



Mike Read Associates

Waste Reduction

Evidence Submitted to the House of Lords Science and Technology Committee, Sub-Committee I

Introductory Notes

- Mike Read Associates (MRA) is an international environmental consultancy, established in 1987 and has worked for clients including the UK, German, and Australian Governments, as well as the European Parliament. Since 2002 MRA has developed expertise in resource efficiency in the UK, including work on waste prevention for Defra, water efficiency with the Environment Agency, and the development of Beyond Recycling, www.beyondrecycling.net.
- In the context of this evidence it is assumed that waste 'reduction' is distinct from and excludes recycling. Indeed it is taken to be equivalent to the Organisation for Economic Co-operation and Development (OECD) interpretation of waste prevention (as a subset of waste minimisation), i.e. prevention being avoidance, reduction at source and reuse of products, as distinct from recovery (including recycling) and disposal. Thus essentially a beginning-of-pipe approach including issues such as design, efficient production and use, and levels of consumption.
- We have only answered those questions where we have factual information or a considered opinion to offer.
- The call for evidence indicated that the Committee would be interested to hear about other issues that are relevant to the scope of the inquiry. We have therefore been pleased to add evidence on waste reduction and climate change. Moreover, given the importance of *climate change* issues and the potential valuable contribution that waste prevention can make we have taken liberty of placing these comments at the start of the evidence provided.
- We convey our good wishes to the Committee for the inquiry. We would be pleased to offer further written or oral evidence.

Waste Reduction and Climate Change

While a certain amount of effort has been given to assessing the greenhouse gas (GHG) mitigation aspects of recycling (e.g.¹), virtually no effort has been expended to date on assessing mitigation benefits of waste prevention, even though the benefits are likely to be significantly greater. Given the primacy of tackling climate change this is an odd omission.

Fortunately Defra's recent *Waste and Resources Evidence Strategy 2007-2011* refers to a need for further research in this area (Table 4.1, Section E in

¹ Carbon Balances and Energy Impacts of the Management of UK Wastes. ERM and Golder Associates report for Defra



the Strategy). We suggest this is an issue of the highest priority both to provide the evidence for the primary environmental benefits of waste prevention, and to contribute to knowledge on practical GHG mitigation techniques.

Mike Read Associates has been endeavouring to assemble and assess the various models used for making calculations of the GHG benefits of waste prevention. The few models that have been developed generally focus on avoided emissions associated with material disposal but completely ignore the reduced emissions associated with avoided extraction of raw materials, avoided transport, avoided manufacture, avoided use, and even avoided recycling.

An attempt was made within the Government's Waste Strategy 2007 (Annex 1, Appendix 1) to provide assessments of the relative benefits of recycling and waste prevention, but as Defra acknowledge the basis for the calculations is not sophisticated (James Vause, pers. comm.). For instance, the waste prevention figures in the Strategy represent the energy that would have been used to make the material, but omit the wider production and consumption processes.

A much more sophisticated model, known as WARM² has been developed by the US Environmental Protection Agency. However this model also suffers from significant flaws. For instance the methodologies used for calculating GHG benefits of waste prevention and of recycling differ significantly, and subsequent presentation of the figures in a comparative context is misleading.

We strongly suggest that developing robust methodologies for assessing the GHG benefits of waste reduction needs to be given a very high priority.

Better design and the use of materials

- What role can better design and materials play in minimising the creation of waste? Are there any barriers to how knowledge in this area can best be translated and applied?

Waste reduction substantially relies on beginning-of-pipe solutions (as opposed to the end-of-pipe approaches offered by recycling, landfill, or combustion) and could be said to comprise four main elements, namely:

1. producing fewer items,
2. producing items more efficiently,
3. acquiring fewer items, and
4. using items more efficiently.

The first two of these four require better design and choice of materials, and there are considerable barriers to knowledge in this area.

