

## Pathways to Transition to a Circular Textile Economy in Australia

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### **Abstract**

*The aim of this research is to contribute a first step in identifying pathways, including strategies, interventions and incentives, that would shift the fashion industry in Australia to a sustainable development circular economy (Kircherr et al.2017) model of production. There are significant impacts from the current take-make-waste linear model of production and consumption within the global TCF sector. Globally, the Textile, Clothing and Footwear (TCF) industry is the third highest emitter of carbon, its production is responsible for 20% of global water waste and has a high impact on pollution of natural resources. In addition, less than 1% of the materials used to produce clothing are recycled into new clothing and of the 100 million garments produced every year, an estimated 30% go to landfill within the first year of purchase (Ellen Macarthur Foundation 2017). Against this backdrop, how can we transition the TCF sector to achieve SDG 12, responsible consumption and production, in the Australian context? What practical strategies can be offered to industry that they will take up, and are there government policies that need implementing or changing so as to lead change across the sector?*

*The Australian TCF industry is actively engaging with sustainable initiatives and research and there is a heightened awareness of the effects that particularly production and waste are having on the environment, and some brands are actively taking steps to effect change. However, despite this enthusiasm, there is a gap in the knowledge around strategies and interventions. While the end goal is a circular TCF industry, can we identify the starting point and practical steps for this to occur and, in the process, develop a transitions pathway for the Australian TCF industry. The development of transitions pathway requires a collaboration between industry, tertiary and government sectors with a focus on how to support industry transitions initially and identify the key leverage points. This research is a practical starting point for the local Australian industry, and thus undertaken in partnership with the national TCF sector industry membership body and local state government policy agency.*

*A transitions pathway contributes to greater evidence-based decision making during the state policy development stage as well as the industry sector's business strategy development stage. This research provides a valuable first step in operationalising transitions pathways in the TCF sector toward realising SDG 12.*

### **Introduction**

The global Textile, Clothing and Footwear (TCF) industry contributes \$2.5 trillion to \$3 trillion to the world economy (Textile Exchange and KPMG 2018). It is also estimated 1 in 6 people in the world work in the global fashion supply chain (GCNYU Fair Fashion Center 2019). But the industry's economic contributions come at a significant cost. The TCF sector, and its current linear model of production, pose significant environmental risks and is garnering notoriety for its negative impact on natural resources. For example, the TCF industry is the third highest emitter of carbon, accounts for 8% of global greenhouse gas emissions (Quantis 2018), produces 20% of global water waste (UNECE 2018), uses 5 trillion litres a year for fabric dyeing, and uses mostly virgin inputs to produce clothing, with less than 1% of the materials used to produce clothing that are recycled into new clothing (Ellen MacArthur Foundation and Circular Fibres Initiative 2017). The consumption of TCF products is also having a severely negative impact on our environment, particularly as consumers are purchasing more clothing and textile products, yet they are using them less and keep them for half as long: of the 100 billion garments produced globally every year, an estimated 30% already go to landfill within the first year of purchase (Ellen MacArthur Foundation and Circular Fibres Initiative 2017). Up to 85 percent of the textiles (21 billion tons) sent to landfill each year (UNECE 2018).

Some of the trends and figures related to the TCF in Australia include:

- Australians are generating more commercial and industrial waste per capita than other OECD member countries. (Victorian Government 2019)
- Consumers spend AUS \$28 billion a year on fashion in Australia (Fashion United, 2018)
- 220,000 are employed in the fashion industry in Australia (Fashion United 2019)
- Australia exports AUS \$6 billion in TCF products annually (Fashion United 2019)
- A large percentage of clothing and textiles in Australia are imported (Neil, Bishop and Simpson 2017)
- An estimated 6000 kg of clothing is dumped in landfill every 10 minutes (Liu 2017)
- The enormous volume of discarded textiles is overwhelming charities and (Payne and Binotto 2017)
- In one Victorian council study textiles were reported to make up 3% of household waste, which was greater than glass (2%), steel and aluminium (2%), and on par with plastic (3%) (Victorian Auditor-General 2019))

All TCF stakeholders - industry, consumers and government - are increasingly becoming aware of the negative impacts of the current 'take-make-waste' linear model of production and consumption, and, globally, there is growing evidence of a willingness to move to a more sustainable production and consumption model, including inputs and end of life management of goods. Increasingly, and especially with the adoption of the Sustainable Development Goals framework, countries are considering, or are instituting, circular economy models that will also assist with meeting the targets and indicators of the Sustainable Development Goal 12 Responsible Consumption and Production. However, there appears to be a gap in knowledge around what the TCF industry (as well as other industries) in Australia are doing to approach this transition and whether there is consensus on exactly what to do.

