TEXTILES: A TRANSITIONS REPORT FOR AUSTRALIA

PATHWAYS TO FUTURE PROOF THE AUSTRALIAN FASHION AND TEXTILE INDUSTRY

MONASH University

MONASH SUSTAINABLE DEVELOPMENT INSTITUTE | SUSTAINABLE DEVELOPMENT GOALS

ABOUT MSDI

Monash Sustainable Development Institute (MSDI) is a world leading institute bringing about change all over the world through pioneering research, education and innovation. Our success is driven by our passion and unwavering commitment to making the world a better place for all.

MSDI Circular Economy (CE) Textiles envisions a responsible and sustainable fashion and textile sector in Australia, one that supports and strengthens both planetary and social health and wellbeing. We work to facilitate strategic partnerships, and help build collaborative networks who engage collectively and effectively.

Disclaimer

TRADITIONAL OWNERS

In the spirit of reconciliation we acknowledge the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respects to their elders past, present and emerging, and extend that respect to all Aboriginal and Torres Strait Islander peoples today.

ACKNOWLEDGEMENTS

AUTHORS

Julie Boulton, Aleasha McCallion, and India Dechrai, from Monash Sustainable Development Institute, Monash University; Melbourne, Australia.

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FOREWORD FROM PLANET ARK

Planet Ark has a vision where people thrive in balance with nature by transitioning to a carbon neutral and circular economy. To prosper on a planet with finite resources, growing population, and multiple environmental challenges, it is essential that we rethink how we produce and use products and services to be circular and decarbonised.

To support this vision, Planet Ark launched the Australian Circular Hub (ACE Hub) with the support of the Australian Government in 2020. The mission of the ACE Hub is to facilitate the transition to a circular economy in Australia. The intent is to enable a circular model of production and consumption that reflects how nature already works where its infinite cycles produce no such thing as waste – rather, valuable resources as part of a regenerative system.

A key tool used to enable circular outcomes is product stewardship. Planet Ark is a proud member of the Reference Group for the development of the National Clothing Product Stewardship Scheme, being led by the Australian Fashion Council. Contributing to the co-design of this scheme involves Planet Ark in the important conversations aiming to shift clothing and textiles production and consumption from a linear system, (take, make and dispose) to one that is more sustainable and regenerative across the entire value chain.

This shift is no easy task and no one actor or pathway provides a complete solution. On the contrary, we need to shift decisions and behaviours in the way we design, make, consume and repurpose what we wear. We need to do this in a way that respects the resources that have been used to make these garments. We need a complete system change.

This is where the MSDI Textiles Transitions report is both valuable and useful: it articulates the system that needs changing and outlines the variety of solutions identifying a number of complementary, and in some cases, overlapping, pathways. Written in clear, compelling language, all actors and stakeholders in the ecosystem will be able to identify with a role (or even multiple roles) that will assist in driving forward positive change.

Planet Ark particularly welcomes MSDI's invitation for all who participate and support the value chain of clothing and textiles to continue to collaborate to accelerate the shift. This approach mirrors the ethos of Planet Ark's work: we understand the value of facilitating knowledge sharing and collaboration - systems change needs system convenors.

We recommend this report to everyone participating in and supporting the clothing and textiles value chain and we look forward to being part of the 'coalition of the willing' as we look to build a responsible and sustainable clothing and textiles sector together.

Established in 1992, Planet Ark is one of Australia's most respected and trusted environmental behaviour change organisations. We are focussed on solutions and making positive environmental actions accessible to everyone. Planet Ark's Australian Circular Economy Hub is facilitating the national transition to a circular economy in Australia.

EXECUTIVE SUMMARY

Over the past four years, MSDI's CE Textiles has undertaken stakeholder engagement and research in the Australian fashion and textiles space. This report is the culmination of our analysis to date. It outlines that we have an opportunity to draw lessons from changes that are already underway. And proposes how we can go further. We believe the Australian fashion and textiles sector and its broader stakeholders - particularly all levels of government - can demonstrate ambitious global leadership by building on existing sector developments to shift the entire system of fashion and textile consumption and production to one that is both responsible and sustainable.

The word *opportunity* - a time or set of circumstances that makes it possible to do something - is used deliberately in this report. The time is right **now** to accelerate the shift towards a responsible and sustainable Australian fashion and textile industry; to build a sector that is both future ready and future proofed.

We have developed a set of practical and strategic pathways supported by an evidence-informed framework for a sustainable transition of the Australian fashion and textile ecosystem. The transition pathways incorporate elements of a circular economy and align with United Nations Sustainable Development Goals.

We note that these transition pathways are a starting point only, and we extend a warm invitation to all to collaborate and co-design the next steps. Our proposal recommends *system transformation* using an integrated *systems approach*; where working in partnership with stakeholders is a key component to enacting change at speed and scale. Our proposed pathways are not in any set order; rather they are interlinked and designed to be activated and invested in simultaneously.

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Our Priority Actions

We have identified two priority actions to embark upon this transition:

1. Establish a round-table event to unite stakeholders across the fashion and textile eco-system, to co-design an Australian sector that is both responsible and sustainable.

2. Identify a comprehensive vision for the Australian fashion and textile industry, which sets specific time-bound, evidence-informed transition targets. This vision will include a discussion over acceptable responsible growth in line with planetary boundaries and sustainable development objectives.

These actions are explored in more detail in the report section, *Next Steps*.

We acknowledge that transitioning Australia's existing fashion and textile ecosystem to a sector that is responsible and sustainable is complex. It is our hope this report provides a repository of ideas that prompt on-going conversations and deeper dialogues around what is needed, and what is possible. Our objective is to assist in the process of developing a sector transition roadmap, utilising a systems approach to outline a set of complementary pathways for action. ▪

THE SEVEN TRANSITION PATHWAYS

We have identified seven pathways to facilitate the transition of the Australian fashion and textile sector to one that is responsible and sustainable. Each pathway is detailed in the report and includes suggested strategies as a recommended course of action. We have chosen not to number these pathways as we believe the plan of progression is best determined collaboratively.