Waste reduction requires a wider range of skills and a more inter-disciplinary approach than for more conventional waste management. The knowledge barriers appear to be particularly acute in terms of knowledge transfer between disciplines. A proposal for a waste prevention 'network' to, *inter alia*, address this challenge has been developed by Mike Read Associates as part

² <http://www.epa.gov/epaoswer/non-hw/reduce/wstewise/climate/tools.htm>



of a Defra-funded research project³. An expanded and more detailed proposal for a 'Beyond Recycling' Network has been developed with the University of Northampton, and further details can readily be provided.

It appears rare for waste reduction to even be included in design briefs for products. Inclusion at the design brief stage could radically improve resource efficiency.

- What factors influence the use of materials? In what way do considerations of sustainability feature in the selection of most commonly used materials?

Cost and availability appear paramount in most contexts. Where a claim of sustainability can be applied (legitimately or otherwise) to a commonly used material this will be used to promote the material or product, but change to a less unsustainable material appears relatively rare.

- To what extent do product designers and engineers take into account the availability and the end of life impacts of raw materials?

Most designers, including engineering designers work to design briefs. As mentioned above, these often do not include consideration of sustainable production and consumption.

- Can better designed products offset the increase in consumption?

To a limited extent only. Products that consume fewer materials in their production, transport, retail and use can help reduce the growth in impact of increasing consumption. However it seems likely that a very considerable reduction in material consumption is required to achieve truly sustainable material use, along with reducing greenhouse gas emissions towards necessary targets.

- Are there any other gaps in knowledge and how are they being addressed?

The biggest gap in knowledge would appear to be how design affects not just material use in a product but material consumption over a product's potential life, and the greenhouse gas emissions associated therewith. This is a discipline that appears as much in its infancy as it is important.

Business framework

- Does the current policy, regulatory and legal framework support and incentivise the development of better, more sustainable products and processes? How is the framework communicated to businesses and what is the level of awareness and understanding among businesses?

While many policy, regulatory and legal instruments (producer responsibility, landfill taxes, etc.), acting individually, incentivise greater sustainability, the overall framework still appears to prioritise profitability and shareholder value far above sustainability. Indeed, the very means used to judge success countervail promotion of sustainable products and processes. For instance at national level Gross Domestic Product can readily be seen as a measure of how swiftly material and environmental capital is being exhausted.

³ Towards an Efficient Waste Prevention 'Network'. Mike Read Associates, July 2007. Available at <http://www.beyondrecycling.net/scopingstudy/index.html>



- How central is sustainable design to business thinking? What initiatives are in place to encourage this and are they meeting business needs?

While some businesses are considering sustainable design, there remains that a perception that a product with a reduced 'footprint' compared to its predecessor is de facto 'environmentally friendly'. However this is frequently just as fallacious as considering a reduced debt to be a credit. It appears that many more initiatives meet business needs than meet environmental needs.

Waste reduction actually offers considerable scope for cost cutting for business, as is evidenced by success of some of the elements of the BREW family of programmes⁴

- What other measures can promote a focus on waste reduction among businesses?
 1. Taxation and regulatory structures that favour the production of long-lived, repairable, refurbishable and upgradeable products.
 2. Personal carbon allowances.
- What lessons can business learn from international experience?

Although rapidly emerging as an issue of great importance, waste reduction appears to be as yet poorly understood across the developed world, and as yet there is little effort to gather and disseminate best practice. Ironically the best practice may be found in the developing world where greater value is put on efficient resource use and reuse.

Government policy

- What is and should be the role of Government in addressing the issue of waste reduction?

Until very recently, waste reduction - despite being at the top of the government's waste management hierarchy - has received remarkably little attention or funding. There are signs in the recent *Waste Strategy 2007* that this is changing, however there is a great deal more to do. The establishment of statutory municipal waste prevention targets for local authorities, alongside their waste recycling targets, would be one valuable step, if accompanied by the necessary research, resources and guidance.

19 October 2007

⁴ <http://www.defra.gov.uk/Environment/waste/brew/factsheets.htm>