

Waste Reduction Inquiry

**by the Sub-Committee of the House of Lords Science and Technology
Select Committee**

MEMORANDUM by WRAP (the Waste & Resources Action Programme)

Executive Summary

WRAP welcomes the opportunity to comment on the Waste Reduction Inquiry launched in August 2007.

Our response addresses seventeen questions posed in the Inquiry document.

Introduction

1. WRAP (the Waste & Resources Action Programme) is a not-for-profit UK company providing recycling and resource efficiency programmes for Defra, the Scottish Executive, the Welsh Assembly and the Northern Ireland Assembly. The organisation was formed in 2000 to implement a number of the actions set out in the Government White Paper *Waste Strategy 2000*¹.

2. WRAP works in partnership to encourage and enable businesses and consumers to be more efficient in their use of materials, reduce wastes and to recycle more things more often. This helps to divert waste from landfill, reduce carbon emissions and improve our environment.

3. WRAP operates at the top end of the waste hierarchy, which gives priority to reducing waste at source, reusing products and recycling materials. One of the major programmes within our current business plan aims to address waste reduction issues as they arise in the food sector. WRAP introduced the Courtauld Commitment in July 2005 as a means of securing the commitment of major retailers to concrete actions to address packaging waste reduction. Thirteen of the largest grocery retailers are signed up to actions that, with WRAP, will help to design out packaging waste growth by 2008 and to deliver absolute reductions in packaging waste by March 2010. And more recently, 14 major food manufacturers have joined the Courtauld Commitment. We welcome the opportunity to contribute to this enquiry, therefore.

¹ Department of the Environment, Transport and the Regions (2000), *Waste Strategy 2000 for England and Wales*, Parts 1&2, Cm 4693-1&2, London: Stationery Office.

DETAILED ANSWERS TO THE INQUIRY QUESTIONS

We have set out below our answers to seventeen questions.

PART A: BETTER DESIGN AND THE USE OF MATERIALS

Question 1: 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?

4. WRAP believes that better design and appropriate materials selection have a central role to play in minimising waste. Since 2005, we have worked with the retail as well as food and drink manufacturing sectors under the auspices of the Courtauld Commitment to develop waste saving solutions that involve and benefit the whole supply chain and consumers. These solutions include developing new and innovative packaging materials, technologies and formats; reducing the weight of packaging, increasing the use of refill and self-dispensing systems, collaborating on packaging design guidance, and increasing the amount of recycled content packaging used by the industry.

5. For example, WRAP has worked with manufacturers, brand owners and retailers to develop a range of innovative lightweight glass food and drink containers that resulted in 36,500 tonnes of glass savings within the 12 first months following the project. Another of our projects has resulted in the development of a new pack sealing technology, the Integrity Seal, which reduces the amount of packaging material by a 10% and increases the products' shelf life as the controlled atmosphere within the pack that helps to preserve the food more effectively.

6. The Design Council² has undertaken research that highlights the fact that up to 80% of the resources and energy required to manufacture a product are determined at the design stage. This highlights the important role design has in ensuring an efficient use of resources.

7. There are many barriers that can be encountered in translating and applying knowledge in this area. Many designers remain focused on the functionality and aesthetics of a product and are largely unaware of resource implications and environmental impacts of their designs. Some industries also suffer from a fundamental skills gap. For example, in the food industry it is estimated that one in four food technologist posts remain vacant and one in five packaging technology posts remain vacant.

² <http://www.designcouncil.org.uk/en/>

8. WRAP has been working with the design community for some time to help designers of food and grocery packaging to optimise the use of material in their designs. Recently we have published an *Evolving Guide to Packaging Design*³ and also provide concept rooms, market, consumer and technical research, international best practice and a range of other tools and resources for designers and specifiers alike on-line⁴. The aim is to help overcome the barriers to move resource and efficient packaging in particular.

