BED BUG

With one estimate that 62,000 mattresses are being sent to landfill every week in the south east of England alone, cowboy recycling operators are rife and many legal ones are going out of business, it's no surprise that one observer talks of 'a massive mattress problem'. **Maxine Perella** reports

Mattresses tend to be an overlooked waste stream in many respects, despite their size. Not much mapping work has been done to date on these bulkier end-of-life items, making any data on material flows somewhat unreliable. This is somewhat surprising, given the recycling challenges they present.

Several cases of 'mattress mountains' have been documented in recent years, with reports of dumped mattresses piled high in empty warehouses or fly-tipped onto farmland.

The low returns offered by mattress recycling have only compounded this problem – some operators have gone out of business, resulting in vast clear-up jobs. The presence of transient, cowboy traders meanwhile threatens to undercut those legitimate firms that are finding useful end-markets for the materials they recover.

However, there are signs that the situation is slowly improving. Last year, the National Bed Federation (NBF) – a trade body representing UK bed/mattress manufacturers and their suppliers – commissioned a study from Oakdene Hollins in an attempt to assess the current state of play regarding end-of-life (EOL) mattresses. The analysis, *NBF End of Life Report for Mattresses*, makes for some interesting reading.

It found that while national mattress recycling rates were very low, they were on the rise. The study estimated that, in 2013, 586,000 mattresses were collected for recycling in the UK – 30% more than in 2012 (452,000).

Based on estimated annual replacement mattress sales, this represents a recycling rate of 12.9%, up from 9.7% in 2012. The study is currently being updated to take into account figures for 2014/5.

Making a start

According to the NBF's executive director, Jessica Alexander, the report is a first step in re-energising the debate again on this issue. "Before we can decide what to do, we need to know what's happening now – and it's plain that mattress recycling is growing by itself because many businesses do take a responsible view towards disposal of old mattresses."

That said, some mattress recyclers are regularly coming across operators that are violating duty of care obligations. Steve Fawcett, business partner at Manchester-based Matt Tech, says more enforcement is needed on the ground to tackle the problem – especially in relation to rogue traders.

"There's a cost to everything, simple mathematics tells you that you can't process a mattress for £1.95 or £2.95," he says. "It's just a mess, the industry wants cleaning up. I could take you to several places that have mattress mountains. It seems that everybody's just burying their head in the sand and hoping it's going to go away, but it's not – mattresses are a massive problem."

Matt Tech has just expanded its premises to take account of the growing number of EOL mattresses – it currently recycles around 1,000 mattresses a week. Fawcett says the company would like to source more supply, but argues there's no real cost incentive to move mattresses up the waste hierarchy. It's still in many cases cheaper to dispose of them in landfill.

Photography: Alamy

Another mattress recycler, who wishes to remain anonymous, concurs with this view. He estimates that in the south east of England alone, around 62,000 mattresses are being sent to landfill every week.

"The problem you've got, if you have a gate fee of £3 a mattress – and there are 45 mattresses to a tonne – is that's £135 a tonne. It's cheaper to take them to landfill."

That said, mattress manufacturer Dreams claims that none of its used mattresses go to landfill. According to Lynsey Wickens, Dreams' PR co-ordinator, the mattresses are put through a process which involves metal being consolidated into large roll-on, roll-off skips and taken to a scrap metal recycler. Fabric components are baled and either reused or recycled (foams are turned mainly into insulation). Non-recyclable or heavily contaminated fabrics are used as a feedstock to make refuse-derived fuel.

Hoops to jump through

Even if a collection authority wishes to enact more responsible disposal, there are often contractual barriers to overcome.

"A council might want to do it, but there may already be a contract in place which doesn't give the proviso to do mattress recycling. So if they want to do it, they'd have to pay a premium. Not everyone wants to incur that cost," a source points out.

Mindsets must also change, says Martin Gamester, director for business development at Lancashire-based Total Reuse CIC. "It's about changing the mentality of automatically phoning for a skip to put them in, or taking them to the household waste recycling centre, rather than searching for alternatives."

