UNSW + SSROC Circular Economy Think Tank Series

Think Tank 2: Textiles and clothing

Board Report

26 November 2019

NSW Circular

SMaRT@UNSW
Sustainable Materials Research & Technology

SSROC

ThinkPlace

Introduction

About the project

The University of New South Wales Sustainable Materials Research and Technology (SMaRT@UNSW) Centre and Southern Regional Organisation of Councils (SSROC) with the support of NSW Circular are collaborating to run a series of three think tanks aimed to catalyse innovation that will lead to waste avoidance and an increase in reuse and resource recovery within a circular economy. The series bring together stakeholders from SSROC Councils, UNSW, government and the design, manufacturing, resource and charity sectors to establish collaborative ways of working and to progress our understanding of how to transition to a circular economy.

The overall project objectives for SSROC are to partner with a research centre based in the region to investigate which materials could be recovered from the domestic general waste and recycling streams and be returned to the productive economy; and over what timeline?

The second think tank was focused on textiles, it explored:

1. **Opportunities to recover more textiles from the domestic waste stream**

2. **Ideas to reduce the amount of textiles entering the waste stream**

3. **Innovative ways to reclaim and repurpose unwanted textiles.**

We had a variety of experience in the room, including 46 representatives from local councils within the SSROC region, members of NSW Circular and the SMaRT Centre, NSW Government,

the charity sector, Universities, and peak bodies from the textile and product stewardship sectors.

Think Tank participants worked on solutions to the following textile streams as they affect not only local government, but also present challenges and circular economy opportunities for all sectors in the room: Unwanted clothing and manchester, latex mattresses, flock, and carpets.

The 15 great ideas that were presented at the culmination of the think tank incorporated the multi-disciplinary input of all participants. Ideas ranged from finding solutions to the lack of latex recycling, through certification and product stewardship schemes, low tech (and high-tech) collection and sorting systems to improve recoverability, providing essential textile resources for Pacific Nations, and the need for a shared data platform. And a whole lot in between.

Purpose of this document

To provide a summary of the activities, and ideas raised at the textiles Think Tank held on 26 November 2019. For a fuller report please see the associated "Conversation Tracker".

Material Pathway summary

Carpets

What works?	Kerb: better for sorting than bins			Trucks that can monitor tonnage	Regional procurement of services				Easy for the consumer	Selling to Germany
What doesn't work?	Can only do it twice a year; Residents think / expect there's a solution	No easy way to recycle / reuse; Materials get wet / dirty	Expensive to dump; Stuff sits on the road for days	Only moves the problem; Poor alternative recycling options	Most carpet goes to landfill; No carpet-specific levies (only general waste levies)	Limited EFW facilities	Not volume-viable in Australia right now (EFW)	Made from a variety of materials – hard to separate	No social licence to EFW
Opportunities	More communication between carpet designers and disposers	General public education; Incentives for sorting	Regional procurement of services	Communication between facilities and circular economy designers	Shred materials to make flock / insulation / underlay	Invest in innovation and emerging technology	MERF separate carpet materials	Methane gas collection; Alternate daily cover	Alternate end – materials back to manufacturers

Flock / Mixed fibres

What works?	Education creating awareness	Council and charity donations / Take-back schemes	Facility for shredding (tested)	Recovery of metal and wood (CTruck)		Cleaning – no contamination			
What doesn't work?	All collection is impacted by a lack of education and knowledge	Contamination challenge			Innovation for recovery not working well	Marketable products	Revenue opportunities – need to be created	Reuse competition with virgin materials	Customers don't see reuse as value for money
Opportunities	Responsible manufacturing approach; Create matching opportunities (20% on take back)	Product design – to be re-useable; Extended producers responsibility	Multi-purpose facilities	Guidelines on agreed approach between State / Federal Government and Council	Clear communication channels between Council and State / Federal Government	Procurement	Create a new standard / technology; Government lead in generating demands via purchase	Funding for innovation in recycling technology; Understand potential resource recovery streams 'Education'	Put textiles on the agenda; Increased product stewardship; Prioritise recycled / upcycled materials

Clothing 1 – Clothing placed in kerbside bins

What works?	Education as to which to put into	Landfill into red	Compacting and efficient	Well managed				
What doesn't work?	Resident behaviour Alternative collections in MUDs (recycling)	Trust issue Lack of charity bins (reuse / recycle)	Lack of producer responsibility	Lack of EPR / stewardship	Easier to just chuck	Inertia	Entanglement snakes – mechanical issues	
Opportunities	Mini CRCs Bulk recycling for multi-units	More avenues to dispose Takeback schemes (retailers)	6-bin trucks	Separate textiles truck	Sorting option		Landfill mining	ARRT

