Next Steps for High Performing Communities
Lessons from the UK

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Agenda

1. Introduction to Eunomia
2. Key Elements of an Effective Waste Management System
3. Case Study - Wales
4. Conclusions
Introduction to Eunomia
Key Elements of an Effective Waste Management System

GOVERNANCE

- Sound institutions
- Policy designed to support implementation of the waste hierarchy
- Clear waste strategy and planning
- Effective stakeholder engagement and communication
- Robust system of sanctions and consistent enforcement of laws

OPERATIONAL WASTE MANAGEMENT SYSTEM

- Producers help cover end-of-life costs for products
- Products placed on the market
- Full cost recovery
- Households and businesses
- Waste collection services that can deliver against recycling targets and which cover 100% of households and businesses
- Consistent and effective environmental inspection and licensing
- Waste transfer stations
- Effective application / enforcement of the waste hierarchy
- Preparation for reuse
- Recycling
- Energy from waste
- Sanitary landfill / residual waste treatment
- Consistent reporting of accurate data
Case Study - Wales
Why Wales?

- **Who Really Leads the World?**
- **Recycling Rate**
  - 2005 = 25%, 2010 = 40%
  - 2016 = 60%
  - 2025 = 70%, 2050 = 100%

% recycled, from 2012/13 recycled, reused and composted

Top 10 MSW Recyclers - Adjusted Recycling Rate
Introduction to Wales

- Area = 8,000sq m
- Pop = 3m
- 22 municipalities
- Mix of rural and some urban
How Did it Get there? - Policy and Legislation

- **Landfill Directive 1999**
  - Set BMW diversion target – 35% by 2020 – trading
  - Landfill Tax (~$68/t)

- **Waste Framework Directive 2008**
  - Reuse and Recycling targets 50% H/H (70% C&D) by 2020
  - Amendment to align with circular economy package
How did it get There? - Policy and Legislation

- Wales
  - One Wales – One Planet 2009
    - Sustainable development
    - Low carbon, low waste society
  - Towards Zero Waste 2010
    - 2025 - 70% Recycling/Re-Use
    - 2050 - Zero Waste Nation
  - Municipal Sector Plan 2011
    - Collections Blue Print 2011
      - A preferred cost effective curbside collection system
      - Contribute to circular economy
      - Resilient to recycling market
Collections Blue Print Modelling

Literature
- Literature reviewed

Social impacts

Resources
- Logistics of case studies used to build up baseline description for U/V/R authorities
- Baseline Urban, Rural and Valleys (U/V/R) authority description
- Combined with budget data, reprocessor information, MRF fieldwork

Reprocessor data
- Mass flows, including contamination and tonnages to various end uses

MRF fieldwork
- Wales-wide averaged mass flows (V/R/U) 3 collection types CURRENT AND ENHANCED
- Average collection cost of (V/R/U) 3 collection types CURRENT AND ENHANCED

WDF tonnages each Welsh authority

H&S data 6 authorities
- H&S literature review
- Analysis of data plus literature

H&S literature

Number and type of jobs

Quantify job provision

Qualitative discussion

Energy use for facilities

Environmental impacts
- Including miles travelled
- Materials income, gate fees

Phase 3 CBA - CURRENT AND ENHANCED - kerbsort vs com-mingled vs 2-stream

Phase 3 outputs

Key
- Phase 1
- Phase 2
- Phase 3
What Collection System - Best Value for Money?

- For each of the three dry recycling
  - Current – No change in performance or range of services
  - Enhanced – 70% recycling achieved through fortnightly trash, weekly food, weekly recycling
What Collection Option - Recycling Performance?

**kg Recyclate per Household**

<table>
<thead>
<tr>
<th>Process Loss (kg/hh)</th>
<th>Rejects (kg/hh)</th>
<th>Recycled Material (kg/hh)</th>
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</thead>
<tbody>
<tr>
<td>CURRENT KS</td>
<td>3</td>
<td>140</td>
</tr>
<tr>
<td>CURRENT COM</td>
<td>12</td>
<td>142</td>
</tr>
<tr>
<td>CURRENT 2S</td>
<td>8</td>
<td>146</td>
</tr>
<tr>
<td>ENHANCED KS</td>
<td>6</td>
<td>217</td>
</tr>
<tr>
<td>ENHANCED COM</td>
<td>18</td>
<td>209</td>
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<tr>
<td>ENHANCED 2S</td>
<td>13</td>
<td>216</td>
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</tbody>
</table>