9. WRAP is also working with the construction sector and its clients to reduce waste in construction projects. It has been estimated that the design of the structure and of the delivery approach can account for over 10 times the cost of disposing on construction waste⁵. Materials choice and standardisation are key issues in designing out waste in building projects whilst materials mass balance approaches are critical in civil engineering projects in ensuring that materials from site are re-incorporated back to avoid surpluses.

Question 2: What factors influence the use of materials? In what way do considerations of sustainability feature in the selection of most commonly used materials?

10. Choosing the most appropriate materials from which products and packaging are made is a fundamental part of product and packaging design. Many factors affect the decisions that are made on the materials that can be used, including:

- Physical, chemical, functional and structural properties (e.g. durability, ability to contain acidic liquids, etc.)
- How easy it is to machine the material
- Barrier properties (e.g. provision of oxygen or grease barrier in food packaging)
- Consumer preferences
- Recyclability and recycled content (e.g. Ribena, for example, has just introduced 100% recycled PET bottles)
- Whether materials are certified as food grade or covered by European regulations for materials that come into contact with food.
- Sustainable / ethical sourcing

11. Historically, sustainability has not been high on the list of factors designers take into account. Work by the Design Council, Envirowise, WRAP and others has been trying to raise this issue higher on the agenda, particularly in retail and

³ http://www.wrap.org.uk/retail/the_guide_to_evolutionary_packaging_design/index.html

⁴ To access the mentioned tools, please go to www.wrap.org.uk/retail

⁵ Envirowise; WRAP (2007) *Benefits of Construction Resource Efficiency*
<http://www.envirowise.gov.uk/media/attachments/202895/BRE-Construction-resource-efficiency.pdf>

WRAP response to the Waste Reduction Inquiry

construction which between them account for 40% of the waste produced in the UK. There is some evidence of change as highlighted below.

12. Consumer research also suggests that the ability of the material to be recycled in the UK is increasingly important for consumers and this is the beginning to input on designers working in retail.

13. WRAP's manufacturing and construction teams work to encourage businesses to use recycled or reclaimed materials instead of virgin materials. For example, WRAP's construction team has worked with Marks & Spencer to secure a commitment to use 20-30% recycled or reclaimed construction materials in its new store builds.

14. WRAP is currently working with the British Retail Consortium (BRC) and the retail sector to ensure that clear and unambiguous information is provided to consumers to tell them whether packaging is or is not widely recyclable. A number of options are currently being consumer tested, and its hoped this will overcome the issues surrounding the provision of clear recycling messages to the consumer.

15. WRAP's research found that most consumers are confused about the wide range of new materials emerging with 'biodegradable', 'home compostable', 'compostable' and 'degradable' labels, all being introduced in the UK as bags, pots, trays, films or bottles, albeit in relatively small quantities at present.

16. Consequently, we believe that clear labelling and guidelines for materials is vital along with a better understanding of the full environmental benefits of the new materials. WRAP and other stakeholders are working with the Composting Association to provide a certification service for home compostable packaging, and provide guidance on 'compostable' claims that such items carry.

17. WRAP held a roundtable⁶ to discuss the responsible introduction of new compostable and biodegradable packaging materials with stakeholders, which contributed to raising awareness among food retailers of the need to be cautious when introducing these materials (as they can contaminate conventional recycling and composting streams); and the importance of providing clear information to consumers to avoid any confusion over how to dispose of these materials.

18. More recently, there has been a growing interest in understanding and communicating the carbon footprint of products, with a number of retailers and brand-owners working with the Carbon Trust and the British Standards Institution (BSI) to develop a standard approach to carbon foot-printing and carbon labelling.

⁶ WRAP (2007) *Biopolymer Packaging in UK Grocery Market*
http://www.wrap.org.uk/downloads/Biopolymer_briefing_final_6th_Sep.6b84b12c.pdf

Alliance Boots, Innocent Drinks and Walkers Crisps already display a prototype carbon label on their packaging. This interest in carbon, mirrored in wider society and in government policy, is likely to lead to a much greater focus on the carbon intensity of products and packaging alike. This may push manufacturers and retailers towards the use of less carbon intensive materials like wood and some plastics; and away from more carbon intensive materials like steel, aluminium and glass.

