A Zero Waste Vision for Europe: management of resources and the key role of biowaste

Enzo Favoino
Scuola Agraria del Parco di Monza

Chair, Scientific Committee, Zero Waste Europe
Overview

- What is Zero Waste, why it’s getting on top of the Agenda
- The EU waste policy and related drivers
- The pivotal role of biowaste in waste management
- The tools: Importance of separate collection
Rossano Ercolini, president of Zero Waste Europe 2013 wins the Green Nobel award

Posted on 1 hour ago
Tiny *tweets*, big steps forward

Good waste management needs good will and good organisation: "zero waste" is completely possible

#EUDeb8
The principles of Zero Waste: the 5 “R”s

- Reduce
- Reuse
- Recycle
- Rot (make compost!)
- Re-design
“Zero waste is more the journey, than the destination”
The regulatory context: drivers from EU env policy

- Revised Waste Framework Directive
  - waste hierarchy
  - Recycling/reuse targets
  - prevention programmes

- Landfill Directive
  - diversion targets for biodeg waste
  - obligation for pretreatment

- EU Climate Change Programme

- EU Soil Strategy
The regulatory context: drivers from EU env policy

- Revised Waste Framework Directive
  - waste hierarchy
  - Recycling/reuse targets
  - prevention programmes
- Landfill Directive
  - diversion targets for biodeg waste
  - obligation for pretreatment
- EU Climate Change Programme
- EU Soil Strategy
Why a “material recycling society”?

- Environmental benefits
- Local economic benefits
- Occupational implications (green jobs)
- Supply of raw materials
The “resource scarcity crisis”


"With growing demands on the world’s limited stock of resources, it is imperative that Europe makes more efficient use of both virgin materials and waste."

- EEA Executive Director Jacqueline McGlade

'Unsustainable resource use is a truly global problem – Europe’s voracious demand for materials is felt around the world," EEA Executive Director Jacqueline McGlade said. "With growing demands on the world’s limited stock of resources, it is imperative that Europe makes more efficient use of both virgin materials and waste."

The report, 'Material resources and waste' is an update to the Thematic assessment on material resources and waste within the EEA’s 2010 State and Outlook report. It states that Europe is using resources more efficiently, though it has used increasing volumes of raw materials in absolute terms. While this trend has been interrupted by the economic downturn, it is likely that increasing resource consumption will resume with renewed economic growth.
Decoupling !

GDP,

Waste

Time
“ready effect” actions (Community level)

- Home composting
- Sustainable event management (e.g. no throwaway dishes/cutlery)
- Tap water
- Cloth (washable) or compostable nappies
The power of compost
BIOWASTE
More than just waste management!

- Biodegradables represent the vast majority of MSW arisings (above all in S and SE Europe)
- Major contributor to GHGs from inappropriate management of MSW (4 to 11% of total GHGs come from landfills)
- Proper management often driven by strategies to reduced impacts of disposal
  - Landfill diversion targets (EU Landfill Directive)
- Extended benefits: soils, farmlands, the environment
  - Climate Change (UNFCCC)
  - Desertification (UNCCD)
  - Biodiversity, fertility, resilience, prevention of floods, erosion (EU Soil Thematic Strategy)
# MSW Composition (EC, 2001)

<table>
<thead>
<tr>
<th>YEAR (quantities)</th>
<th>AU</th>
<th>BE</th>
<th>DK</th>
<th>FIN</th>
<th>FRA</th>
<th>GER</th>
<th>GRE</th>
<th>IRL</th>
<th>ITA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (OECD) (1997 data, or latest year)</td>
<td>4.1</td>
<td>4.85</td>
<td>2.95</td>
<td>2.1</td>
<td>28.8</td>
<td>40.0</td>
<td>3.9</td>
<td>2.03</td>
<td>26.6</td>
</tr>
<tr>
<td>Kitchen and Yard Waste</td>
<td>29.2</td>
<td>34.9</td>
<td>37</td>
<td>40</td>
<td>29</td>
<td>29.9</td>
<td>47</td>
<td>27</td>
<td>33.6</td>
</tr>
<tr>
<td>Yard Waste</td>
<td>13.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen Waste</td>
<td>21.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper and card</td>
<td>24</td>
<td>18.9</td>
<td>36.8</td>
<td>16</td>
<td>20</td>
<td>32.5</td>
<td>22.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timber</td>
<td>1.4</td>
<td>1.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Textiles</td>
<td>2.8</td>
<td>2.6</td>
<td>0.8</td>
<td></td>
<td>2</td>
<td>2.1</td>
<td>5.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nappies</td>
<td></td>
<td></td>
<td></td>
<td>2.8</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastics</td>
<td>8.2</td>
<td>6.8</td>
<td>4.5</td>
<td>5.4</td>
<td>4.5</td>
<td>11.4</td>
<td>10.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td>9.4</td>
<td>5.1</td>
<td>2.3</td>
<td>9.2</td>
<td>4.5</td>
<td>4.8</td>
<td>7.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metals</td>
<td>7.2</td>
<td>3.7</td>
<td>3.2</td>
<td>3.2</td>
<td>4.5</td>
<td>2.6</td>
<td>3.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferrous metals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-ferrous metals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>17.8</td>
<td>26.0</td>
<td>12.4</td>
<td>37.3</td>
<td>31.5</td>
<td>15.5</td>
<td>19.2</td>
<td>15.6</td>
<td></td>
</tr>
</tbody>
</table>
The regulatory context: drivers from EU env policy