## **Objectives**

This research aims to contribute to an understanding of the needs and interests of Australia's TCF industry to transition to a circular economy model of production. This paper presents a summary of findings from a series of interviews conducted with a select number of industry members from both large manufacturers, retail organisations and SMEs, coordinated in partnership with the Australian Fashion Council.

This needs assessment focused on sector insights within three broad objectives:

1. Develop an understanding of how the TCF industry in Australia defines sustainability and circular economy.
2. Engage with industry members to identify the sustainable and/or circular economy initiatives that are a priority for their organisation.
3. Identify the opportunities that may facilitate Australian fashion brands and retailers to adopt a circular economy model of production.

The needs assessment has been designed as an outcome of Phase 1 of an anticipated three phase research project. The proposed Phase 2 component is expected to explore obstacles and opportunities facing all stakeholders (e.g., via an online survey) while the proposed Phase 3 component focuses on developing a set of recommendations to transition to a circular textile economy in Australia. Phase 3 consists of summarising the levers, potential collaborations between industry, researchers, and government policy makers, and propose pathways that could support such a transition. Phase 3 also aims to contribute to greater evidence-based decision making during the Victorian government policy development stage where possible and inform business strategy development within the TCF sector more broadly.

## **Methodology**

To gain a comprehensive understanding of the current state of play in the TCF sector in Australia, acknowledging at the outset that the TCF sector is not a homogenous group, an exploratory qualitative approach was adopted. Interviewees were sourced through the Australian Fashion Council, who approached a number of its members via an email call out asking for participation (27 direct emails to industry members, and 1 group email to members and alumni of an industry incubator program). A total of ten TCF retail organisations and manufacturers agreed and were available to be interviewed.

Data was collected through semi-structured interviews with individuals (except one small team of two). A copy of the interview guide is provided in Appendix 1. The questions were designed to elicit knowledge of circular economy principles, current business approaches, circular economy success stories, enablers and obstacles, and future priority areas that interviewees believed could assist with transitioning.

Each interview lasted between 45-60 minutes, and was recorded provided that permission was granted by the interviewees. Interviews were transcribed and then imported into the qualitative data analysis software package NVivo to identify patterns of meaning across the interviews that provide insights to the research questions informing the project. Patterns were identified through an inductive process of data familiarisation, data coding,

theme development and revision, where codes and themes were directed by the content of the interviews.

An analysis of the NVivo outputs along with direct transcript reading was undertaken jointly by the co-authors and this resulted in a framework of overarching themes. These themes are presented as sub-headings in the following Results section. The subsequent discussion section draws on the findings and contextualises the findings to make some formative recommendations.

This research has limitations associated with generality of findings. While this report can contribute to a better understanding of TCF industry in Australia, the number of interviews were limited to 10 and coverage of some parts of the sector are missing, (including TCF union), therefore generalizing these findings to the whole sector may be limited particularly, as we know, the TCF industry is not homogenous. In addition, within the organisations only one to two people were engaged in the interview process which is a very small sample and the findings cannot therefore be guaranteed to either represent the organisation's view as a whole or be transferable to another context. Instead, this report should be read as providing a first step towards understanding the interests of the TCF sector in Australia to transition to a circular model of textile production. This is a first formative engagement with the TCF industry to gain some of initial insights

## **Results**

In this section, we have grouped and summarised the main themes that emerged under each of the interview questions. The six overarching themes include: definition of circular economy; state of play of the sector; enablers; barriers; and opportunities. A short summary of each is provided and, where relevant, direct quotes from interviewees that typify the insights are included.

### Profile of Interviewees

Of those interviewed, 2 represented micro business, 5 SMEs and 3 large enterprises. The majority of the interviewees (6) have 20 or more years in the industry, including two that have 30 years, and 2 had less than 10 years in the TCF industry but came with experience from other production industries including cosmetics. The interviewee roles ranged from COO, to Head of Sustainability, Advocacy and Sustainability, and a few had Circular Economy within their job title or portfolio. Almost all (6 of 10) had global or international experience and three of the interviewees were founders of their organisation. Seven of the organisations were either founded or had their head office based in Victoria. Two were based in New South Wales and one was located in Queensland.