Given that the average mattress can take up to 600kg worth of space in a landfill, some landfill operators are now banning them from their sites – but this is left to individual choice.

Many feel a complete landfill ban on mattresses is required to move the needle forward, especially as EOL mattress volumes appear to be increasing, not decreasing.

However, it's a chicken and egg situation – until more recycling infrastructure comes on stream to deal with this anticipated rise in diversion, used mattresses will continue to get illegally dumped. According to the NBF study, of the 439 local authorities across the UK, only 100 have facilities in place for recovering EOL mattresses.

"This can't be an overnight process," says Alexander. "It's going to take the next 10 to 15 years. There simply isn't the infrastructure in place. The solution probably ultimately lies in a mix of approaches – legislation, incentives, industry-led initiatives, consumer and business pressure. It's good to see recycling of mattresses increasing voluntarily, but to get to 100% might eventually take legislation."

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Interestingly, moves are being made to establish a Mattress Recycling Association, which could secure buy-in from key stakeholder groups. While the details are sketchy at this stage, it is thought the organisation could develop a code of practice and establish a register for reputable recyclers.

Potentially it could also help to subsidise mattress recovery operations in the future.

"It would obviously help everyone if it could set standards and guide on best practice," says Alexander. "It would also give suppliers of used mattresses – retailers, manufacturers, local authorities – confidence that they are dealing with bona fide businesses recycling responsibly."

Extracting value from materials

However, even if recycling rates can be improved, there is the matter of making EOL mattress processing commercially attractive. Recycling tends to take the form of shredding or manual dismantling – the latter, while labour-intensive, usually enables more value to be extracted from the materials. A report produced for Zero Waste Scotland, *A Business Case for Mattress Recycling*, highlights a few challenges around end markets.

The steel from pocket sprung mattresses, for example, is trickier to extract and the springs can be costly to transport if not compacted. Sprung steel is also not as valuable as mild steel. While pure polyester layers have high value and recyclability, markets for some of the other textile components are restricted by negative perceptions of material sourced from mattresses.

"There are several component parts that have obvious reuse value such as the steel, polyester, foam and timber from the base," says Gamester. "There are also claims that you can recycle 100% of a mattress and it's used in things like insulation and carpet underlay. Finding manufactures of insulation and underlay that will take secondhand materials is a different matter."

He adds: "The way forward is to identify what can be reused immediately in its current form and secure an end market, secondly identify exactly what we need to do to a material so that it is deemed clean and therefore has an end market, and thirdly identify what is left and design a new product that can use the materials and create a market for it."

Increasing opportunities

Strengthening producer responsibility obligations – such as paying a fair price for EOL mattress disassembly – might also boost reuse opportunities, says Charles Craft, managing director of London Re-use. He adds there is a case for remanufacture too, if the economics can be made to work. "New and premium end manufacturers will not want to be seen 'selling' reused. Levies for disposal could subsidise rents for remanufacturers as high rent and rates are the single biggest issue to create viable remanufacturing operations."

Total Reuse CIC's Gamester would also like to see a greater push on producer responsibility. "If the government introduces a scheme similar to the WEEE take-back scheme and retailers offer customers a take-back service, then all the fee must be paid to the deconstruction company. They have already charged the customer for delivery and have to drive back anyway, so they don't need to keep any of the fee."

Making mattress design fit for easier disassembly is another issue altogether – and something that WRAP explored back in 2013. Its research mooted various options, including modular solutions whereby the top layers of a mattress can be changed or replaced as required by the user, and self-cleaning mattresses using nanotechnology.

Whether manufacturers can be encouraged to get on-board with this remains to be seen. Many years ago, Gamester held discussions with a major brand on the possibility of introducing more deconstruction-friendly design. "At the end of the day, they are driven by what the consumer wants or likes – for example, as long as people want quilted covers, they will continue to produce them." **RWW**