Reduce Overall Consumption Of Resources Across The Product Lifecycle

Ban The Destruction Of Fashion And Textile 'Finished Goods'

Invest In Education On Responsible And Sustainable Industry Practices

Accelerate Government Sustainable Procurement

Incentivise Use Of Recycled, Non-Virgin Materials

Increase And Regulate Textile Transparency, Traceability And Verification

Increase Support For The Development And Execution Of Clothing Extended Producer Responsibility (EPR)
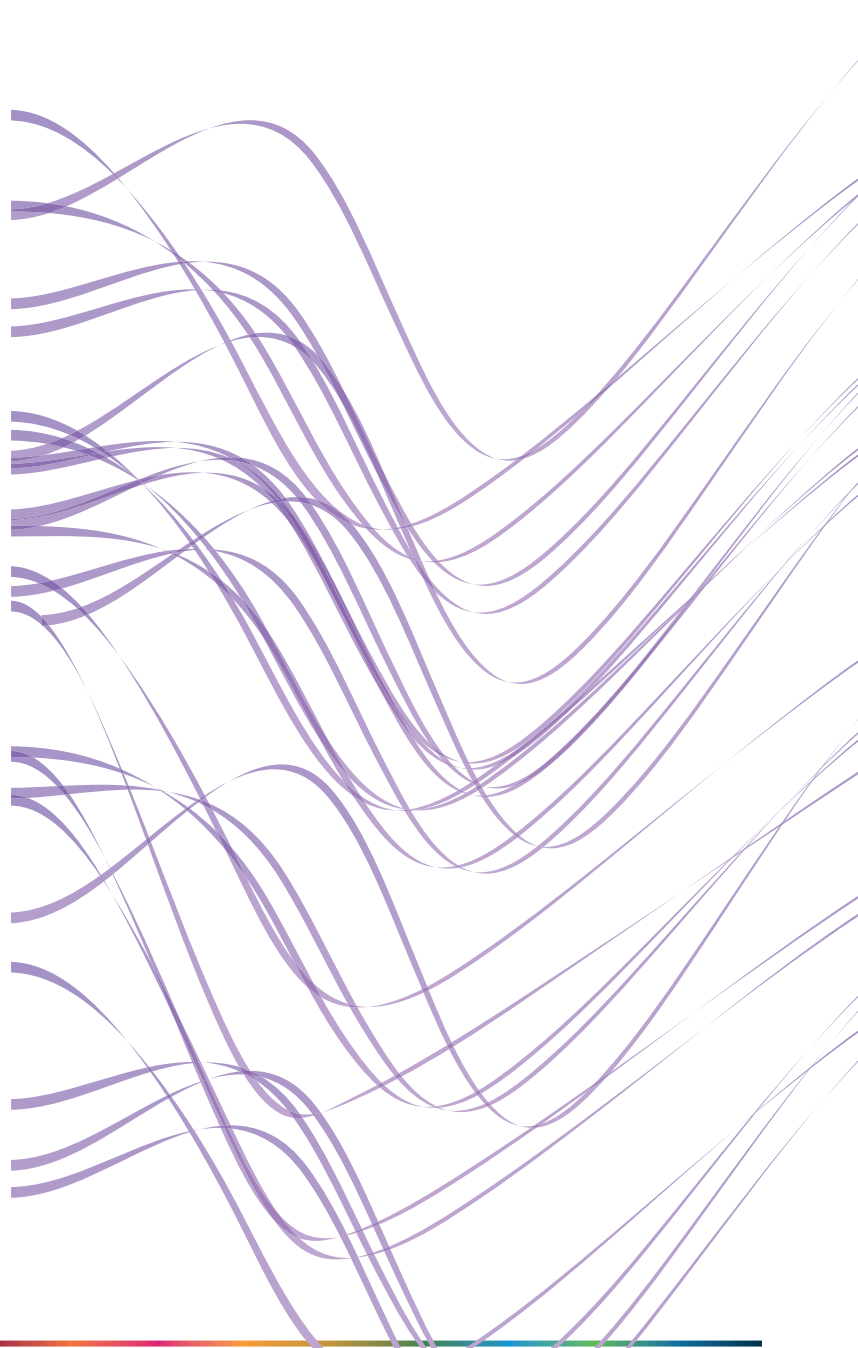
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TERMS AND DEFINITIONS

Circular Economy: An economic system that replaces the 'end-of-life' concept with circularity principles of reducing, alternatively reusing, recycling and recovering materials in the production/distribution and consumption processes, with the aim to accomplish sustainable development (Kirchherr et al, 2017).

Responsible: To have control and authority over something or someone and the duty of taking care of it (Cambridge University Press, n.d).

Sustainable: Causing, or made in a way that causes, little or no damage to the environment and therefore able to continue for a long time (Cambridge University Press, n.d)

Sustainable Development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission, 1987).

Sustainability Transitions: Transformation processes through which established socio-technical systems, industries and societies undergo major shifts to move systems towards more sustainable modes of production and consumption (Köhler et al., 2019).

Systems Approach: A particular way of tackling an issue whereby the problem is considered in reference to an interrelated whole (Carey et al., 2015).

System Change: A process and an outcome where a deliberative, collaborative, and iterative process of change leads to the emergence of a new structure (Barker et al., 2021).

System Transformation: The result of action that leads to significant alteration in attributes and/or function within a system (i.e., alteration to structures, rules, processes, practices, power dynamics, and mental models), potentially creating substantial impact (Clarke & Crane, 2018).

Textiles*: Any cloth or goods produced by weaving, knitting, or felting; a material, as a fibre or yarn. (Dictionary, n.d.).

The Ellen MacArthur Foundation

The Ellen MacArthur Foundation is a charity committed to developing an evidence-base on the benefits of a circular economy as a way to tackle global challenges like climate change and biodiversity loss. They maintain a circular economy is an economic system that delivers better outcomes for people, and the environment.

The Foundation describes a circular economy as being comprised of three component parts: A circular system that designs out waste and pollution; keeps products and materials in use by circulating them at their highest value; and regenerates natural systems..

The Ellen MacArthur Foundation describes a circular fashion and textiles system as one that is restorative and regenerative by design and provides benefits for business, society and environment.

*Disclaimer: Textiles is a vast, complex and innovative material sector ranging from clothing, apparel and leather goods - including bags and footwear, to household textiles (linens) and furnishings, to more industrial textiles for agriculture, the automotive industry, buildings and infrastructure (geotextiles). We are not keen to exclude key categories of textiles within this report, however much of the research, literature and policy to date focuses on consumer goods such as fashion, apparel and household items. More work needs to be done to expand the focus and common understanding of textiles materials to include all consumable goods (household or industrial) textiles.

RESEARCH APPROACH

This report is primarily developed through collective synthesis and interpretative analysis by the authors on the basis of secondary data from across a range of sources. Data analysis is complemented with learning outcomes from collaborative projects with industry and government, as well as primary data from a research project with a limited number of interviews with industry members. The process involved:

- An academic and grey literature review of state-of-the-art policy and practitioner knowledge on opportunities (innovations, actions and initiatives) for circular transitions in fashion and textiles globally and locally in Australia.

- Mapping the views of the Australian industry on transitioning to a circular approach (in collaboration with the Australian Fashion Council (AFC) and the Victorian Department of Environment, Land, Water and Planning (DELWP), then analysing the gaps between industry needs and current state and federal government policy.

- Engagement with stakeholders across industry and all levels of government, which included:

  □ Membership of the Federal Government's Textile Stewardship Committee, and becoming signatory to the communique following the National Clothing Textile Waste Roundtable in 2021.

  □ Working with DELWP to encourage the prioritisation of textiles within the Recycling Victoria policy, and co-designing stakeholder knowledge building workshops.

  □ Collaboration with BehaviourWorks Australia, Circular Strategies, and AFC on a behavioural research trial towards understanding business barriers to implementing a circular economy.