### Definition of Circular Economy and Success Stories

The definition of circular economy that was articulated to all interviewees at the beginning of the interviews, was *“an economic system that replaces the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes...with the aim to accomplish sustainable development, thus simultaneously creating environmental quality, economic prosperity*

*and social equity, to the benefit of current and future generations.” (Kirchherr, Reike and Hekkert 2017).*

While there was not a specific question asking interviewees to define circular economy, it was evident through introductory comments and answers to questions 2, 3 and 4 that, within the industry, there exists a range of interpretations (and therefore focuses) to what a circular economy includes. Some interviewees focused predominately on the whole lifecycle of the product, including inputs, manufacturing process, use behaviours and waste or end of life. A small number of interviewees held the view that circularity is focused primarily on the waste stream and recycling, and is less about the scope of inputs (here.

Circular Economy means different things for different people, and so having a common understanding will be important in any future government policies implementing circular economy business and production models. There was also some discussion over whether a circular economy in textiles needs to be broadened in scope, and looked at in conjunction with other industries.

Interviewees were asked to describe successful examples of circular economy principles in the Australian TCF industry. Most interviewees found identifying successful domestic examples hard, at least in terms of commercial viability. Successes that were mentioned included: the reduction in the amount of virgin plastic used in manufacturing; take back schemes; and the developments around separation of fibres. The lack of identified successes, however did not equate to a lack of discussion around the awareness of the impacts of the current linear model of production, nor the sense of urgency of adapting circular principles.

*“There’s no other way forward. This industry won’t exist if it doesn’t change. We know that there’s no way that we can continue to operate in the way that we are because it is so environmentally damaging. It has such a huge impact on human rights and mostly in relatively negative way. We understand that there’s no way that in its current model that can continue to operate in that way and that’s what drives me in this area is that I recognise that these changes have to occur. And that’s just, that’s it. That’s the only way that we look at it.”*

### Current Circular Economy Approaches

Of the 10 TCF retail or manufacturing interviewees, eight identified sustainability initiatives implemented in their organisation which ranged from basic to more advanced in terms of progressing towards circularity. The two participants who reported no specific environmental sustainability or circular initiatives highlighted instead the quality of production and durability of their products. One interviewee focused specifically on ethical production and socially sustainable sourced as a core focus over environmental initiatives.

The sustainability or circular economy related initiatives reported by interviewees focused predominately on managing inputs (including material selection and design, certification and product sourcing, manufacturer selection and supply chain management). While to a lesser extent, interviewees also highlighted access to scalable and commercially viable solutions for waste management and end of life alternatives as focus areas. Consumer awareness and industry collaboration were also noted as themes here.

Although many interviewees reported being engaged in one or more of these areas, there appears to be a range in the level of commitment to pursuing a circular economy model

of production. For some, the concept is not central to the business. But for others, circular economy principles are either core, or are becoming core, to the business.

In terms of the changes being made to production, there is a growing focus on inputs to achieve the business objectives with improved material selection at the design stage, including sourcing recycled, recyclable or sustainable materials being invested in. Three of the interviewees described a commitment to conducting Life Cycle Assessments (LCAs) for all product units for sale. The use phase of products was mentioned by multiple interviewees and included increasing consumer awareness of the impact of TCF products, how to repair and reuse products and ensuring that, when it is time to retire products, clear options are provided and available. One organisation had implemented additional labelling on the inside of garments which provided more detailed information for the consumer to extend the life of the garment. The end of life alternatives that were most spoken about included: take back schemes; separating fibres; and recycling. One organisation had already piloted a take back and resell program which was very successful but had yet to be scaled, and the majority of interviewees articulated a waiting game in so far as take back scheme because all they could do was stockpile it currently.

### Enablers

Interviewees were asked what factors or circumstances have supported the implementation of circular economy/sustainability initiatives that are currently being pursued or invested in by the interviewees' organisation. The responses can be thematically clustered into three key areas: leadership (including strategy and targets development), knowledge base and access to information, and consumer awareness or consciousness.

A number of interviewees reported that leadership on sustainability within their organisation is paramount, including support and understanding of the issues at the executive and board level in public companies and commitment by founders in privately owned businesses. Leadership by the organisation around the issue of sustainability more broadly was also highlighted as a pull factor in terms of attracting and retaining employees to work for the organisation and, for some, seen as part of a brand's global responsibility.

Composing, drafting and implementing endorsed program initiatives or targets linked with circularity or SDG targets were referenced as evidence of a commitment to leadership and vision. Many of the organisations published their strategy or goals to the public, while others, while internally circulating strategies and goals and/or making formal commitments, did not publish to the public domain.