**Combined Financial and Environmental Cost, £k**

<table>
<thead>
<tr>
<th></th>
<th>Financial cost</th>
<th>Environmental cost</th>
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<tbody>
<tr>
<td>CURRENT KS</td>
<td>£50,635</td>
<td>£20,000</td>
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<tr>
<td>CURRENT COM</td>
<td>£53,422</td>
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<tr>
<td>CURRENT 2S</td>
<td>£89,015</td>
<td>£20,000</td>
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<tr>
<td>ENHANCED KS</td>
<td>£11,780</td>
<td>£16,394</td>
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<tr>
<td>ENHANCED COM</td>
<td>£16,394</td>
<td>£15,542</td>
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<tr>
<td>ENHANCED 2S</td>
<td>£124,294</td>
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</table>
Blue Print System

- Weekly Multi Stream Recycling
- Fortnightly Trash
- Weekly Food Waste
Food Waste Container

Kitchen

Curbside

Communal
Now What?

• 2016 = 60%
• 2025 = 70%
Further Reduce Trash Collection Frequency

- Isle of Anglesey
  - 2015 = 55%
  - Failing to meet 70% = $60k per % point

- Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Trash</th>
<th>Recycling</th>
<th>Food</th>
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<tbody>
<tr>
<td>Baseline</td>
<td>Fortnightly 240L (63g)</td>
<td>Weekly Multi stream</td>
<td>Weekly 24L (6.3g)</td>
</tr>
<tr>
<td>1</td>
<td>Fortnightly 120L (31g)</td>
<td>Weekly Multi stream</td>
<td>Weekly 24L (6.3g)</td>
</tr>
<tr>
<td>2</td>
<td>Three Weekly 240L (63g)</td>
<td>Weekly Multi stream</td>
<td>Weekly 24L (6.3g)</td>
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<tr>
<td>3</td>
<td>Four weekly 240L (63g)</td>
<td>Weekly Multi stream</td>
<td>Weekly 24L (6.3g)</td>
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Reduce Trash Collection Frequency

### Overall IoACC Recovery Performance

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</thead>
<tbody>
<tr>
<td>Overall IoACC</td>
<td>55%</td>
<td>63%</td>
<td>67%</td>
<td>68%</td>
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<td>IBA Recovery</td>
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<td>7%</td>
<td>6%</td>
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<td>6%</td>
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<tr>
<td>Kerbside Garden</td>
<td>18%</td>
<td>18%</td>
<td>19%</td>
<td>19%</td>
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<td>19%</td>
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<tr>
<td>Kerbside Food</td>
<td>4%</td>
<td>4%</td>
<td>5%</td>
<td>7%</td>
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<td>8%</td>
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<tr>
<td>Kerbside Dry</td>
<td>12%</td>
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<td>16%</td>
<td>15%</td>
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<td>15%</td>
<td>17%</td>
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<tr>
<td>Non-Kerbside</td>
<td>21%</td>
<td>21%</td>
<td>21%</td>
<td>21%</td>
<td>21%</td>
<td>21%</td>
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</tbody>
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Overall Recovery Rate

0% 10% 20% 30% 40% 50% 60% 70% 80%
Reduced Trash Collection Frequency

Net Annual Revenue Costs (thousand £ per annum)

Op 1: 120L*2wk
Op 2a: 240L*3wk
Op 2b(i): 240L*3wk +TB
Op 2b(ii): 240L*3wk +TB(et)
Op 3a: 240L*4wk
Op 3b(i): 240L*4wk +TB
Op 3b(ii): 240L*4wk +TB(et)

- Net Revenue Costs
- Residual waste collection
- Material income
- Disposal
- Recycling collection
- Garden waste collection
- AHP sacks
- Additonal annual container replacement
- Additonal biobag replacement
- AHP collection
- Net
Reduce Trash Collection Frequency

- Live October 2016 – 3 weekly
- Waste Avoidance Took Kit
- National education schemes
  - Love Food Hate Waste
  - Love your Clothes
  - Support tools for waste education
  - Standard images
Conclusions
Conclusion

- **Levers for high performance**
  - Comprehensive scheme to enable people to recycle
    - Food waste collections
    - Broad range of materials
  - Clear performance and policy targets
    - 70% moving to zero waste
  - Funding and commitment
    - Collaborative Change Programme National Resource
    - $9m Circular Economy Fund create processing capacity in Wales
  - Incentives/mechanisms to encourage people to recycle
    - Restricting trash collections
    - Pay as you Throw
    - Deposit Refund Scheme