19. In construction terms, materials and product choice is undertaken within the design phases and can be influenced by the clients brief. WRAP has been reviewing the impact of materials use in terms of the impact of waste arising on site and the quick win opportunities within the design that will help reduce impact. Key elements in resource efficient materials can be the use of off-site methods and the ability, where demolition is required, to re-incorporate materials into the newbuild phase.

20. WRAP has reviewed the potential for offsite manufacture and produced 8 case studies detailing the potential for waste reduction across a variety of systems and methods⁷.

21. A step by step approach has also been developed in conjunction with the demolition sector that allows the potential for recovery and re-use of materials from the demolition phase, i.e. closed loop recycling, by combining the Quality and Demolition Protocols with Site Waste Management Plans⁸.

Question 3: To what extent do product designers and engineers take into account the availability and the end of life impacts of raw materials?

22. Availability is taken into account to some extent through the proxy measure of material cost. Generally though thinking about end of life has tended to be dominated by complying with regulation rather than the end of life impacts.

23. There are signs that this is changing with a focus on carbon emissions associated with different materials. There is also increasing interest in incorporating recycled content and in 'closed loop' thinking which can lead to carbon and raw material savings, for example, recycling glass containers back into

⁷ For more information on the case studies and the report go to http://www.wrap.org.uk/construction/construction_waste_minimisation_and_management/offsite.html

⁸ WRAP (2007) *Efficient Use of Materials in Regeneration – A Step by Step Guide* http://www.wrap.org.uk/construction/construction_waste_minimisation_and_management/mre_guide.html and WRAP (2005) *The Quality Protocol for The Production of Aggregates from Inert Waste* http://www.aggregain.org.uk/quality/quality_protocols/

containers. For more information on the carbon benefits of “closed loop” systems for glass see the glass export report⁹

24. Complete focus on carbon only can distort thinking on material use if other factors aren't taken into consideration. For example, whilst glass containers are heavy and more carbon intensive in manufacture and distribution they can be more readily recycled or reused (e.g. in doorstep milk deliveries).

25. WRAP has been working with the design community over three years and recognises the importance of introducing end-of-life analysis, as well as other tools that can lead to the right informed decisions being made when it comes to the materials used in packaging. To this end, WRAP has created a Guide to Evolving Packaging Design, which can be found on our website (see above) and is encouraging designers to use it. Envirowise and Design Council have been working on wider sustainable design for some years and have shown the cost and environmental benefits this can bring.

Question 4: What impact does the development of new materials have on design?

26. WRAP believes that, although there have been dramatic improvements in sustainable design, there is still a need to educate the design community on the role that all materials, including new ones, can play in resource efficiency and sustainable design. Very few product designers have a detailed knowledge of materials science, and sometimes find it difficult to judge the sustainability of new materials. The complexity of the impact of new materials can be difficult for designers to assess, for example what are the benefits of new biodegradable materials? WRAP and the Green Alliance organised a conference to discuss this issue¹⁰ and WRAP has produced a position statement to try to highlight key issues¹¹.

27. In construction terms processing of construction and demolition wastes such as recycled aggregates are often perceived as 'new' products depending on the applications for which they are being considered. WRAP has worked with the aggregate producers and regulatory bodies to develop a quality protocol¹² for recycled aggregates that provides certainty in use for various applications and confidence to clients that, where fit for purpose (as with any, material or product)

⁹ WRAP (2007) *Assessment of the International Trading Markets for Recycled Container Glass and their Environmental Implications*

http://www.wrap.org.uk/downloads/MSG007_Final_v2_no_fibre_glass.fd667985.pdf

¹⁰ <http://www.wrap.org.uk/retail/materials/biodegradable.html>

¹¹ WRAP (2007) *Biopolymer Packaging in UK Grocery Markets*

http://www.wrap.org.uk/downloads/Biopolymer_briefing_final_6th_Sep.588c2276.pdf

¹² http://www.aggregain.org.uk/quality/quality_protocols/

they can be specified. The AggRegain website (www.aggregain.org.uk), provides a specifiers tool to help in specification and materials choice for recycled aggregates use¹³.