Almost all of the interviewees described a significant investment in the organisation's knowledge base, along with a commitment to research sustainability initiatives and circularity, is required to support internal leadership and understanding of circular economy. The maintenance of the organisation's knowledge base was identified as a requirement and formed part of the active investment in recruitment of experienced and knowledgeable professional staff, positions were created and talent brought in house as well as ongoing staff professional development and industry conference attendance.

Multiple interviewees reported on the influence of a more conscious consumer and the demands that this places on how a business operates, including whether a business

adopts a circular economy approach. Although there is evidence to suggest that a growing number of consumers are interested in transparency, interviewees stated that consumers need more information about the raw materials and manufacturing processes involved in making TCF products, as well as what occurs when items are washed and, ultimately, disposed of. Linked to this, a number of responses called for increased consumer education, notably on the environmental impact that consumption can have.

## Barriers

Interviewees were asked what factors or circumstances have hindered the implementation of circular economy/sustainability initiatives in their organisations, and more broadly in Australia. The resounding response was that there are no “*complete solutions yet.*” The barriers described can be clustered within four key themes: complexity, access to information, consumer behaviour, and limitations of scale – including to recycling infrastructure, sourcing sustainable materials and financial support for scaling innovation.

The sheer complexity of embarking on the journey to circularity was outlined in a context of already extensive and layered system. Interviewees described the complexity of working to identify a solution or alternative to a high impact problem, only to learn of further challenges with the so-called solution. The context of an expansive TCF supply chain was identified as innately complex where by one transition or substitution was not easy to implement even when the organisation had the conviction to do so.

At the same time as growing an in-house knowledge base, interviewees described a considerable need for coordinated access to information. Options proposed included an open source database of materials that covers inputs and end of life options; as well as collaboration between apparel brands in coordinating leadership and understanding in the Australian context (e.g., who is doing what).

Although conscious consumers may support the transition by the TCF industry towards more sustainable products, the perceived enormous lack of consumer awareness is seen as a critical barrier to implementing more circularity. Interviewees reported that what consumers choose to purchase and what consumers see value in or de-value directly impacts those working to create better products. This was also seen as a key issue when it comes to the improving the use phase of TCF products, which appears to be a less explored aspect of implementing circularity within the interviewee’s organisations. Consulting behavioural science to drive the endorsement of conscious consumption may be key to accelerate a local push for circularity (Lauren, et al. 2019).

Every interviewee noted the lack of infrastructure and innovation in the textile manufacturing space as a critical barrier. The limited on-shore manufacturing capability in Australia is seen as problematic when it comes to developing and scaling innovative solutions locally including implementing end of life alternatives that have circular economy principles embedded - that a product is recycled again and again (e.g., scaled waste collection of materials for recycling). This barrier also impacts on other parts of a circular economy approach, critically for example, a take back scheme. Furthermore, even when recycled material is invested in, the current nature of the recycling industry is limited in so far as integration across industries or product categories. To this end, DEWLP’s (2019) Issues paper probing the development of a circular economy policy in 2019, underlines

the risk posed by textile waste streams, as the lack of an adequate recycling infrastructure inhibits the transition towards a circular textile economy.

Having access to standard or innovative solutions was identified as challenging for the smaller Australian TCF businesses. In addition, these smaller businesses noted that they are often having to do the research for sourcing inputs on behalf of their suppliers, because they don't have the influence of scale that would compel their supplier to otherwise change. Interviewees reported little to no financial support, for example available government grants, that they identified their business would be eligible for to support their transition or scale their innovative approaches (ie. zero waste).

### Opportunities

Despite the numerous barriers, interviewees had a number of ideas and approaches to encourage uptake of circular economy principles in the Australian textile industry at all stages of the product life cycle. The opportunities identified by interviewees are summarised in this section.

The opportunities for innovation and infrastructure exist at both the input and output stage. For inputs, there are opportunities to provide assistance to build more responsible supply chains and scale the sourcing of sustainable materials. At the end of life stage, infrastructure for the collection of textile waste was mentioned, (including home collections, curbside collections or centralised collection points). However, the biggest opportunity (which also happened to be the biggest barrier) is with investment (national or local) in textile recycling manufacturing (technologies/systems). Calls were also made for further research to be done in Australia to expand the available sourcing of sustainable or circular materials, including raw fibres.

