Climate change and waste management: Why we should Stop the Waste

Dr Michael Warhurst
Friends of the Earth
Contents

• The challenge
• Waste management’s role in climate change
• Maximising eco-efficiency, minimising climate impacts
• Conclusions
The challenge

- **Global consumption of resources is increasing rapidly**
  - Fuelled by increasing levels of consumption per capita in rich countries
  - And by a rapid rise in consumption in some very large poorer countries (China and India)

- **This increase is having environmental and economic impacts**
  - Climate change is an urgent threat
  - Increasing resource use has many other impacts, e.g. damage to biodiversity and depletion of water supplies
  - There is also an economic impact as prices of many resources increase

- **We must act urgently to both reduce our climate impacts and improve resource efficiency**
  - Delaying action on climate change is not an option, as shown by the recent Tyndall report for Friends of the Earth [1]
  - Improving our resource efficiency will reduce the damage that we do to the environment, whilst helping our economy in the future as resources become more expensive.
Waste management and climate change - the impact?

- **In DEFRA’s environmental report [2]:**
  - “Waste sector emissions of all greenhouse gases accounted for approximately 2% of UK emissions of greenhouse gases in 2003, but have fallen from a contribution of 5% in 1990. Methane accounts for approximately 80% of waste sector emissions.”
  - Carbon savings from the scenarios examined which had either waste prevention (stabilisation at 2002/2003 levels) or increased recycling (59% of municipal waste, 49% commercial and industrial) could be around 3% of current greenhouse gas emissions by 2020.
    - **NB:** We would view these recycling rates as un-ambitious.

- **WRAP research [3] shows the impact of recycling**
  - Recycling in the UK is already saving around 10-15 million tonnes of CO2 equivalent per year, equivalent to taking 3.5 million cars off the road
    - **NB:** Some of this saving actually occurs outside the UK, e.g. in savings in mining & material processing.
  - This study also demonstrated that the majority of life cycle assessments back recycling over incineration with energy recovery.

- **Friends of the Earth research [6] has shown that anaerobic digestion of household food waste alone could generate 0.4% of UK electricity demand**
Waste policies to maximise resource efficiency

• **The top of the waste hierarchy shows the way:**
  • Waste prevention - the best environmental option, avoiding resource use
  • Reuse - reduces need for resources and manufacturing
  • Recycling - reduces need for extraction and processing of new resources
  • Composting - returns nutrients and structure to soils; displaces other fertilizers; sequesters carbon; and, in the case of anaerobic digestion, produces methane which can be used as a 100% renewable energy source.

• **Then we must phase out the rest - the residual waste, which is currently landfilled or incinerated**
  – Phasing out residual waste is the right long term direction, both for resource efficiency and climate change.

• **The problem with residual waste treatments...**
Landfill and climate

**Problems:**

- Landfilling biodegradable wastes will lead to methane production
  - Some of this can be captured, and energy generated from the landfill gas
  - Much will not be captured, and will contribute negatively to climate change
- Landfilling of material that could be recycled, e.g. aluminium cans, creates climate emissions when materials have to be replaced.
  - In spite of the high market value of aluminium cans (>£800 per tonne), the recycling rate in the UK is not impressive:
Aluminium can recycling - 2005

Preventing the residual waste that goes to landfill

- **Divert biodegradable wastes through:**
  - Source-separated food waste collection, followed by anaerobic digestion or composting
  - Maximising recycling
- **Ban landfilling of reusable, recyclable and compostable materials**
  - Particularly important as a tool to force recycling of commercial waste
- **Increase landfill tax**
  - Most stakeholders agree that it is far too low at the moment
- **Use mechanical biological treatment to pre-treat any remaining residual waste prior to landfill**
  - Allowing maximum removal of recyclables (including plastics)
  - Preventing methane production in the landfill.
  - NB: We must ensure that this technique is designed to be gradually phased out as residual waste volumes decrease
Incineration and climate

- **Incineration creates a demand for residual waste**
  - Incinerators are expensive, and require long term financing, and usually long-term contracts forcing delivery of waste for 20 years or longer.
    - These contracts create a ceiling on future levels of waste prevention and recycling.

- **Incineration generates energy inefficiently, whilst emitting fossil fuel-derived CO₂**
  - Incinerators are designed to dispose of rubbish, and need a lot of air pollution control equipment.
  - Much of what is burned in incinerators is fossil-fuel derived - e.g. plastics, synthetic textiles etc. When burnt, this produces fossil fuel derived carbon dioxide.
  - Therefore, the power generated from incinerators is not ‘green energy’ or ‘renewable energy’ [5,6]
    - Incinerators produce more total CO₂ per unit energy generated than a coal fired power station.
    - If only fossil-fuel derived CO₂ is considered, an electricity only incinerator produces around 33% more than a gas fired power station.
Fossil CO₂ pollution from power generation, now and in 2020

Preventing the residual waste that goes to incineration

- Bring in an incineration tax to divert waste up the hierarchy
  - as used in countries such as Denmark and Sweden
- Redirect funding support to better waste management methods
  - e.g. Effective recycling systems and anaerobic digestion
- Ban incineration of materials that can be reused, recycled or composted
- NB: DEFRA is proposing an increase in incineration - we believe this is a fundamental error
Waste to energy from anaerobic digestion

- **E.g. Greenfinch project in Ludlow**
  - DEFRA funded
  - Strong public support

- **Recycles 5000 tpa of source-segregated waste into:**
  - Pasteurised fertilizer for local agriculture
  - Biogas, producing electricity & heat (100% renewable)

www.greenfinch.co.uk
Long term policies to phase out residual waste

• **Phasing out of residual waste (getting rid of rubbish) will also require other changes**
  – E.g. re-design of goods to be reusable, recyclable or compostable:
    • Some signs of this happening now, e.g. Sainsbury’s are beginning a move to compostable or recyclable packaging.
    • New policies will be required, e.g.
      – More producer responsibility schemes, to oblige producers to recycle their products at end of life, leading to eco-innovation
      – Changes to packaging regulations to force recycling and composting

• **We also need to develop effective waste prevention programmes**
  – Including variable charging
  – At local, national and EU levels.
Conclusions

• **We have to act now to improve our eco-efficiency**
  – We must reduce our impacts on climate change
  – Wasting resources will not help the UK economy

• **Recommendations for the England waste strategy:**
  – Promotion of separate collection & anaerobic digestion of food waste, not other energy from waste technologies - *not an increase in incineration, as currently proposed by the government*
  – More ambitious recycling targets, and a phase out of landfill or incineration of reusable, recyclable or compostable materials
  – Redesign of goods to make them reusable, recyclable or compostable
  – Variable charging, increases in landfill tax, and a new incineration tax

• **Recommendations for the review of the EU Waste Framework Directive:**
  – No re-branding of incinerators from ‘disposal’ to ‘recovery’
  – Creation of an effective waste prevention process, with targets
  – Promotion of recycling, including a phase out of landfill or incineration of compostable or recyclable materials


