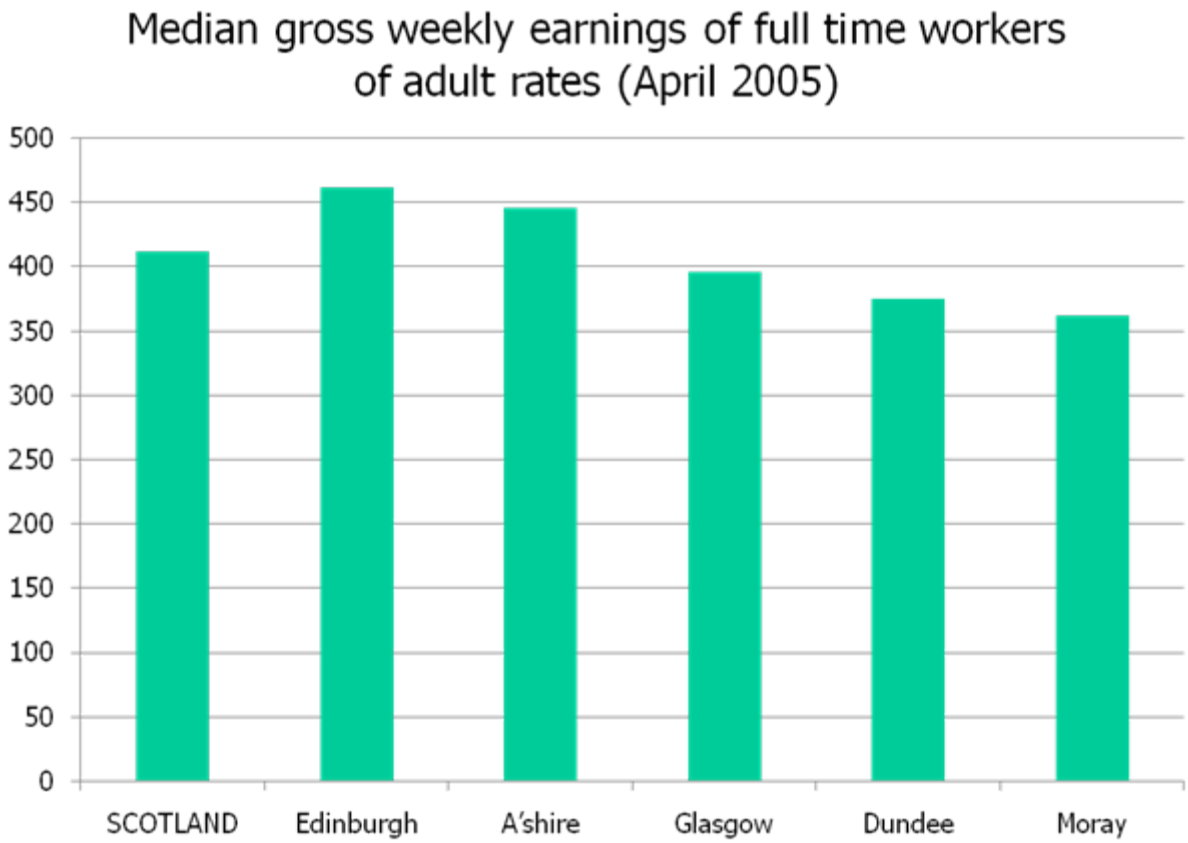
Earnings



Data taken from Scottish Government Economic Statistics 2007

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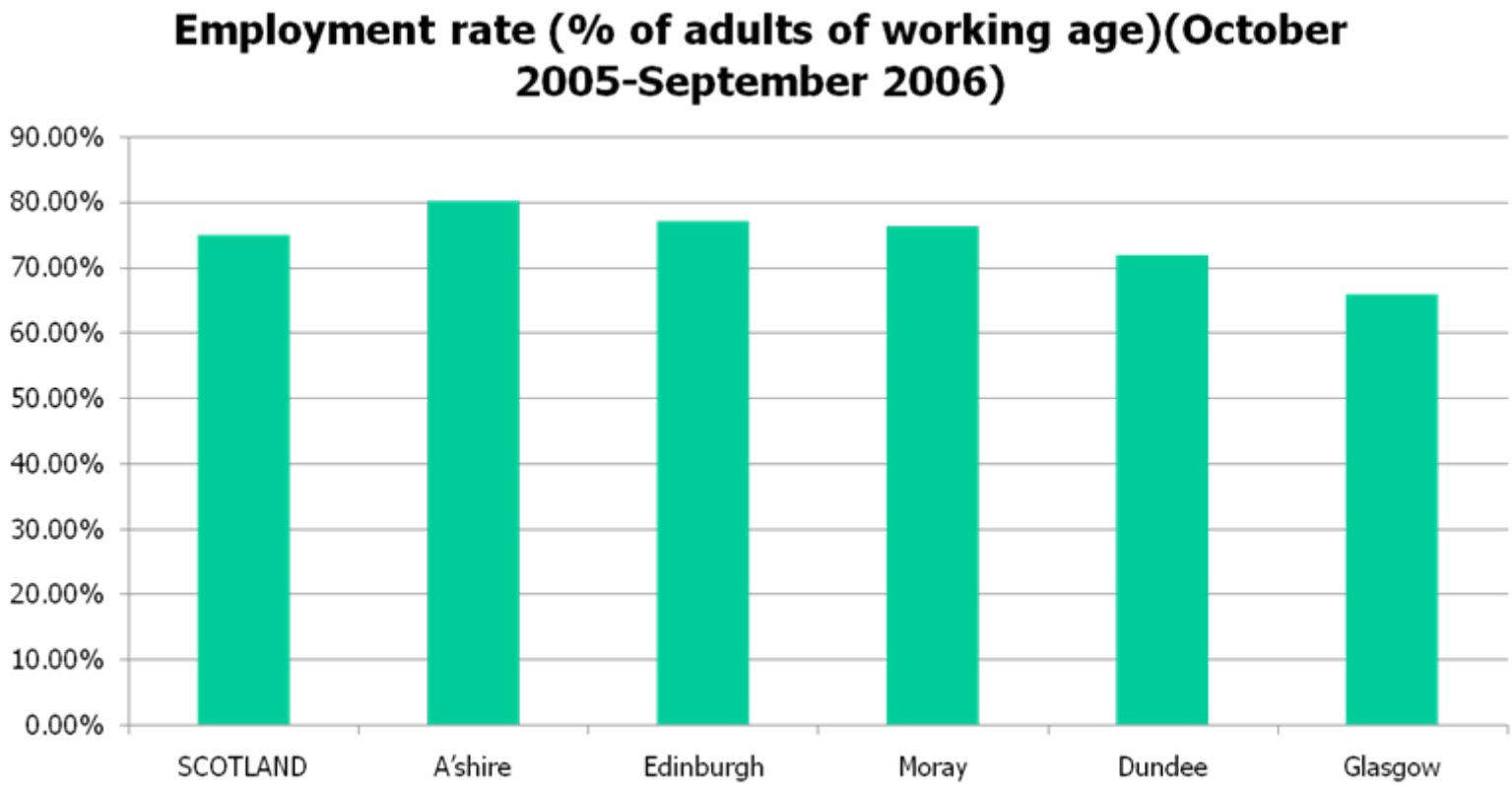
Employment



Data extrapolated from Scottish Government Economic Statistics 2007

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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

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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

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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

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Low/Zero Carbon Considerations

ENERGY CONSUMPTION - MORAY

Summary per employee (Industry)	**KWh**	**KW**
Coal	102	0.01
Petroleum products	5,267	0.6
Natural gas	20,503	2.33
Electricity (grid)	6,059	0.69
Renewables & waste	200	0.02
TOTALS	**32,029**	**4**