  □ A 2021 MSDI-led collaboration of Australian designers, distributors, re-users, recyclers, and researchers brought together to decode circular fashion within an Australian context, resulting in the publication of "Circular Stories T-Shirt Guide", an education tool for all stakeholders. ■
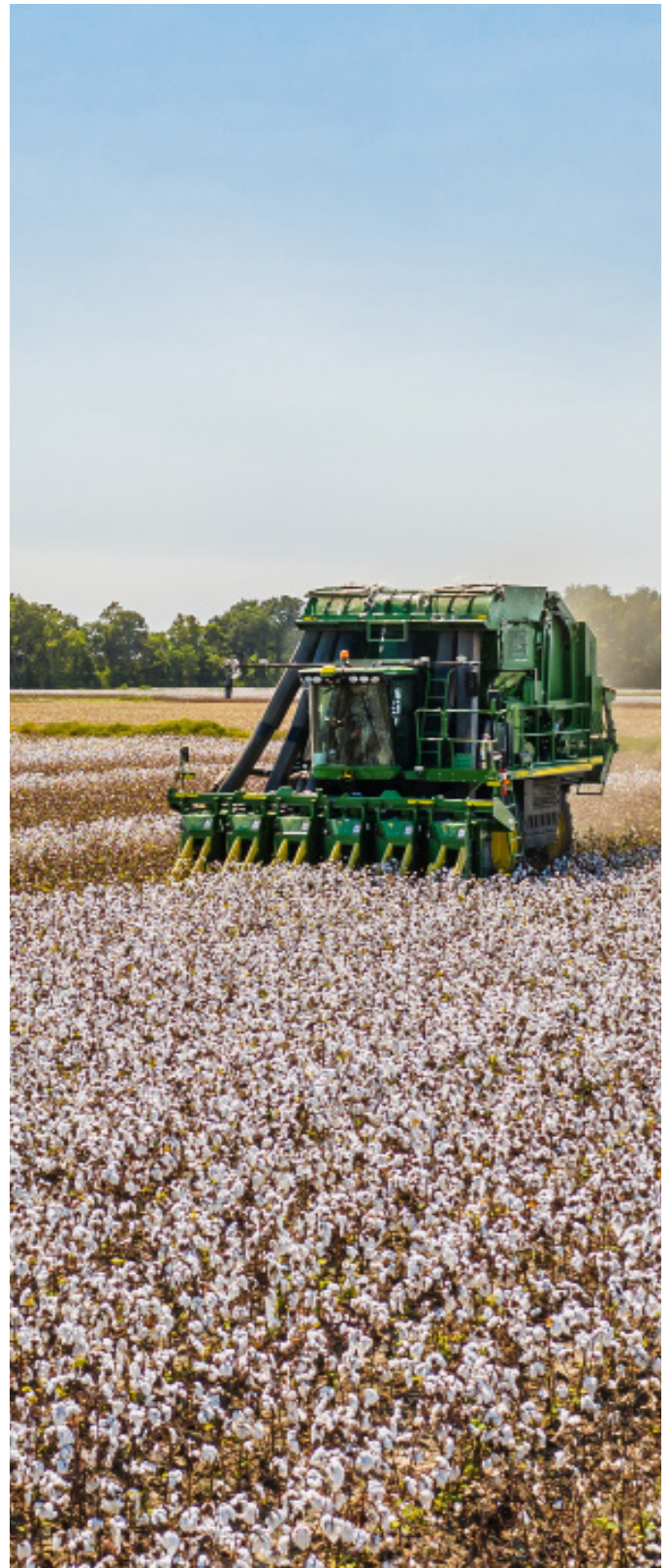
HOW TO READ THIS REPORT

This report is set out in three sections:

We begin by highlighting the prevailing issues with current fashion and textile production and consumption practices, and outline why a transition is needed.

Many, if not most, of the challenges with current practices are well established, and the issues run across the spectrum of the entire fashion and textile life cycle, from design to disposal. This section provides context of these issues using both Australian and international settings, and outlines both the existing industry structure, and the wide range of stakeholder groups involved.

We acknowledge that solving any one of these issues is a complex process and, as such, is best approached utilising an evidence-informed framework to facilitate system change. We present and recommend a *systems approach* for thorough and comprehensive mapping of the multi-level, interconnected challenges, and we introduce *sustainability transitions* as a response to systemic social and environmental problems.

We also illustrate how a re-imagined Australian fashion and textile sector aligns with the UN Sustainable Development Goals of peace and prosperity for people and the planet.

The second section details our transition pathways: a series of opportunities and recommendations which, if actioned upon, will result in achieving the goal of a responsible and sustainable Australian fashion and textile sector.

Applying a systems approach method led to the identification and development of seven transition pathway opportunities. Section two explores each of these pathways in detail, and offers suggested implementation strategies.

The report concludes with suggested recommendations for the first steps in beginning this transitional change.

We extend an open invitation to come together and collaborate; to coalesce intentions, build consensus, and lay out the next steps in successfully transitioning the Australian fashion and textile sector to one that is both responsible and sustainable. We are confident that if we capitalise on these timely opportunities now, and comprehensively enact and build upon the pathways and strategies we have identified, we can build a progressive and thriving Australian fashion and textile sector that carries us into the future. ∎

ACTION TOWARDS A RESPONSIBLE AND SUSTAINABLE FASHION AND TEXTILES SECTOR

THE IMPERATIVE FOR CHANGE

An opportunity exists now for the Australian fashion and textile ecosystem to transition to a responsible, sustainable sector. With bold leadership and collective action, Australia could be a world leader in both ambition and achievement for the fashion and textile sector. International bodies are moving, and there is momentum building within the Australian sector. Designers, manufacturers and producers, retailers, consumers, reuse and recycling parties are already either engaged with, or signalling for change.

The highly globalised fashion and textiles market comprises millions of producers and billions of consumers across the world placed along so-called 'linear' value chains, articulated by Payne and Solomon (2018) (see Figure 1). Currently, little consideration is given to the value of resources, the environmental impact of practices, or the amount of waste generated. There is little to no reuse or recycling within a linear model. Textiles are an innovative and valuable resource material which should be listed alongside and prioritised with others such as food and organics, plastics, glass, paper and tyres (Schandl et al., 2020).

In Australia, the fashion and textile sector comprises a diverse and disparate group of stakeholders who sit across a multi-tiered, pre- and post-consumer system (see Figure 2.). Transitioning the sector will involve all players, although there will be differing degrees of roles and responsibilities, relating to the pathway that is being activated. For now, we are noting there are a significant number of stakeholders, and we acknowledge the importance of their engagement in co-design and co-development.