Question 5: How much interaction is there between material scientists and designers?

28. WRAP has both material scientists and packaging designers in its Retail and Manufacturing teams. Consequently, the information and tools WRAP produces uses the combined knowledge of both of these. However, such interaction is unusual, and there is a lot more scope for both groups to work together.

Question 6: Can better-designed products offset the increase in consumption?

29. The life span or durability of a product has a major impact on the ongoing consumption of that product. So a well-designed and durable product (or one that has not been designed with built in obsolescence) is more likely to support more sustainable consumption patterns. Products can also be designed to be upgradable (e.g. personal computers) rather than disposable. Some companies are beginning to introduce so-called "product / service systems" where products are leased instead of sold and the manufacturer of the product remains responsible for the maintenance of the leased product (e.g. photocopiers, floor coverings). This new business model creates an incentive for the manufacturer / leaser to design and build a durable, reliable and high quality product that requires very little maintenance. There is a well researched scientific literature that supports the view that better design reduces resource use. WRAP can supply further references if this would help.

Question 7: Are there any other gaps in knowledge and how are they being addressed?

30. As mentioned in our responses above very few designers have a reasonable working knowledge of materials science, re-use and recyclability. Whilst the government-sponsored Knowledge Transfer Networks attempt to provide information on materials to a wider audience their ability to attract designers has been limited to date. Other Government organisations such as Envirowise have also been active at addressing the knowledge gap. Perhaps the key gap is to ensure that designers have a brief that includes minimising resource use from their customers. This may provide designers with additional incentives. This approach

¹³ <http://www.aggregain.org.uk/specifier/index.html>

can provide interesting results as illustrated at WRAP's Concept Room¹⁴. A more active engagement with the design community – perhaps through organisations like the Design Business Association – could help to better inform designers.

PART B: BUSINESS FRAMEWORK

Question 8: 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?

31. There has been a gradual positive shift regarding the support and incentives of sustainable products and processes in the policy framework. There are many examples that show this shift in current legislation. However, a stronger legislative emphasis should be placed on waste reduction in order to see greater and more rapid changes.

32. Following the emphasis that the 2006 Northern Irish Waste Management Strategy placed on waste reduction, the Waste Strategy for England 2007 (WS 2007) adds to this by placing a greater focus on the issue than it did previously.

33. The WS 2007 pays special attention to the waste materials with the greatest scope for improving environmental outcomes, such as paper, food and garden waste, aluminium, glass, plastics, wood, and textiles. Not only this, but a number of business sectors are identified as the target sectors for reducing waste. Among them are the retail sector, the food industry and the construction industry.

34. Furthermore, the WS 2007 identifies various actions that emphasise the importance of product design when it comes to waste reduction. Some examples are the lightweighting of glass containers, and the increase of recycled plastic and recycled content of certain plastic containers.

35. Additionally, Defra is planning to launch its new Products and Materials Unit, which will lead in the areas of product design and product policy.

36. Defra's targets regarding waste reduction are consistent across ministerial departments, which shows a very positive commitment from the Government on this issue. For example, the WS 2007 proposes a possible target of halving the amount of construction, demolition and excavation waste going to landfill by 2012 as a result of waste reduction, re-use and recycling. This target has also been

¹⁴ www.wrap.org.uk/retail/tools_for_change/concept_room

included in the BERR draft Sustainable Construction strategy currently out for consultation¹⁵.

37. Within this regulatory framework, WRAP has been working with the UK's top 12 grocery retailers and many major brands since their signing of the Courtauld Commitment, developing both a range of actions and long-term initiatives that would enable the retailers to embed household waste reduction in their corporate strategies.

38. Although the current system is producing good results, if signatories are not deemed to have delivered to their full capacity, this approach could be reinforced by the threat of legislative action, as is the case in Scotland

Question 9: How central is sustainable design to business thinking? What initiatives are in place to encourage this and are they meeting business needs?

