

MAXIMISING REUSE AND RECYCLING OF UK CLOTHING AND TEXTILES

Project Summary

Under the UK Defra led [Sustainable Clothing Roadmap industry initiative](#) to improve the environmental and ethical impacts of clothing, Defra has commissioned a series of industry informed evidence projects in key areas, one of which is “*Maximising Reuse and Recycling of UK Clothing and Textiles*” The aim of this project was to report up-to-date, comprehensive and robust data on the quality and quantity of post consumer clothing and textile waste in the UK, and present and evaluate strategies for increasing reuse and recycling in order to divert them from landfill. This included a detailed assessment of the barriers and opportunities to maximise reuse and recycling, the technical and economic feasibility of different options, the infrastructure requirements, and examples of best practice from overseas. A pilot scale trial to test textile waste suitability for reuse/recycling was conducted for a representative sample of households in Birmingham. The study recommends key interventions in order to optimise technologies and develop markets for clothing and textiles items and their constituent materials, thus diverting more from landfill. The project is an independent study funded by government and peer reviewed. A **Summary** and more detailed **Technical Report** have been produced. The results were designed to inform interested industry stakeholders. The project was informed by an industry steering group as per Appendix 3 of report and encompassed two 1 day workshops.

Key Findings

The study shows that as of 2007 for the UK:-

- **2 million tonnes of textile waste** (inc clothing, carpets and footwear) is generated annually (of which approx 1 million is clothing);
- **24%** (523k tonnes) is collected for reuse and recycling in the UK and overseas.
- **47%** (1 million tonnes) enters the Municipal Solid Waste (MSW) stream to landfill
- The remainder is unaccounted for (14%), reused as secondary textiles (9%), trade waste (2%) or directly given away (4%).

The best end of life options for clothing were identified as reuse and recycling. These perform best in energy and waste /resource terms compared to other options e.g. Energy from Waste.

The opportunities to increase reuse and recycling via established and new markets to greater than the current 24%, thereby diverting from landfill, look optimistic on a pricing (currently several hundred £GBP/tonne), capacity and quality basis. Key trends noted are:-

- Collection and reuse/recycling organisations reported difficulties in sourcing enough textiles to meet demand.
- An increase in exports of unsorted or partially sorted textiles to countries with lower labour costs compared to 2004/2005 data.
- Infrastructure, in particular for downcycling (recycling waste clothing into lower value products) lags behind other recyclates. Downcycling applications (e.g. wipes, mattress filling, building/automotive components) are under utilised at present and have potential for establishment of new uses.

In particular, opportunity focus areas for increasing reuse and recycling are:-

- Carpet – a large contributor (11%) to Household Waste Recycling Centres (HWRC), with a low recycling rate at present. The existing collection infrastructure facilitated by Carpet Recycling UK, for carpets and carpet tiles, while small can be built on. The USA based CARE (Carpet America Recovery Effort) industry product stewardship scheme for increasing carpet recycling is recommended as a model for UK consideration.
- Corporate clothing and textile rental –This has an existing take back infrastructure but with some barriers relating to corporate logos and security requiring resolution. Procurement (public and private) is an important potential driver to enable this. The high percentage of polyester in corporate clothing makes it a potential candidate for closed loop upcycling e.g. via the Japanese based Teijin ECOCIRCLE technology, however this is not available in the UK or Europe at present and the viability economically is not clear.
- Footwear
- Consumer clothing – it is estimated that an additional 310k tonnes of clothing, are potentially collectable from households at a suitable quality for reuse and recycling, with market capacity.

Researchers' Recommendations

Key recommendations for going forward include:-

- To resolve barriers e.g. bogus collection and differing collection requirements, development of an industry wide standard or voluntary agreement for collection, sorting, reuse and recycling;
- Sorting and Collection improvements:-
 - ✓ Acknowledge and encourage direct reuse as the best environmental option for clothing and footwear and focus on removing the additional capacity from the waste stream;
 - ✓ Greater Local Authority involvement in offering kerbside collection;
 - ✓ Keeping textiles separate during collection is required where comingled collection exists; and
 - ✓ Incentives for UK sorting, where environmentally and economically sound, rather than barriers to export.
- Encourage investment (where appropriate) in new technologies that increase the value of downcycled and upcycled textiles (polyester in clothing; polyester and nylon in carpets);
- Research and development into new applications that create lower added-value recycled textiles should be encouraged – this absorbs the largest volumes that cannot be reused;
- Standards and labelling for waste fibre composition (e.g. recycled, biodegradable, compostable) are required to enable use of recyclate in clothing or other applications and diversion to the most appropriate waste management route.
- Promote the message that clothes unsuitable for reuse can be recycled to dispel the myth that low quality/torn clothing cannot be recycled.

Methodology & Scope

The method included a literature review, industry input through workshops and subsequent follow up plus the Birmingham trial on textiles in household waste. The project scope included post consumer domestic and commercial textiles, such as carpets and corporatewear, as well as domestic clothing. The scope was post consumer waste so excluded production waste and textiles made from non-textile recyclates, such as plastic bottles.

Robustness

The literature review conducted in this study was extensive and drew on the expertise of stakeholders for key information, as well as searches of online and trade journals. The 77 main stakeholders involved drew from existing contacts in the Clothing Roadmap, as well as specialists in the collection, reuse and recycling of clothing.

Limitations

It is important to note that the information and opinions gathered from the stakeholders involved in this study will not cover the full range of expertise on this issue. Also, the Birmingham textile trial results are based on a sample size of about 250 houses. While this should be considered a reasonable sample size, it comes from one UK city and could not be considered fully representative.

Further Information

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