Figure 1. A garment linear life-cycle: Cradle-to-Grave Design
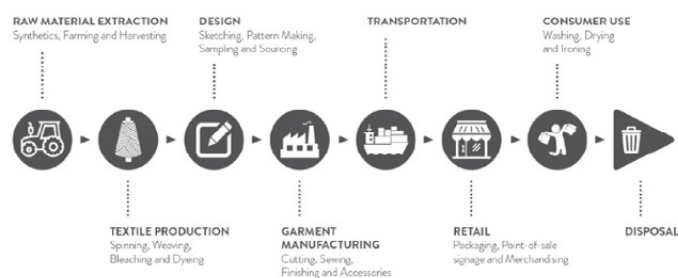
Note. Figure depicting linear fashion lifecycle, by Payne, A., & Solomon, L. (2018). Sustainable Fashion Educator Pack. Queensland University of Technology, Brisbane, Australia.

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Figure 2. Fashion and textile stakeholder groups.

Approaching Change With Evidence-Informed Practices

The fashion and textiles system is a large socio-technical system. Its problems are complex, with multiple drivers and significant social, economic and environmental impacts. To unlock changes to the existing patterns of production and consumption, we need transformative change.

"We need to profoundly rethink fashion. This systemic change includes addressing the economic growth logic which currently drives the fashion sector. If the sector is serious about climate change, biodiversity loss and the interplaying social and economic injustice – like many who work within it claim – then systemic work is essential."

Fletcher & Tham, 2019, p. 1

"The scale and speed of change required means that genuine systemic efforts are needed. In the fashion context this means addressing not only the environmental impact of a fashion product and the processes of making it, but also the psychology behind fashion use, our systems of economics, finance and trade, how we fashion local and global infrastructures around clothing, how we construct meaningful lives and livelihoods. Rethinking fashion outside the economic growth logic shifts power from multinational companies to organisations, communities and citizens. It invites fashion creativity to flourish far beyond the confines of a garment, into visions of new relationships between people, other species, artefacts and technologies."

(Fletcher & Tham, 2019, p14)

Complex problems require more than conventional problem-solving approaches. The field of *sustainability transitions* is confronting the world's sustainability crises through a focus on radical transformation of large, socio-technical systems towards more sustainable modes of production and consumption (Markard et al., 2012).

Evidence supports tackling large, interconnected-system transformation with a **systems approach;** a method of analysing a problem as part of a wider, interrelated whole (Carey et al., 2015). The systems approach is uniquely iterative, experimental and collaborative. Problems are considered from a diverse range of perspectives simultaneously to construct a wider, deeper, and clearer understanding of the issues (Barker et al., 2021). There is acknowledgement that while some issues change quickly, others have higher needs: more time, more steps, and likely the involvement of multiple actors across multiple jurisdictions to come together. Each step and every interaction is essential for change.

UNITED NATIONS SUSTAINABLE DEVELOPMENT GOAL ALIGNMENT

The fashion and textile eco-system has potential to be strongly aligned with the UN Sustainable Development Goals (SDG). A sustainable and responsible fashion and textile sector will directly, and indirectly impact the following SDGs:

3 GOOD HEALTH AND WELL-BEING

Target 3.9. *By 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.*

Health and well-being of workers and wearers will be improved through phasing out (reducing, and eventually eliminating) the use of toxic chemicals in fashion and textile manufacturing and production.

4 QUALITY EDUCATION

Target 4.7. *By 2030 ensure all learners acquire knowledge and skills to promote sustainable development. Including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development.*

5 GENDER EQUALITY

Target 5.5. *Ensure women's full and effective participation and equal opportunities for leadership.*

Target 5.a. *Undertake reforms to give women equal rights to economic resources.*

Gender inequalities will be reduced through supporting and increasing women designers, makers, and producers.

6 CLEAN WATER AND SANITATION

Target 6.3. *By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.*

Responsible and sustainable industry practices will protect waterways from hazardous and polluting chemicals.

7 AFFORDABLE AND CLEAN ENERGY

Target 7.2. *Increase substantially the share of renewable energy in the global energy mix by 2030.*

Target 7.3. *Double the global rate of improvement in energy efficiency by 2030.*

Conscious business practices will increase demand for affordable clean energy.

8 DECENT WORK AND ECONOMIC GROWTH

Target 8.4. *Improve progressively through 2030, global resource efficiency in consumption and production, and endeavour to decouple economic growth from environmental degradation.*

Target 8.8. *Protect labor rights and promote safe and secure working environments for all workers, particularly those in precarious employment.*

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Target 9.4. *By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes.*

Adoption of new business models and practices will yield industry infrastructure development and growth, alongside increased innovative strategies and productivity.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Target 12.2. *By 2030, achieve sustainable management and efficient use of natural resources.*

Target 12.5. *By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse.*

Target 12.8. *By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.*

13 CLIMATE ACTION

Target 13.3. *Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.*

14 LIFE BELOW WATER

Target 14. *Conserve and sustainably use the oceans, seas and marine resources for sustainable development.*

Water-conscious practices in consumption and production will protect waterways and marine life from exploitation.

15 LIFE ON LAND

Target 15. *Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.*

17 PARTNERSHIPS FOR THE GOALS

Target 17.17. *Encourage and promote effective public, public-private, and civil partnerships, building on the experience and resourcing strategies of partnerships.*

Emphasise collaboration amongst all stakeholders, including multi-stakeholder and cross-sector initiatives /platforms, on the case for change.

SIGNIFICANT CONTRIBUTOR TO THE AUSTRALIAN ECONOMY

The Australian fashion and textile sector makes a significant contribution to the Australian economy through employment, and material product imports and exports. In 2020-21, the industry generated more than $27.2 billion to the Australian economy - representing approximately 1.5% of GDP (AFC, 2021). Export revenue was $7.2 billion, and the industry employed more than 489,000 Australians (AFC, 2021).

Economic analysis commissioned by the Australian Fashion Council (2021) highlights that:

- More than $15.7 billion were paid in fashion sector wages.

- The fashion and textile employment rate is higher than Australia's mining and utilities industries.

- More than 24,333 clothing retail businesses operate across Australia.

- Consumer spending on fashion items accounts for $25 billion annually.

- The fashion and textile industry is 77% female, making it central to driving women's economic security and advancement.

- More than $6 billion in textiles, clothing and footwear products are generated annually.

- Export revenue of $7.2 billion represents 1.7% of all Australian exports (double the value of wine and beer). ∎

In terms of future industry potential, the Australian Fashion Council report (2022a) shows that within ten years, the Australian fashion and textile industry has potential to deliver an additional $10.8 billion in economic gain, create an additional 86,000 jobs, and become a $38 billion industry by 2032. Short term projections indicate the industry has potential to generate an additional $1.3 billion, including $700 million from additional investment, $500 million in exports, and $100 million in private consumption and government expenditure (AFC, 2022a).

SIZEABLE FASHION FOOTPRINT

Australia's economic growth and productivity in the fashion and textile sector comes with a sizeable environmental impact. Consuming non-renewable resources, producing non-recyclable materials, and importing and exporting large volumes of product contributes to biodiversity harm, high water and energy use, air, earth and water pollution, carbon emissions, and material waste deposits sent to landfill (see figure 3).

Consider the following Australian statistics:

Production

- Australia is a world-leading consumer of raw materials (over 40 tonnes per capita in 2019), with a material footprint of 47 tonnes per capita. Both metrics are around double the OECD benchmark (OECD, 2022a).

