

Co-collection of duvets and pillows with clothing in textile banks – theoretical example

This case study provides an indication of the potential viability of including duvets and pillows as a target material in textile banks, using the value of the clothing to subsidise re-use and recycling.



Collection of duvets and pillows from textile banks

This is a theoretical example of the co-collection of duvets and pillows with clothing via textile banks. The bulk and low value of post-consumer duvets and pillows makes the collection of these materials challenging. This case study assumes a market for these items which is currently limited.

Key facts

Organisation: Theoretical example

Type of non-textile: Duvets and pillows

Type of collection: Co-collection (with clothing) from textile banks

Introduction and background

Whilst duvets and pillows are bulky items, they do not make up a significant proportion of household waste by mass due to their lightweight nature. As recycling rates are weight-based they may not be considered a priority waste stream to divert from landfill by local authorities. They are also difficult to burn and recover because most contain flame retardants, although this is possible if they are shredded and mixed with other materials. Nevertheless they represent bulky items in the waste stream that have a potential to be re-used or recycled as a fibre source.

There are currently no large scale collection systems for duvets and pillows in the UK. Some charities may accept small amounts of clean duvets for re-use as part of their regular textile collection, but this is generally not encouraged and is a very niche market with low capacity (homeless shelters and animal rescue centres, or exported abroad).

The collection of textiles in textile banks is well established in the UK, with an estimated 12,000 to 15,000 banks nationwide. Over 140,000 tonnes of textiles¹, are collected from these banks each year (mainly clothing and some household linens). The majority of textile banks are labelled with instructions detailing the types of items acceptable. In general, duvets and pillows are discouraged or not encouraged.

While material prices for post-consumer duvets and pillows are low, collections of used clothing (and other household textiles like bed linen and curtains) are, in most cases, viable due to the current high prices of these items. This theoretical case study examines the possibility of including duvets and pillows in collection alongside clothing.

Figure 1 & 2 Duvets and pillows; shipment of collected items abroad for reprocessing

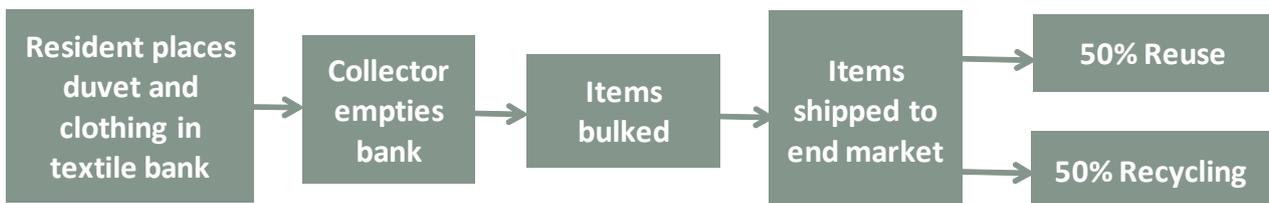


¹ WRAP (2012) *Textiles flow and market development opportunities in the UK*

Description of the operation

Pillows and duvets are brought to textile banks by residents. Each bank is normally emptied at least two to three times per week by the collector; though the addition of bulkier materials may lead to a higher frequency of collections. Materials from the bank are collected by one driver using a 3.5 tonne van.

Duvets and pillows are separated from the clothing during the emptying of the bank. They are easily identifiable and can be loaded separately into the collection vehicle, reducing sorting costs. It has been assumed that the proportion of duvets and pillows to clothing is low, with the duvets and pillows being taken to a bulking point and on to a central depot for further bulking to allow for more efficient transport.



As the main markets for post-consumer duvets for re-use and recycling are outside the UK, the items would be bulked and exported using a shipping container to their country of destination. On arrival the duvets and pillows would be hand sorted, approximately 50% are re-used as bedding, while the remainder is recycled as textile into other products. The main end market for the export of such products is India and Pakistan, where there is demand for low cost stuffed bedding for re-use as bedding. The Southern Asia area also has a sizeable shoddy industry², where used textiles are shredded to reclaim their fibres before being spun into recycled yarn and woven to make recycled textile products such as low quality blankets.