Education at all levels was identified as a significant opportunity from the interviewees. To begin with, consumer education is a must. There is also an opportunity to educate future industry professionals, in particular educating designers as part of their studies. Finally, knowledge sharing (and even product samples for design and testing) between industry and universities or research institutes was also an identified opportunity to increase research and development on all aspects of the system.

Government regulations can support businesses transition to a circular economy. Opportunities for regulation mentioned by interviewees included input regulations, standardised labelling and licences for developing products. Additionally, *“while increasing levels of commercial and industrial waste are being recycled, policies are required to ensure that waste recycling is a feasible and desirable option for business and industry” (Transforming Australia).*

Interviewees reported an awareness that embarking on circular economy is not something that the TCF sector can do alone, and so collaboration is key. Collaboration opportunities suggested included creating a textile innovation and recycling park, developing a shared knowledge base of who is doing what and where across Australia; and regular meetings with key representatives from across all states to support a collaborative approach to *“the good things going on and move things forward in a structured, organised format.”*

## Discussion and Recommendations

The aim of this study was to contribute to a formative understanding of the interests of Australia's TCF industry to transition to a circular economy model of textile production.

From the interviews conducted, participants reported a range of organisational approaches and where the current priority investment areas are, as well as where they see the future opportunities existing and what will get traction for change in this sector. These findings, compiled into themes, are instructive and provide useful formative sector insights. Perhaps the most telling outcome, however, is that while there is interest and appetite for a circular economy approach to be applied to the TCF industry in Australia, there are different focus areas within the sector, specifically whether the various components that constitute a circular economy approach apply equally across a product lifecycle or system.

The Ellen MacArthur Foundation (2017) states that in order for a transition to a circular textile economy to occur, the following four aspects need to be addressed;

1. Phase out substances of concern and microfibre release;
2. Transform the way clothes are designed, sold, and used to break free from their increasingly disposable nature;
3. Radically improve recycling by transforming clothing design, collection, and reprocessing; and
4. Make effective use of resources and move to renewable inputs.

A true circular economy is broader than only considering the inputs (ie material selection) and is also broader than only considering end of life options for textiles. However, possibly because the TCF industry in Australia is not a homogenous group, (Australia's TCF industry includes on-shore manufacturers, offshore production, larger retailers who predominately import) with a range of business drivers and objectives, there appears to be a variety of opinions as to what should be included in a TCF circular economy. Some see waste or end of life as the only focus that matters, while others are focused on the inputs, others still consider the entire life cycle. Consequently, we are seeing a divergence of focus around circularity which may hamper future efforts.

Australia has shown a variety of circular initiatives in other sectors, such as electronic and household waste. Circular economy in textiles should not be looked at in isolation given that collaborative efforts have proven to be imperative for a systemic transformation (Lehmann, et al. 2018). In 2018, the Australian government released the National Waste Policy (Australian Government 2018), which urges the country to move away from a linear into a circular model, preserving the long-term value of resources. Consequently, organisations in the TFC industry can play a critical role in achieving the SDGs due to the sector's vast size and scope (Textile Exchange and KPMG 2018). However, Grainger-Brown and Malekpour (2019) stress the need to provide firms with the strategic tools and guidance to facilitate implementation.

As international momentum increases toward achieving the Sustainable Development Goals, in particular SDG 12 (responsible production and consumption), it is expected that increased attention will be placed on the role that a circular economy could play across all industries, including the TCF industry. As noted previously, the negative impacts of the TCF industry are well documented and pressure is mounting for a systems shift to occur.

Because of this, we recommend that the TCF industry be included in federal and local state(s) circular economic policy and action plan(s). This is important for several reasons, including:

- the amount of textile waste in Australia is higher than average amongst OECD economies and is expected to continue to grow as population increases;
- the critical waste challenge in Australia and the opportunity to develop a manufacturing and/or innovation hub around textile recycling
- the sustainable management of natural and recovered resources
- the links and benefits to other industries - developing a circular economy for TCF will draw on solutions that are not specific to one industry alone and vice versa
- the opportunity to provide leadership on meeting SDG 12 locally and to draw parallels with other issues of global significance.

Finally, it is recommended to acknowledge that transition is not simply about implementing roadmaps, but that interventions must carefully puncture into movements along a transition curve, aiding the industry to progress towards the next phase of change (Buchel, et al. 2018). This evolution warrants a guiding vehicle that coordinates cross-industry initiatives and innovative capabilities, and facilitates adoption of disruptive interventions; Victoria could position itself as a leading actor.

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