- Environmental impact of textile production comes through use of resources; primarily raw materials, energy, and water, but also includes chemicals, auxiliaries, and dyes (Moazzem et al., 2018).

- National production sits at 38 million units of clothing a year – which is equivalent to 3% of Australia's import market (Allan & Allan, 2022).

- More than 70% of industry emissions come from upstream activities, particularly energy-intensive raw material production, preparation, and processing (McKinsey & Company, 2020).

Export

- The $7.2 billion fashion and textile export industry is wide, and includes wool and cotton production, tourism and travel, and creative professional services;

- Australia is the world's largest producer of merino wool, and the third largest exporter of cotton. Australia also grows 2500 hectares of industrial hemp per annum (AFC, 2021).

Import

- 97% of Australia's demand for clothing was fulfilled by imported goods in 2018-19, compared with less than 3% of retailers selling clothes produced domestically (AFC, 2021).

- Australia imports an estimated 373,000 tonnes of clothing each year, with an FOB value of AUD$9.27 billion. This equates to approximately 1.42 billion units of imported clothing - equal to 55 pieces of new clothing, per person, per year (AFC, 2021).

Consumption

- Australians are the second largest consumers of textiles globally, behind the US, purchasing on average an estimated 27kg of new fashion and textiles each year (Department of Climate Change, Energy, the Environment and Water [DAWE], 2021). This is twice the global average of 13kg per person (Shirvanimoghaddam et al., 2020).

- Australians buy 14.8kg of clothing every year - equating to 56 new items per person, per year - making Australia one of the highest clothing consumers in the world (Allan & Allan, 2022).

- Of annual new sales purchases, it is estimated that 92% of clothing items will outflow in the same year (AFC, 2022b).

Waste

- Australians dispose of on average 93% of the textiles they purchase each year, of which only 7% is recycled (AFC, 2022a). This is the equivalent of 23kg of textiles per person, per year (DAWE, 2021; Milburn, 2017) - or approximately 800,000 tonnes total per year (DAWE, 2021).

- Approximately two-thirds of material sent to landfill is non-renewable, non-degradable, and synthetic, which will take hundreds of years to break down - releasing carbon emissions as it does (AFC, 2021).

Shared Social and Planetary Responsibility

Statistics show the vast majority of fashion and textile products Australia consumes are imported - however, this does not alleviate our responsibility. We can no longer ignore the social and environmental impacts that occur outside of our jurisdiction, particularly when we are contributors to the problem. Practices offshore must be connected to practices onshore. We must focus on influencing transitions across the system, and this includes impacts upstream.

When considering Australia on a global scale, our overall material footprint is extremely high (OECD, 2022a). Only six other countries in the world have a bigger demand for ecological resources per capita than Australia. The Global Footprint Network has estimated the global population would need the biocapacity of 4.5 Earths if the rest of the world lived like Australia (Earth Overshoot Day, 2022). As responsible global citizens, there is a pressing need for Australia to lighten our social and environmental footprint. ∎

FIgure 3. Environmental impact of the fashion and textile supply chain

LIFE CYCLE STAGES		ENVIRONMENTAL IMPACTS

Raw materials (Growth, acquisition and processing)

FIBRES

Natural	Man-made
Cotton	Viscose/
Wool	rayon
Linen	Polyester
Down	Nylon
Hemp	Acrylic
Jute	Lycra

1. Resource Consumption,
2. GHG Emission,
3. Air/water pollution
4. Soil degradation
5. Biodiversity/ Land-use

Fibre production (Natural and manmade)

1. Spinning
2. Knitting
3. Weaving
4. Pre-treatment
5. Bleaching and dyeing
6. Printing
7. Finishing
8. Making-up

1. GHG emission
2. Air/water pollution and toxicity
3. Soil degradation/ contamination
4. Biodiversity/land-use
5. Solid and hazardous waste

Fabric and clothing production and garments assembly

1. GHG emission
2. Air/water pollution and toxicity
3. Soil degradation/ contamination
4. Solid waste

Packaging → Solid and hazardous waste

Distribution → GHG emission

Retail → GHG emission

Use (Washing and drying) → Resource consumption GHG emission

Disposal (Impacts depend on management option used) → **End of Life Management** → GHG emission

1. Reuse
2. Recycle (Changing apparels into a new product)
3. Incineration for energy recovery
4. Landfill

Note. Impact contribution of different stages of textile life cycle (McGill, 2009).

THE GLOBAL LANDSCAPE

An increasing world population and the dominance of a 'faster is more profitable' system means the impact of the global fashion and textile industry is growing.

As it stands, the global fashion and textile sector currently accounts for more than 2% of the world's GDP - an estimated value of USD$3 trillion (Shirvanimoghaddam et al., 2020). Existing production practices makes an industry of this size a large consumer of resources, and a substantial contributor to waste production. Although there is active debate on best estimates of impact, the textile industry greenhouse gas emissions were reported as 4% in 2018, making this sector the fifth largest contributor of global carbon emissions (McKinsey & Company, 2020).

The fashion and textile sector's rate of growth means its impact will only increase. For example, global per-capita textile production has increased from 5.9kg to 13kg per year between 1975 and 2018 (Niinimaki et al., 2020). By 2030, it is estimated global apparel consumption will reach 102 million tonnes - an increase of 63% from 2015 (Manshoven et al., 2019). This growth has resulted in an increase in impact. For example, an increase of 50% water and energy consumption; a 63% increase in chemical use, and a 62% increase in waste creation (Moazzem, 2021a).

There are a number of reports and statistics that contribute to an active debate and discussion as to the scale/ measured impacts of the global sector.

Global Fashion And Textile Statistics

Production

- Global fibre production has almost doubled in the last 20 years - from 58 million tonnes in 2000 to 109 million tonnes in 2020. Production is expected to increase by another 34% to 146 million tonnes by 2030 (Textile Exchange, 2021).

- The number of garments produced annually exceeded 100 billion in 2014; equivalent to 14 new items of clothing per person every year (Remy et al., 2016).

- It is estimated 43 million tonnes of chemicals are used in production processes, such as dyeing or finishing treatments (Chen, 2019), with 165 of those commonly used classified by the UN as hazardous to human or planetary health (Sajn, 2019).

- Mismanagement of hazardous chemicals in clothing and textile production and waste processing harms health through polluting soils and waterways used as community food and water sources (Ferronato & Torretta, 2019).

- Production of petroleum-based textiles consumes more energy, produces more emission, and contributes to more hazardous waste than production of natural fibres (Muthu, 2020).

- Workers in production and manufacturing are typically paid below a living wage, work long, unregulated hours, and can be blocked from organising or unionising (D'Ambrogio, 2014).