39. At the moment, there are not enough initiatives that link eco-design and sustainable design to mainstream business management. This has two implications. For business this means that it is not exposed to the latest thinking in – and benefits of - sustainable design. For sustainable designers a lack of exposure to the business community means that they very often aren't equipped with the entrepreneurial skills necessary to bring their designs to market. There are some organisations and fora that are trying to rectify this situation. For example, the Centre for Sustainable Design (www.cfsd.org.uk) and the Sustainable Design Forum sponsored by BERR.

Question 10: What other measures can promote a focus on waste reduction among businesses?

40. WRAP would encourage the introduction of a variable Value Added Tax (VAT), with a lower VAT for products that are more sustainable. This would contribute to making sustainable products more cost-effective, as well as more attractive to the consumer.

41. WRAP would also suggest that Enhanced Capital Allowances (ECAs) should be made available to the waste management industry to improve the investment case for new waste treatment technologies (as long as such incentives are designed to reinforce the waste hierarchy). This would allow the waste management industry to invest in new infrastructure that meets the needs of all types and sizes of food and drink companies, as well as to take account of the

¹⁵ <http://www.dti.gov.uk/sectors/construction/sustainability/page13691.html>

needs of the municipal waste stream. Enhanced capital allowances could also be deployed to encourage the development of a sustainable products industry.

42. In construction the implementation of Site waste Management Plans (SWMPs) as a regulatory requirement will provide a level playing across construction projects above a pre-determined value. Coupled with the landfill tax escalator for disposal of inert and non-inert wastes (currently £2/24 respectively) the cost of waste compared to the benefits of waste reduction and improving recovery and recycling will become increasingly visible to both contractors and their clients as part of overall project costs. WRAP has used the SWMP as framework to help embed good and best practices that will enable both cost and environmental benefits to be realised¹⁶. However, there is significant work required in getting the message across to constructors and clients in order to ensure requirements are set to develop SWMPs early enough within project design in order to maximise the opportunities to reduce waste.

Question 11: What lessons can business learn from international experience?

43. WRAP has created a web-based searchable database and image back with more than 200 successful and innovative retail packaging formats and product designs from all around the world. This database is continuously updated with innovative packaging designs identified through global intelligence and market research agencies. We also have a large list of case studies which provide information and advice on the best-practice solutions. All of these resources are available through the WRAP web-site at: www.wrap.org.uk/retail

44. If the Sub-Committee is in agreement, we would be happy to provide evidence of international and national best-practice packaging design and the broader work we are doing to encourage and support a more sustainable retail and food and drink manufacturing sector.

PART C: GOVERNMENT POLICY

Question 12: What is and should be the role of Government in addressing the issue of waste reduction?

45. Defra published the Waste Strategy for England in May 2007, which places greater emphasis on waste reduction. The Government's role should be to

¹⁶http://www.wrap.org.uk/construction/construction_waste_minimisation_and_management/onsite/agp_waste_minman.html

encourage positive changes by setting and communicating clear waste reduction targets – but not necessarily prescribing the ways in which industry achieves these targets. This provides business and industry with flexibility and does not stifle innovation.

46. Where government departments, agencies or delivery bodies identify market failures they should determine the most appropriate interventions, whilst not creating anti-competitive situations that go against the principles of the European Single Market. These interventions could include R&D to overcome technical barriers to waste minimisation or targeted grant aid to trial new technologies or solutions.

Question 13: How does Government policy link up with European strategies and action plans?

1. The UK Government and European Union (EU) policies on waste prevention are very much connected.

2. The EU Member States revised the Waste Framework Directive on the 28 June 2007. This revision reinforced waste reduction as the top priority and, therefore, as being at the top of the waste hierarchy. However, concrete waste prevention policies were agreed to be the responsibility of the EU Member States. Therefore, the Waste Strategy for England fits in with the broader European waste agenda.

3. However, in order to achieve greater results, a deeper commitment from the national and European layers of Government would be welcome.

Question 14: What lessons can be learnt from other countries – within the EU and globally?