- Revised Waste Framework Directive
  - waste hierarchy
  - Recycling/reuse targets
  - prevention programmes
- Landfill Directive
  - diversion targets for biodeg waste
  - obligation for pretreatment
- EU Climate Change Programme
- EU Soil Strategy
The regulatory context: drivers from EU env policy

- Revised Waste Framework Directive
  - waste hierarchy
  - Recycling/reuse targets
  - prevention programmes
- Landfill Directive
  - diversion targets for biodeg waste
  - obligation for pretreatment
- EU Climate Change Programme
- EU Soil Strategy
Some savings – just to give a touch

- Replacement of mineral fertilisers → 30-50 kg CO$_2$-eq/tonne
- Biogas Production → 100-150 kg CO$_2$-eq/tonne
- Peat replacement → 300-400 kg CO$_2$-eq/tonne
- C sequestration → 11 to 326 kg CO$_2$-eq/tonne
  - EC Report “Soils and climate change”
- Reduced N$_2$O release + Improved Workability + Water retention + Replacement of pesticides…..
"The report underlines the need to sequester carbon in soils. The technique is cost competitive and immediately available, requires no new or unproven technologies, and has a mitigation potential comparable to that of any other sector of the economy."

http://ec.europa.eu/environment/soil/review_en.htm
What does it take to get there?

- **intensive kerbside incl. food waste + PAYT**
  - > 80%
- **intensive kerbside, incl. food waste separation**
  - > 80%
  - 70%
- **Road containers + kerbside (doorstep) for a few dry recyclables (paper)**
  - > 80%
  - 70%
  - 50%
istemric
- **“additional” systems, organics included through containers on the road**
  - > 80%
  - 70%
  - 50%
  - 40%
- **“additional” systems, containers on the road for dry recyclables**
  - > 80%
  - 70%
  - 50%
  - 40%
  - 20%
Article 22

bio-waste

- Member States shall take measures, as appropriate, (...) to encourage:
  - (a) the separate collection of bio-waste with a view to the composting and digestion of bio-waste;
  - (b) the treatment of bio-waste in a way that fulfils a high level of environmental protection;
  - (c) the use of environmentally safe materials produced from bio-waste.

- The Commission shall carry out an assessment on the management of bio-waste with a view to submitting a proposal if appropriate. The assessment shall examine the opportunity of
  - setting minimum requirements for bio-waste management and
  - quality criteria for compost and digestate (...) in order to guarantee a high level of protection for human health and the environment.
The pivotal role of separate collection

- A tendency to reduce “avoidable” contamination through separately collected inputs
  - Conservation of the “natural asset” of soils (EU Soil Strategy)
  - Increasing concerns on healthy food production
- Biowaste compost remarkably better, on the average, than mixed MSW compost
  - Not just “glass and plastics”
  - Heavy metals
  - Organic pollutants
## Food waste in residual waste

<table>
<thead>
<tr>
<th>Municipality</th>
<th>% Food waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altivole</td>
<td>7.82</td>
</tr>
<tr>
<td>Arcade</td>
<td>8.24</td>
</tr>
<tr>
<td>Breda di Piave</td>
<td>7.61</td>
</tr>
<tr>
<td>Casale sul Sile</td>
<td>9.42</td>
</tr>
<tr>
<td>Castello di Godego</td>
<td>8.05</td>
</tr>
<tr>
<td>Cessalto</td>
<td>6.30</td>
</tr>
<tr>
<td>Conegliano</td>
<td>9.40</td>
</tr>
<tr>
<td>Cornuda</td>
<td>7.19</td>
</tr>
<tr>
<td>Giavera del Montello</td>
<td>6.88</td>
</tr>
</tbody>
</table>