Consumption: Natural Resources

- Total use of primary raw materials in the EU supply chain for clothing, footwear and household textiles represents the fourth highest pressure category after food, housing and transport. These textiles are also the fourth highest pressure category for water use;

- Global material resource extraction has grown exponentially (27 billion tons in 1970 to 92 billion tons in 2017);

- More than 150 million trees are logged annually for the production of man-made cellulose fibres (MMCF). Up to 30% of MMCFs come from endangered and primary forests;

- Virgin materials make up 94% of clothing and textile production content;

- The textiles industry consumes 215 trillion litres of water per year;

- The fashion industry consumes 79 trillion litres of water per year in production processes (Niinimaki et al., 2020).

Consumption: Consumers

- In the last two decades, the average annual global consumption of textiles has doubled, from 7 to 13kg per person (Shirvanimoghaddam et al., 2020). This is an estimated 62 million tonnes of apparel each year (Niinimaki et al., 2020).

- Consumption of fashion and textiles is increasing by the day as the world population increases (Moazzem et al., 2021a). Earth Overshoot Days are getting progressively earlier, indicating intensified consumption activity.

Waste: Land

- The global fashion industry generates >92 million tonnes of textile waste per year (an estimated US$460 billion). Most is burnt or sent to landfill) (Niinimaki et al., 2020).

- Of the 100 billion garments produced globally every year, 2/3 enters landfill after use, with an estimated 30% within the first year of purchase (Shirvanimoghaddam et al., 2020).

- Dumping clothing in landfills impacts biodiversity through habitat loss and soil degradation: decomposing clothing emits methane gas and leaches harmful chemicals from dyed garments (Sharpe et al., 2022).

- Discarded textiles are overwhelming global charities and textile recyclers (Binotto & Payne, 2017).

- Waste generation is set to increase by 70 per cent by 2050 (Kaza et al., 2018).

Waste: Water

- Chemical runoff and non-biodegradable liquid waste from textile treatment accounts for approximately 25% of global industrial water pollution (McKinsey & Company, 2020).

- Microfibre particles released through washing synthetic textiles is the primary source of microplastic ocean pollution (De Falco, 2019).

- An estimated 700,000 fibres from acrylic fabric are released in a standard laundry load (Napper & Thompson, 2016).

- An estimated 35% of primary microplastics in the world's oceans (190,000 tonnes per year) originate from washing synthetic textiles (Niinimaki et al., 2020).

Waste: Air

- The fashion industry produced an estimated 4% of global CO_2 emissions in 2018(McKinsey & Company, 2020).

- The global fashion industry is currently the fifth highest emitter of carbon by industry type (Juanga-Labayen et al., 2022).

- The climate change impact from global apparel *consumption* in 2016 represented 6.7% of global climate change impacts - an estimated 3,290 million metric tonnes CO_2eq (Quantis, 2018).

THE PATHWAY
TO CHANGE

TRANSITIONING THE SECTOR: OPPORTUNITIES & RECOMMENDATIONS

The international fashion and textile industry is facing increasing scrutiny around the social and environmental impacts associated with current practices (Niinimaki et al., 2020). The Australian sector is not immune to this scrutiny.

Achieving a responsible, sustainable fashion and textile sector for Australia is possible. Case studies show the transition has in fact already begun. However, to shift the entire system will require a coordinated effort with a range of stakeholders across multiple fronts. A collaborative approach is needed that encompasses both urgent action alongside a broader, long-term perspective.
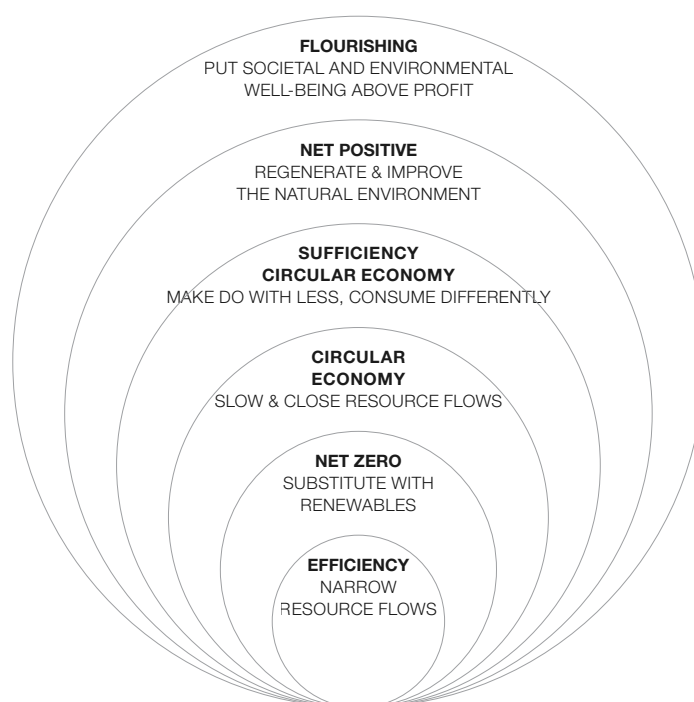
Findings from MSDI's work in the fashion and textile space over the last four years supports and reinforces the prevailing call for urgent change. We have critically analysed the existing system using a systems approach as our principle framework, and applying the circular economy model of production and consumption as a precedent.

While learning from countries and regions who have deep experience in developing and utlising a circular approach (i.e. Netherlands, UK, and the EU), we acknowledge and note the conversation is beginning to extend beyond this model - to encompass circular economies within a broader sustainable business model (see Figure 4 for an interpretation). We seek to focus Australia's efforts on a broader responsible and sustainable fashion and textiles sector, which includes principles of circularity.

From our work, we have identified seven transition pathways to effect change. We are seeking to consult and engage widely on these proposed pathways. A collaborative, co-designed process will not only strengthen the pathways but may also identify additional, complementary options.

We acknowledge that these transition pathways are an entry point only. Additional work is required to agree on language (mandatory, versus voluntary), roles and responsibilities, and the priority and timing of the activations. This is why we invite further reflection and discussion on this report. ∎

Figure 4. Toward a new sustainable society.

FLOURISHING
PUT SOCIETAL AND ENVIRONMENTAL
WELL-BEING ABOVE PROFIT

NET POSITIVE
REGENERATE & IMPROVE
THE NATURAL ENVIRONMENT

SUFFICIENCY
CIRCULAR ECONOMY
MAKE DO WITH LESS, CONSUME DIFFERENTLY

CIRCULAR
ECONOMY
SLOW & CLOSE RESOURCE FLOWS

NET ZERO
SUBSTITUTE WITH
RENEWABLES

EFFICIENCY
NARROW
RESOURCE FLOWS

Note: From Bocken & Short. (2021).

THE SEVEN TRANSITION PATHWAYS

We have identified seven pathways to facilitate the transition of the Australian fashion and textile sector to one that is responsible and sustainable. Each pathway is detailed in the report and includes suggested strategies as a recommended course of action. We have chosen not to number these pathways as we believe the plan of progression is best determined collaboratively.