Performance/outcomes

Number of collections/deliveries: 2-3 per bank per week.

Non-clothing textiles collected: Duvets and pillows

Re-use rate: 50%

Recycling rate: 50%

Potential innovation/good practice

The mixed nature of the waste stream means it has low income potential as a mixed material; sorting is required. The main barrier is the cost of collecting partly due to the bulkiness and low weight of the products. There is a limited re-use market in the UK due to competition from new low-cost products and the requirement to extract individual materials for recycling is challenging. Additionally, the presence of flame retardants does not make them particularly suitable for recovery unless mixed with other materials.

By collecting these difficult items alongside clothing, there could have been the potential to run an operation which is financially viable overall, though subsidised by the value of the clothing component. However, this viability would be affected by the proportion of clothing

² Shoddy is a material produced by reprocessing used textiles. These are shredded and spun to produce yarn which is woven into low quality recycled fabrics.

to duvets and pillows in each bank. The use of existing banks and reprocessing infrastructure could also help to reduce costs.

Description of costs and revenues

This box provides a summary of the main estimated costs and revenues

Costs:

- Collection vehicles: One 3.5 tonne van.
- Buildings: Use of a warehouse for bulking. Premises would be shared with clothing sorting activities.
- Specialised equipment: A bulking point for collectors such as an articulated trailer, estimated £10,000 per annum.
- Dedicated staff: 1 driver and a proportion of time from clothing sorting staff for loading and bulking.
- Collection costs: £300/tonne for textile bank collections of mixed clothing and bedding, including fuel, maintenance, vehicle and wages for collector (within 30-40 mile radius)
- Sorting costs: Marginal as duvets and pillows pulled out at collection stage.
- Shipping costs to end market: For a 40 cubic yard container filled with duvets and pillows it would cost £125-185 per tonne for unbaled materials.

Revenues:

- Duvets and pillows: Assumed to be £100-£150 per tonne for re-use or recycling
- Revenue from sale of clothing
- Additional benefits include landfill tax and gate fee savings of approximately £85 per tonne.

Conclusions/Key learning points

The cost of collecting textiles from multiple collection points means textile bank collection of pillows and duvets is comparatively expensive. Although this collection system is viable for clothing due to their high market price and comparative higher density, the cost of collecting duvets and pillows in this manner is far higher than their resale value. There is a risk that co-collecting duvets and pillows with clothing would result in the clothing collection being unviable rather than it subsidising the bulkier material. If more substantial end markets developed in the UK, another option could be separate (specialised) banks, operated by businesses that have a dedicated duvet/pillow collection and reprocessing service.

The collection of duvets and pillows could be made more efficient by the compaction of these items before transport. Collecting them from HWRCs and baling them before transport could offer a solution for part of the waste stream. Around 50% more duvets and pillows can be fitted into the same space if baled. However baling is an additional cost due to the equipment and staff time necessary to bale the items.

Having the ability to re-use and recycle these items locally could help to reduce costs if the market is developed. Some charities have reported that there is demand for clean second hand duvets in the UK, although there are some concerns over hygiene and potential liability.

Unfortunately, donated items rarely meet consumer requirements and the cost of getting a duvet laundered to the required standard is often higher or comparable to that of buying a new low-cost duvet. Costs could be reduced if large quantities of duvets and pillows were available and if commercial laundering equipment was purchased.

Recycling in the UK is also limited. If reprocessors were widely distributed it would be possible deliver items directly, reducing collection costs. There may also an opportunity to produce wipers with the duvet and pillow covers or to reprocess fillings if they could be laundered in a cost effective way.

Pillows are fairly easy to deconstruct but extracting stuffing materials from duvets for recycling is time consuming and expensive. If this was undertaken in the UK by paid employees it is assumed that the labour cost would be such that the recycled product would be unlikely to compete with virgin product. Additionally, it is difficult to predict the level of quality of any recovered materials. It is possible to divert duvets and pillows from landfill into recovery and use small quantities of combustible material as refuse-derived fuel. However in all cases the collection costs may be higher than the revenue from the product.

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