DTI data, 2004

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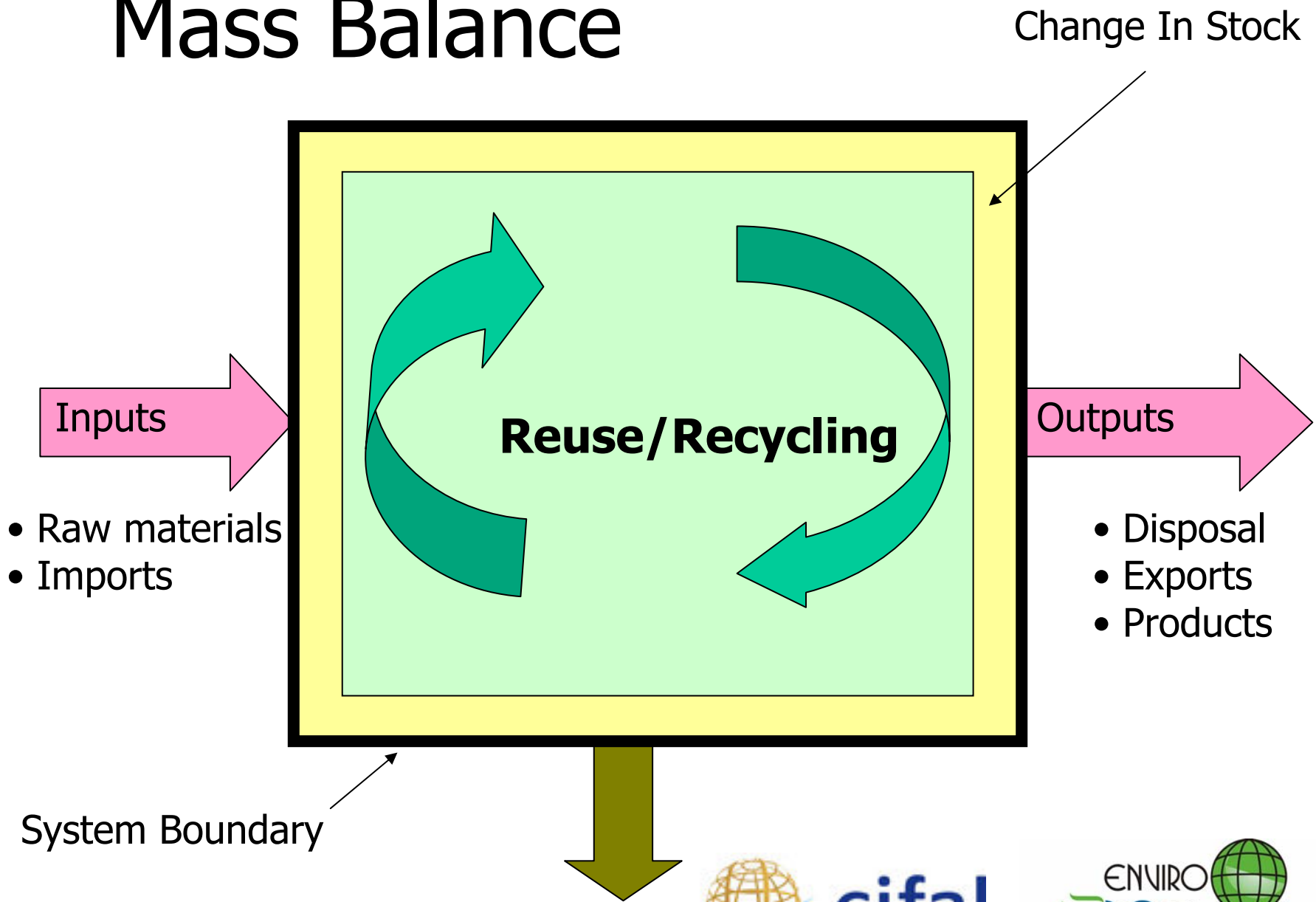
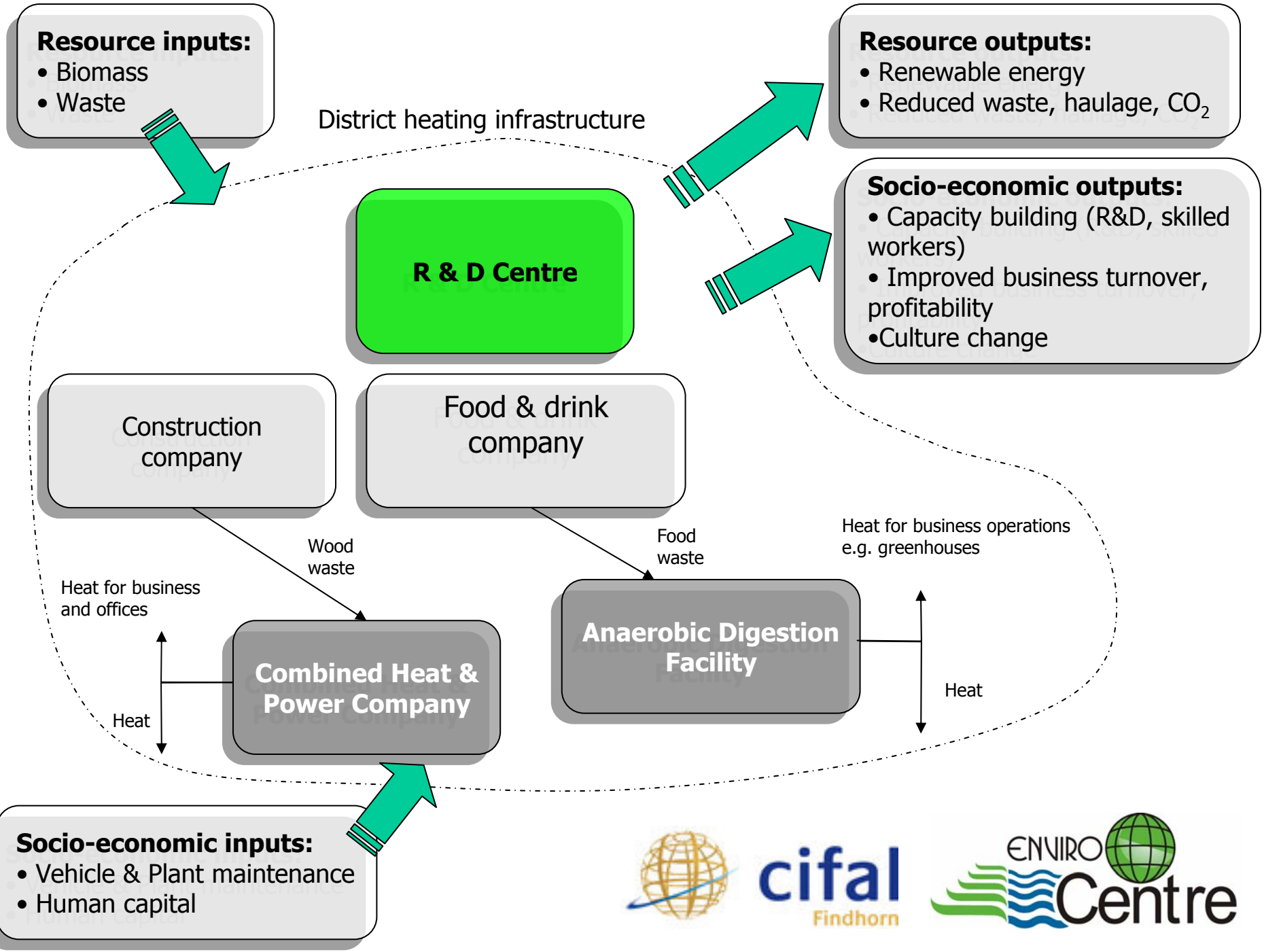
Mass Balance