Reduce Overall Consumption Of Resources Across The Product Lifecycle

Ban The Destruction Of Fashion And Textile 'Finished Goods'
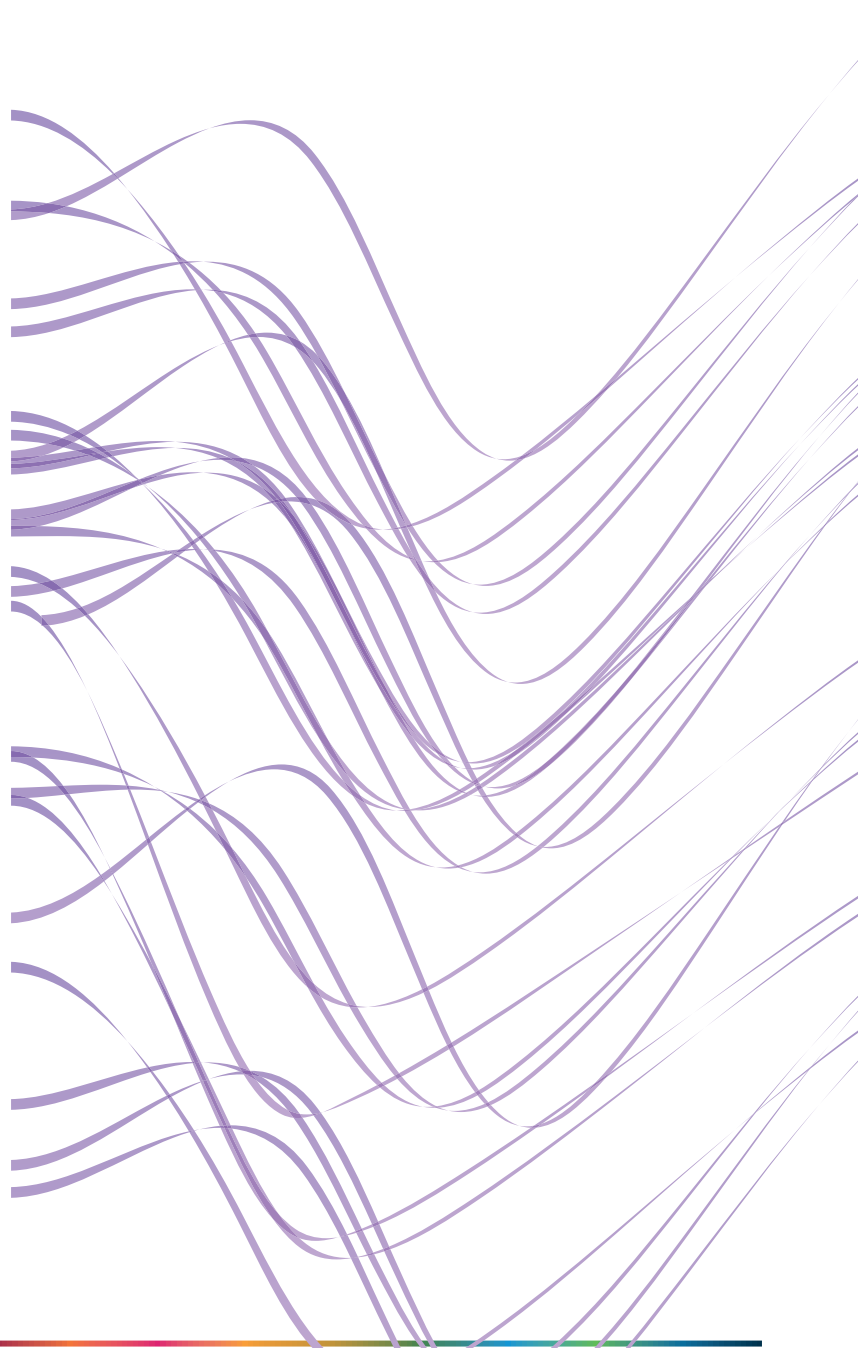
Invest In Education On Responsible And Sustainable Industry Practices

Accelerate Government Sustainable Procurement

Incentivise Use Of Recycled, Non-Virgin Materials

Increase And Regulate Textile Transparency, Traceability And Verification

Increase Support For The Development And Execution Of Clothing Extended Producer Responsibility (EPR)

REDUCE OVERALL CONSUMPTION OF RESOURCES ACROSS THE PRODUCT LIFECYCLE

> *"One of the most powerful changes the apparel sector can make in the interest of biodiversity is to simply stop making too many clothes. Average overproduction is estimated around 20 percent."*
>
> *(Granskog et al., 2020).*

Develop Goals for Reducing Australia's Resource Use Across the Fashion and Textile Eco-System

A responsible and sustainable sector begins with setting goals around the conscious use of resources such as land, water, energy, and raw materials - and ensuring adherence and accountability. A recent report cites a 75-95% reduction of resource use in the fashion industry is needed to meet looming climate targets (Fletcher & Tham, 2019).

For this step to occur, we need to collectively:

- Understand Australia's material footprint of fashion and textiles (alongside all products), in terms of production and consumption. This includes imported fashion and textiles, and finished fashion and textile products at every step along the ecosystem value chain.

- Identify a reasonable overall goal for fashion and textile resource consumption (which includes considering limits to production), with particular reference to planetary boundaries research and established climate targets. Reduced consumption of resources could be linked to a 'social licence' to continue production.

- Set and support targets for sustainable resource use. This could include specific targets on the amount of fashion and textiles that can be made, and/or imported.

- Develop a national action plan to set metrics and track progress.

8 DECENT WORK AND ECONOMIC GROWTH

Target 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.

UN SDG 12 CALLS FOR RESPONSIBLE CONSUMPTION AND PRODUCTION

A number of countries and regions have responded to SDG 12 by drafting specific policies and/or action plans relating to a circular economy. This action is in addition to other international agreements and domestic drivers advocating for change.

International policy actions include:

- The Netherlands have developed a policy programme for circular textiles 2020-2025, with goals to half their ecological footprint of the textile sector in emissions, water consumption, chemicals and microplastics, on their way to a full circular economy (Government of the Netherlands, 2020).

- The EU Parliament has called on the European Commission (2020) to bind EU 2030 targets to significantly reduce material and consumption footprints, and bring them within planetary boundaries by 2050.

- Canada has convened government, finance, academia and NGOs to accelerate a transition to a circular economy in textiles (De Paoli, 2015).

- France and Slovenia have all published a roadmap towards circularity (Iles, 2018).

- Finland has developed a roadmap towards circularity, and adopted national laws on recycling and extended producer responsibility (Niinimäki, 2017).

- A working group in Japan has recommended policies on 'design for the environment, collection systems, and consumer cooperation (Ministry of Economy, Trade and Industry, 2021).

- China updated their textile and apparel industry policies in 2008 and 2019. Initiatives include strict guidelines on meeting water pollution targets, promoting chemical traceability, requiring the textiles industry to develop a circular economy, and boosting green tech innovation (China National Textile and Apparel Council, 2021). ■

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Target 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

Target 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

THE EU 2020 CE ACTION PLAN

The European Commission (2020) is actioning best practice circularity principles through regulating the following:

- improved product durability, reusability, recyclability, upgradability and reparability;

- hazardous chemicals in products;

- remanufacturing, and increased use of recycled materials, while ensuring performance and safety.

