

Evidence for the House of Lords Science and Technology Select Committee inquiry into "Waste Reduction" on behalf of Philips Consumer Electronics (PCE).

General Remarks

The evidence given here refers to electrical and electronic products. For other product categories the evidence is not necessarily identical.

In the considerations below, there is focus on waste. Issues are however discussed against the background of the total life cycle of products which includes the production, transport and use phase as well. In the "life cycle hierarchy" waste often has a subordinate position.

1. 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?

Design for materials reduction and materials substitution (for materials with a lower environmental impact) are important Ecodesign strategies. These strategies result mostly in waste reduction as well. Best knowledge and know how in this field are with producers - however most of this is proprietary.

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

Application of materials is in the first instance determined by maximizing value creation. Value includes functionality value, economic value but also immaterial value (convenience, health and safety, etc) and emotional value (quality feel, "green", feel good etc). Sustainability aspects of materials play an important role in last named two categories of value, but do not dominate in the total package of design decisions to be made.

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

For companies seriously involved in Ecodesign (like Philips) availability and end-of-life impacts of raw materials play an important role in design decisions. These are balanced however with other life cycle aspects of electronic products like energy consumption of products in the production or the use phase. This makes that in some cases one aspect (one "impact category") has to sacrifice for others.

What impact does the development of new materials have on design? How much interaction is there between material scientists and designers?

The availability of new materials and new components has a big impact on the life cycle impact of products including waste aspects. Examples are for instance LED lighting, LCD TV's and monitors etc.

Can better designed products offset the increase in consumption?

In principle yes (materials reduction), in practice often no. The weight reduction of portable phones has been more than offset by the increase by the numbers sold. For LCD TV which has a lower weight than the traditional CRT TV, the effect has been largely offset by the fact that bigger screen sizes are being bought.

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

Knowledge in the field is chiefly based on empirics, although can be consolidated into some general principles and design rules. Real fundamental research in this field is lacking, because the field is new and universities have for new research projects have to rely on external sponsors (which are mostly interested in applied rather than in fundamental research)

2. 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?

The current policy, regulatory and legal framework only partly supports the developments of more sustainable products and processes. European Directives (from which Member States' legislation is derived) focus on special fields (like just waste) lack therefore life cycle focus. Moreover emphasis is strongly on environment and proper balancing between value creation and environmental load is lacking. This lack of the right perspective has made communication to business cumbersome. Moreover there are justified doubts whether the implementation of the Directives lead to maximum environmental gain at the minimum cost.

There is much to be improved in this field both in terms of content and of communication.

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

In proactive companies sustainable design has got an appropriate position in functionality value creation processes (see question 1.2). There are however no public initiatives to encourage industry-wide real sustainability thinking in design processes. An European Directive aiming to do so (EuP) is being felt by industry as partly counter-productive. A scientific analysis (by the EcoDesign Department at Delft University of Technology) of EuP confirms this idea.

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

Waste reduction in production processes has a natural driver: waste costs. Waste reduction of products sold to the market and subsequently discarded by users is much more complicated. In the reasons to discard products a lot of issues ranging from changes in personal life, increased functionality ambitions and just wanting to have something new, play a much bigger role than specific "design for waste reduction" by producers. As already said this design for waste reduction is subject to the overarching goal to optimizing functionality value.

What lessons can business learn from international experience?

After a backlog in last century, the UK has caught up well in Ecodesign. At least in Europe it is now up to par. Best country where valuable lessons can be learned is Japan - it is to be realized that also there a lot of the Applied Ecodesign know how and knowledge is in side companies (proprietary aspects).

3. Government policy

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

Governments in the European Union (including the UK) are addressing the electronic waste issue through transpositions of the WEEE and EuP Directives. However from the Directives it has been recognised by the European Union that at least the WEEE Directive contains serious flaws. This is because this Directive is based on principles and ideas of 1995. The implementation started ten years later due to the fact that approval procedures took so long. In the meanwhile knowledge and insight have increased substantially. The Directive has therefore been put up for Review. Through a project with the United Nations University, guidance has been provided how WEEE could be more effective and more simple to implement so that the environmental gain/cost ratio will be substantially higher. The Report has been submitted to the Commission but is not yet public.

Future policies of Member States should be based on the Review decisions of the Commission and on information in more general provided by the report.

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

I interpret that in this question the Government as to be the UK one. As non-resident of the UK, I am not in a position to answer this question.

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

Positive elements as regards electronic waste can be learned from Japan (as regards overall strategy, however expensive), China (as regards selected issues), Switzerland (has the best take back and recycling system for electronic waste from an environmental perspective, expensive as well), the Netherlands (has the most ecoefficient system, however environmentally not the top) and Belgium (has the best collection system via strong contacts with municipalities) and Germany (has the most competitive recycling industry)

4. Consumer behaviour

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

Consumers go for value. In Western Europe value means:

- for roughly one third of prospective in particular items as nice design, "green", and quality;
- for one third innovative, new, original and having a lot of features is the top priority whereas;
- the remaining third go primarily for low price.

In this order the impact of product design and green design decreases.

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

Marketing strategies play a crucial role in promoting more sustainable product. When sustainability is well positioned in the value proposition to the consumers it can strongly enhance the business. However there should be a fit with the the segment of the market which the company is addressing. If for instance price buyers are the chief target group, marketing on basis of a sustainability platform can be very counter-productive.

Are there any gaps in knowledge in this area?

There are a lot of gaps in knowledge how to involve consumers better in sustainability. The traditional idea that green or sustainability is always positive is based on superficial inquiries in which most consumers give "politically correct" answers. When digging deeper, or as current buying behaviour shows, it turns out that consumers are much more selfish and not as green as supposed to be.

5. Skills

How is sustainable design integrated into the design syllabus?

Sustainable design is a crossfunctional activity. Universities and schools have therefore substantial difficulties in integrating sustainability into their teaching curricula, this is also reflected in books and syllabi about design in more general. Books which are specifically geared towards sustainable design are scarce and show generally more attention to the conceptual and the support tool side than to practical examples how this can be done.

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

For industrial training courses the same holds - mutatis mutandis - as for universities, see above.