From Middens to Plasma Arcs

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The Highland Council
3rd May 2012
Today I’ll Discuss...

• The UK & Devolved Administrations
• Some vital statistics
• The policy approaches of the DAs
• Scotland – Past, Present & Future
• Zero Waste
• Some Conclusions
The DAs & England

23 unitary authorities

22 unitary authorities

32 unitary authorities

Unitary 56
London 33
Metropolitan 36
Shire County 27
Districts 201
Total 353
## Vital Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Netherlands</th>
<th>UK</th>
<th>Scotland</th>
<th>Highland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>16.5M</td>
<td>62.5M</td>
<td>5.5M</td>
<td>0.22M</td>
</tr>
<tr>
<td>Households</td>
<td>7.5M</td>
<td>22.5M</td>
<td>2.8M</td>
<td>0.11M</td>
</tr>
<tr>
<td>Hhd Size</td>
<td>2.2</td>
<td>2.7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Land Area</td>
<td>41.5sqkm</td>
<td>244sqkm</td>
<td>78sqkm</td>
<td>25sqkm</td>
</tr>
<tr>
<td>Density</td>
<td>404/sqkm</td>
<td>256/sqkm</td>
<td>66/sqkm</td>
<td>9/sqkm</td>
</tr>
</tbody>
</table>
## Waste Statistics

<table>
<thead>
<tr>
<th>Country</th>
<th>M/HSW</th>
<th>Total Waste</th>
<th>Recycling</th>
<th>EfW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>9.5MT</td>
<td>100MT</td>
<td>62%</td>
<td>3.2MT (36%)</td>
</tr>
<tr>
<td>UK</td>
<td>31.5MT</td>
<td>288MT</td>
<td>40%</td>
<td>3.3MT</td>
</tr>
<tr>
<td>Scotland</td>
<td>3MT</td>
<td>17MT</td>
<td>40%</td>
<td>0.08MT</td>
</tr>
<tr>
<td>Wales</td>
<td>1.7MT</td>
<td>15MT</td>
<td>45%</td>
<td>0</td>
</tr>
<tr>
<td>England</td>
<td>23MT</td>
<td>252.7MT</td>
<td>40%</td>
<td>3.3MT</td>
</tr>
<tr>
<td>N Ireland</td>
<td>0.26MT</td>
<td>3.3MT</td>
<td>40%</td>
<td>0</td>
</tr>
<tr>
<td>Highland</td>
<td>0.15MT</td>
<td>0.45MT</td>
<td>39%</td>
<td>0.001MT</td>
</tr>
</tbody>
</table>
Drivers for Change

• EU Legislation & Policy:
  WFDs, Landfill Directive
  Sustainable Development
  Recycling Society

• Landfill Tax

• Landfill Allowance Scheme (but not really)

• Successive Government Documents but.....
Sterile Debate UK style

- Dump – (Midden)
- Dig & Dump
- Dilute & Disperse
- Entombment
- Flushing Bio-Reactor
England, Wales & NI Policies
Common UK Goals

• Waste Prevention

• Extended Producer Responsibility

• Carbon Metric/Eco Footprint

• Anaerobic Digestion & Food Waste
# Key Issues for DAs

<table>
<thead>
<tr>
<th>Country</th>
<th>Targets</th>
<th>Other priorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wales</td>
<td>2050 1 planet living</td>
<td>Kerbside sort &amp; food collections for all Sustainable consumption &amp; production</td>
</tr>
<tr>
<td></td>
<td>2025 RR=70%; EfW =30%</td>
<td></td>
</tr>
<tr>
<td>Scotland</td>
<td>2013 HW=50%</td>
<td>“Zero Waste”</td>
</tr>
<tr>
<td></td>
<td>2020 HW=60%</td>
<td>Cap on EfW; Food waste collections</td>
</tr>
<tr>
<td></td>
<td>2025 HW=70%</td>
<td>Carbon Metric</td>
</tr>
<tr>
<td>N Ireland</td>
<td>2020 HW = 50% MSW=60%</td>
<td>Promote high quality recycling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Landfill ban on food waste</td>
</tr>
<tr>
<td>England</td>
<td>EU targets</td>
<td>National Plan 2013</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Voluntary agreements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>End of waste criteria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AD &amp; the carbon metric</td>
</tr>
</tbody>
</table>
Planland

- 1974 Control of Pollution Act (GB);
- 1980 waste disposal plans (GB);
- 1990 management/recycling plans (GB);
- 1999 National Waste Strategy (Scot);
- 2003 National Waste Plan (Scot);
- 2004 implementation plan (Scot);
- 2006 Strategic Outline Case (Scot);
- 2007 Outline Business Case (Scot);
- 2008 Zero Waste (Scot);
- 2008-10 Review of National Waste Plan (Scot);
- 2011 Consultation on Zero Waste (Scot);
- 2012 Waste Regulations (Scot)
Scotland – Developments 1

PFI “Cambridge” MBT Lochgilphead

PFI – “Eco-Deco” Plant Dumfries

Public Sector - “Linde” AD Plant Stornoway
Scotland – Developments 2

Shetland:
Inclined Grate
26,000 t/year (not anymore);
3.3 t/hour;
Heat: 7MW

Dundee:
Fluidised Bed
400T/day;
Electricity: 8MW
Scotland – Developments 3

Gasifiers Dumfries

Scottish Gov’t Minister Opens MRF/RDF Plant Falkirk
Scotland: Zero Waste?

Virgin Materials

Means of Production Cycle
Efficient Close to Market Clean

CONSUMPTION
“Need not Want” (utopia vs dystopia)
Guarantees Durability Repairability Re-useability

Residual
Dismantlability Non-toxic Compostable Combustible Inert

Material/Energy
The “Tartan” Carbon Metric

- Introduced in 2010 for Household waste
- Weighted figures for calculating recycling rate
- Top rated was “textiles” for re-use
- 2012 top rated now aluminium but footwear 2nd
- Essentially turns tonnes metric on its head
- No matter – 70% recycling – must recycle everything
Scotland - Treatment

• Anaerobic Digestion – preferred

• Limits on EfW

• Pre-treatment required to get plastics and WEEE out

• Ban on bio-waste to landfill (2020)
Some Conclusions

• No EU legislation – no progress
• Too much time and money spent talking/planning
• Changing targets – with changing politicians
• Obsession with Private Sector Delivery

• In essence Waste (environment) had and has little political priority.
Some more conclusions

• The Devolved Administrations are moving apart (England being out of step);
• Need more Producer Responsibility
• Limited opportunities for recycling & re-manufacturing
• Technologies being used are imported – so only poor jobs for Scotland (& UK)
And almost finally........

It looks like a bin (midden) but it's a Plasma Arc Furnace:

• 3,000°C

• H₂ + CO (energy)

• Inert Vitrified Slag
And finally........

We really are the same under the skin

Inverness c 1940

Isle of Man c 2008
Acknowledgements

Some of the images used in this presentation were taken from presentations from:

- John Quinn CEO Arc 21 Northern Ireland
- Chris Murphy VCEO CIWM Northampton
- Brian Mayne Director AEA Wales