47. Other EU Member States have used a variety of policy instruments to reduce waste, including the development of voluntary industry agreements and covenants in the Netherlands, encouraging the development of product / service / leasing systems in Denmark (see comments above). Some countries have passed legislation or policies that simply ban wasteful products or encourage industry agreements that achieve the same goal.

PART D: CONSUMER BEHAVIOUR

Question 15: How can better product design be used to effect a change in consumption patterns and behaviour?

48. WRAP considers that encouraging change is part of the process of optimising packaging and reducing household food waste successfully. Furthermore, changing the packaging is an opportunity to add value to the product, and to strengthen the bond between the consumer and the brand; also, the new packaging could advertise its positive environmental impact, point out that the brand is taking corporate responsibility seriously, make reuse of packaging a positive experience by offering the consumer an enhanced experience, and build the consumer's view into the design process.

49. For example, WRAP worked with Coors Brewers Ltd on a new lightweight version of the 300ml Grolsch bottle. Apart from reducing the bottle's weight by 13 per cent, the new design retained the classic bottle profile, with no detrimental effect on brand image or bottle strength. The new bottle proved so successful that Coors Brewers Ltd have further lightweighted their 300ml Grolsch and Coors Fine Light bottles, saving an additional 4,000 tonnes each year.

50. WRAP realises that consumer behaviour is the key when it comes to waste reduction, not only where packaging is concerned, but also with regard to food waste. Our recent research suggests that households throw away between £250 and £400 of potentially edible food each year. This is estimated to be 6.7 million tonnes of household food waste produced every year in the UK, most of which ends up in landfill.

51. WRAP is committed to working with our stakeholders and partners to reduce consumer food waste by 100,000 tonnes by March 2008. We are currently working on a new campaign that aims to tackle food waste. In a few days, WRAP will launch a new consumer-facing food waste campaign¹⁷ which will develop new approaches to help consumers to get the most out of their food. This will include both communication and technical solutions.

Question 16: What role do marketing strategies play in influencing more sustainable design?

52. Marketing has a central role in promoting sustainable design. In February 2007, WRAP carried out trials in Tesco aimed at reducing the number of two-for-one offers. Tesco introduced a new scheme which encouraged the buyer to choose five ingredients while only paying for four. This initiative was very popular with

¹⁷ Go to <http://www.lovefoodhatewaste.com/> for more information on the Love Food Hate Waste campaign.

customers as they felt the promotion was more about Tesco helping them to fulfil the ingredients for a meal rather than selling them a second unit of the same product, which they might end up wasting.

Question 17: Are there any gaps in knowledge in this area?

PART E: SKILLS

Question 18: How is sustainable design integrated into the design syllabus?

53. Although there are some exceptions, most education programmes in design do not place enough importance on sustainable design. This needs to be at the core of all design, material science and engineering courses, underpinning every module, rather than being treated as a separate, often optional, module. Some good examples of sustainable design able included in academic courses include the MSc in Sustainable Design at Cranfield University, modules on sustainable design at Sheffield Hallam, the Centre for Sustainable Design and the Royal College of Art.

Question 19: To what extent are considerations of sustainable waste reduction part of broader industrial training courses?

54. In the case of the construction sector, sustainability is not currently a consistent element in construction training courses. Basic training for on-site operatives are delivered through simple 'toolbox' talks and WRAP has developed a number of these to help promote the implementation of SWMPs. WRAP has also worked jointly with Envirowise to deliver regional training on introduction to, and developing good practice in, SWMPs¹⁸. These training events are recognised by the Construction Industry Training Board (CITB).

55. WRAP has also supported the Chartered Institute of Waste Management in the development of the Waste Awareness Certificate for site operatives¹⁹.

56. WRAP recognises however that further work with both clients and contractors is required in order to raise awareness and improve the overall knowledge (and benefits) of materials resource efficiency.

29 October 2007

¹⁸ http://www.wrap.org.uk/construction/construction_waste_minimisation_and_management/swmps.html

¹⁹ <http://www.wasteawareness.org/>