Source: Biffaward (modified)


Resource inputs:
• Biomass
• Waste
District heating infrastructure
Resource outputs:
• Renewable energy
• Reduced waste, haulage, CO_2
Socio-economic outputs:
• Capacity building (R&D, skilled workers)
• Improved business turnover, profitability
•Culture change
R & D Centre
Construction company
Food & drink company
Wood waste
Food waste
Heat for business operations e.g. greenhouses
Heat for business and offices
Anaerobic Digestion Facility
Combined Heat & Power Company
Heat
Heat
Socio-economic inputs:
• Vehicle & Plant maintenance
• Human capital
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Size Requirements

Simplified example used earlier:

Facility	**Ha**	**Tonnage**
AD	0.6	40,000
CHP	2	100,000
Construction	1	
Food	1	
R&D	1	
Greenhouses	1	
Other	2	
TOTAL	**8.6**	

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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

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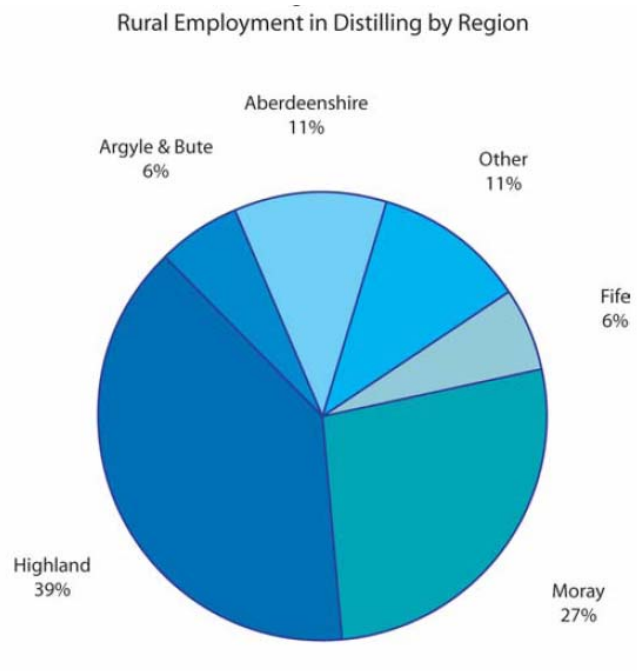
Whisky Industry

- 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

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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)

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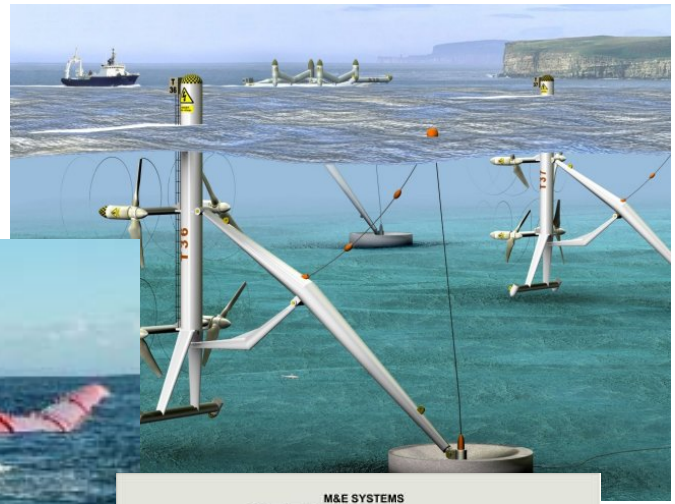
Renewable Energy Opportunities

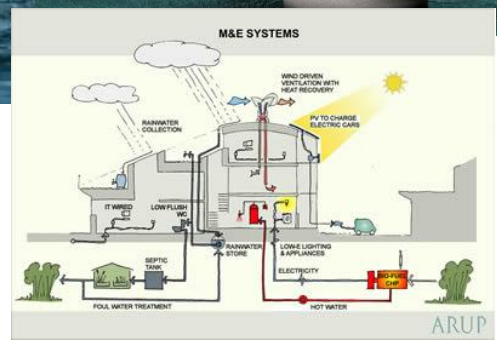
Encouraging business start ups, growth, diversification in:

- 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

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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

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Thank you

Questions?

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