Clothing 2 – Clothing to charity sector

What works?	System for collection	Awareness of collection service		Sorting by quality (reuse)		Increased consumers buying pre-loved / second-hand	Supply	Keeping product in reuse for longer	Sales – projected (~3.5%)
What doesn't work?	Capture	Access to services – special awareness	No ability to sort for material tech	Duvets and pillows cannot be reused / recycled	Change consumer perception	Export bans risk Uniforms branding	Eventually ends up in landfill	Transparency – environmental data ethics	Support for local solutions
Opportunities	Data capture so we understand the situation	More channels for collection (customer-focussed)	Increasing donations to charity	Charities collect and sort all textiles into streams	Technology to sort items by material	Investment in operations and infrastructure to support large sorting	De-branding (procurement and economy to unstitch)	Data / education showing waste result from branding	Procurement (demand / government and industry setting targets)

Latex Mattresses

What works?	$ Take back during delivery	Separate collection for recycling	Drop off at the depot is cheaper	Soft landing collection model	Convenience for consumer	Education – consumers are aware of separate collection	Cheaper to deliver to facility for councils	If compacted, it's cheaper to landfill for councils	Reduces space
What doesn't work?	Compaction is bad for trucks and recycling	Higher turnover of mattresses - consumer	Harder to recycle when compacted	Transient neighbourhood – they get dumped	Difficult to recycle latex – issue if quantity gets higher	Consumers think latex is easily recyclable	Can't tell if natural or synthetic Not enough retailers taking back	Is there enough volume now to make viable?	Cost for council Additives
Opportunities	Expand and support EPR $$ *Get retailers and consumers engaged in solutions*	Clearer labelling of natural / synthetic products *Get retailers to take back*	Funds for flat bed trucks	Invest in recycling technology *Get the best logistics*	3D printing (in US using latex)	Advocacy *Get funding for product stewardship*	R & D recovery solutions for synthetic latex		

Top Ideas

Idea 1: Expanded collection networks – bins and online.

Material	Clothing
What is the problem you're solving?	4% of all waste to landfill is textiles or 800 KT per year. We need a structural solution to move the dial. Bins and online collection services offer a step change.
How do you plan to solve it?	1,000 clothing bins in NSW. Expand it to 5,000 and online innovation. Coalition of industry, charity, brands, and councils.
Why is this a great idea?	• Scalable • Simple • The economies work today • Export markets exist today • Domestic markets exist today
How can we make it happen?	Alliance partners meet and agree Trial in SSROC

Idea 2: What we measure, how we measure

Material	Clothing and C+I textiles
What is the problem you're solving?	Policy, brands and emergent technologies are hamstrung by a lack of data, when it comes to enabling action. Textiles (charity, red bin and bulky waste, C+I disposal) have no common metrics.
How do you plan to solve it?	Establish a framework to amend existing audit schedules (kerbside, C+I, retailer disclosures) to standardise data and allow preservation of value at end of life.
Why is this a great idea?	• Open-sourced data *amplifies* sector responses • Attracts investment from private sector • Clarifies areas of focus
How can we make it happen?	ACTA – joint stakeholder association progressing this agenda. Funding or partnership to deliver and aggregate

Idea 3: Intelligent material sorting technology

Material	Clothing and Manchester (Pathway 2)
Draw or describe your idea	1. Sort by quality; then 2. Sort by material type (QUT) Uni robotic sorting machine = intelligent optical sensors. Uphold the highest value at every stage.

What opportunities does the idea address?	• Maximum use of products / resources / technology
	• Local Government procurement of minimum recycles content
	  o Consistent labelling of materials policy
	  o Increased efficiency with technology
	• Recyclability regardless of textile quality
	• Investment → greater capture of textiles especially high quality and increased upheld value
	• Return → increased education for consumers and staff
	• Facilitates behaviour change

What barriers might prevent us achieving it?	• New / technology trial / logistics • Security in investment / investment in technology • Resistance for global retailers charity to use new labels
Who else is involved?	Governments, brands, retailers, consumers, charities, recyclers

Idea 4: Certified recyclable latex scheme

Material	Latex
What is the problem you're solving?	• Reusability and recyclability of latex in mattresses • Limited use for latex but increasing latex mattresses in the market
How do you plan to solve it?	Certification scheme / legislation to look at latex mattress components to increase reuse and recyclability Research into composition options to binders and 'coatings' and the re-use of latex
Why is this a great idea?	Reduce waste to landfill Expand / create markets for end products Certification for consumers
How can we make it happen?	$150,000 to SMaRT Centre for 1 year of research SSROC Advocacy for government certification scheme to follow research outcomes

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