10% in residual waste (30%) = 3% of MSW
Starting from 35-40% organics in MSW → 90%+ diversion!
Source: Eurostat 2012
<table>
<thead>
<tr>
<th>Country</th>
<th>Municipal waste generated, kg per person</th>
<th>Total municipal waste treated, kg per person</th>
<th>Landfilled</th>
<th>Incinerated</th>
<th>Recycled</th>
<th>Composted</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU27</td>
<td>503</td>
<td>486</td>
<td>37</td>
<td>23</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Belgium</td>
<td>465</td>
<td>460</td>
<td>1</td>
<td>42</td>
<td>36</td>
<td>20</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>375</td>
<td>371</td>
<td>94</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>320</td>
<td>319</td>
<td>65</td>
<td>18</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Denmark</td>
<td>718</td>
<td>718</td>
<td>3</td>
<td>54</td>
<td>31</td>
<td>12</td>
</tr>
<tr>
<td>Germany</td>
<td>587</td>
<td>597</td>
<td>1</td>
<td>37</td>
<td>45</td>
<td>17</td>
</tr>
<tr>
<td>Estonia</td>
<td>298</td>
<td>257</td>
<td>70</td>
<td>0</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Ireland</td>
<td>623</td>
<td>560</td>
<td>55</td>
<td>5</td>
<td>37</td>
<td>4</td>
</tr>
<tr>
<td>Greece</td>
<td>496</td>
<td>496</td>
<td>82</td>
<td>0</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Spain</td>
<td>531</td>
<td>531</td>
<td>58</td>
<td>9</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>France</td>
<td>526</td>
<td>526</td>
<td>28</td>
<td>35</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Italy</td>
<td>535</td>
<td>505</td>
<td>49</td>
<td>17</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Cyprus</td>
<td>658</td>
<td>658</td>
<td>80</td>
<td>0</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Latvia</td>
<td>350</td>
<td>292</td>
<td>88</td>
<td>0</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Lithuania</td>
<td>442</td>
<td>432</td>
<td>79</td>
<td>1</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>687</td>
<td>687</td>
<td>15</td>
<td>38</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>Hungary</td>
<td>382</td>
<td>382</td>
<td>67</td>
<td>11</td>
<td>17</td>
<td>5</td>
</tr>
<tr>
<td>Malta</td>
<td>584</td>
<td>536</td>
<td>92</td>
<td>1</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Netherlands</td>
<td>596</td>
<td>502</td>
<td>1</td>
<td>38</td>
<td>32</td>
<td>28</td>
</tr>
<tr>
<td>Austria</td>
<td>552</td>
<td>528</td>
<td>3</td>
<td>35</td>
<td>28</td>
<td>34</td>
</tr>
<tr>
<td>Poland</td>
<td>315</td>
<td>255</td>
<td>71</td>
<td>1</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Portugal</td>
<td>487</td>
<td>487</td>
<td>59</td>
<td>21</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Romania</td>
<td>365</td>
<td>293</td>
<td>99</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Slovenia</td>
<td>411</td>
<td>351</td>
<td>58</td>
<td>2</td>
<td>34</td>
<td>6</td>
</tr>
<tr>
<td>Slovakia</td>
<td>327</td>
<td>312</td>
<td>78</td>
<td>11</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Finland</td>
<td>505</td>
<td>505</td>
<td>40</td>
<td>25</td>
<td>22</td>
<td>13</td>
</tr>
<tr>
<td>Sweden</td>
<td>460</td>
<td>460</td>
<td>1</td>
<td>51</td>
<td>33</td>
<td>15</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>518</td>
<td>514</td>
<td>49</td>
<td>12</td>
<td>25</td>
<td>14</td>
</tr>
</tbody>
</table>
EP resolution of 20 April 2012 - priorities for 7th EAP

- (the EP) Takes the view that the 7th EAP should provide for full implementation of waste legislation, including compliance with the waste treatment hierarchy while ensuring coherence with other EU policies; considers that it should set more ambitious prevention, re-use and recycling targets, including a net decrease in waste generation
EP resolution of 20 April 2012 - priorities for 7th EAP

● (the EP) Takes the view that the 7th EAP should provide for full implementation of waste legislation, including compliance with the waste treatment hierarchy while ensuring coherence with other EU policies; considers that it should set more ambitious prevention, re-use and recycling targets, including a net decrease in waste generation
A new way of assessing performances!

Sent to recycling

Residuals
Thanks for your attention

Enzo Favoino
enzofavoino@alice.it
+39 (335) 35.54.46