- reduced carbon and environmental footprints;

- destruction of unsold durable goods, and restriction of single-use items;

- incentivising EPR and product-as-service business models

- digitalisation of product information;

- product sustainability through rewards, and linking high performance levels to incentives.

Encourage Use of Sustainable Fibres

Redesigning fashion and textile items to incorporate sustainable materials will lower the impact of production (Patwa, & Seetharaman, 2019). There is an opportunity for Australia to develop a national action plan to encourage the use of sustainable fibres. It could include the following:

- Adoption of a best practice definition for 'sustainable textiles' (developed via consensus within the contemporary debate), accompanied by the appropriate certifications and regulations specific for the Australian context. For example, 'sustainable textiles' may encompass products deemed to be recycled, recyclable, and/or renewable, safely produced, use regenerative production methods, reduce/remove carbon emissions, and reduce/remove water footprint.

- Setting of design minimum guidelines that consider, for example, fibre source, durability, ease of reuse (i.e., disassembly), and recyclability.

- Encouraging the increased use of sustainable, regenerative natural fibres in fashion and textile products.

- Incentivising and investing in innovative, scalable solutions for the development and use of new sustainable material technologies.

- Incentivise the consumption of and investment in the production of natural fibres through regenerative farming practices. ∎

> *"For the imperilled fashion industry, regenerative agriculture presents an intriguing solution. Integrating its principles along fashion's supply chains - by using it to farm cotton, flax (linen), silk, wool, cashmere and hemp - the industry could theoretically transition beyond 'sustainable' solutions that merely mitigate harm towards solutions that promote healthy landscape function and improved biodiversity, soil health, and water cycles in regions the industry has typically used and abused"*

> *(Tonti, 2022).*

EU STRATEGY FOR SUSTAINABLE AND CIRCULAR TEXTILES

The strategy aims to create a coherent framework and a vision for the transition of the textiles sector (European Commission, 2020). Its goal is that by 2030, textile products placed on the EU market are long-lived and recyclable, to a great extent made of recycled fibres, free of hazardous substances and produced in respect of social rights and the environment.

The strategy further notes that:

> *"Consumers benefit longer from high quality affordable textiles, fast fashion is out of fashion, and economically profitable re-use and repair services are widely available. In a competitive, resilient and innovative textiles sector, producers take responsibility for their products along the value chain, including when they become waste. The circular textiles ecosystem is thriving, driven by sufficient capacities for innovative fibre-to-fibre recycling, while the incineration and landfilling of textiles is reduced to the minimum."*

Prohibit Australia's Use of Non-Renewable and Hazardous Materials in Fashion and Textiles

Prohibiting the use of non-renewable or hazardous materials in Australia's fashion and textiles should extend to include both domestic and imported products. This is an opportunity for Australia to initiate the following actions:

- Adopt globally recognised frameworks such as REACH, or GHS to limit or ban the domestic use and import of textiles and finished products that use globally recognised hazardous chemicals. This would bring Australia in line with other best practice nations and geographic regions, such as the EU.

- Develop initiatives and targets to address microplastic shedding, including investment in technology to prevent microfibre release. This would build on the Australian Government's 2021 commitment to ban harmful ocean polluting plastics (see box).

EU CHEMICAL REGULATION 'REACH'

REACH provides a comprehensive legislative framework for chemicals manufactured and used in Europe. Reach was implemented in 2007 and sets industry safety responsibilities for chemicals produced, imported, sold and used in the EU.

The overall aims of REACH are to:

- Provide a high level of protection of human health and the environment from the use of chemicals.

- Allow free movement of substances on the EU market.

- Enhance innovation and the competitiveness of the EU chemicals industry.

- Reduce animal testing by promoting the use of alternative methods of assessing chemicals.

(European Chemicals Agency, 2022).

GLOBALLY HARMONIZED SYSTEM

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) is an internationally agreed-upon standard managed by the United Nations (United Nations, 2021). GHS classifies chemicals by hazard type, and offers harmonized hazard communication elements, including labels and safety data sheets.

GHS aims to ensure chemical hazard and toxicity information is publicly available, to protect human health and the environment during the handling, transport and use of these chemicals. The GHS also creates standardisation of rules and regulations of chemicals at the regional, national, and international level (United Nations, 2021).

AUSTRALIAN BAN ON MICROFIBRES

The 2021 Australian Federal Government's National Plastics Plan, provides for the following:

- A future ban on ocean polluting plastics like expanded polystyrene and microfibres.

- Industry partnership to fit microfibre filters in washing machines by 2030, to prevent households microfibers entering waterways.

(Department of Agricullture, Water and the Environment, 2021).

Extend the Use Phase of Fashion and Textiles

Using a piece of clothing nine months longer can reduce its associated CO2 emissions by 27%, its water use by 33%, and its waste by 22% (McKinsey & Company, 2020). Options to extend the use phase of fashion and textile products include:

- Increasing public awareness of the impacts of fashion and textile production on resources via targeted education campaigns encouraging repair, reuse and reduced consumption.

- Incentivising circular business models and consumer practices, including textile reuse, repair, or re-purpose for households and businesses.

- Making second hand, or alternate purchasing of fashion and textiles more attractive and easier to access, i.e.,community libraries, sharing platforms, second-hand markets, and repair and reimagine refurbishment spaces. ■

SLOW CLOTHING manifesto

think	make thoughtful, ethical, informed choices
natural	treasure fibres from nature and limit synthetics
quality	buy well once, quality remains after price is forgotten
local	support local makers, those with good stories and fair trade
care	mend, patch, sort, sponge, wash less, use cold water, line dry
few	live with less, capsule wardrobe, have one best style, unfollow
make	embrace home sewing as a life skill, value DIY and handmade
adapt	refashion, eco-dye, create new from old to suit yourself
revive	enjoy vintage, exchange, op shop, and swap
salvage	donate, pass on, rag, weave, recycle or compost

(Milburn, 2017)

BAN THE DESTRUCTION (INCINERATION AND LANDFILL) OF FASHION AND TEXTILE 'FINISHED GOODS'

Australia's fashion and textile waste contribution is high. The processes of landfill contribution and incineration of materials contribute a substantial quantity of carbon emissions to the atmosphere. In addition, Australia exports a large quantity of fashion and textile waste to other nations - and with it, our responsibility for waste management.

Australia must assume accountability for responsible, end-of-life processes, through adopting appropriate onshore or offshore waste management systems (Binotto & Payne, 2017). Product accountability encompasses the fashion and textiles Australia manufactures, distributes locally and exports, as well as the products that are imported for domestic use.

Solutions for reducing our waste contribution, and managing our waste responsibly and ethically includes:

- Prioritising the re-use of fashion and textiles *before* recycling by increasing their *recirculation*. This action ensures items are kept at the highest value for the longest period of time.

- Banning the destruction, incineration and/or landfill disposal of fashion and textiles in Australia - pre and post consumer use. This includes the destruction of finished goods including new, returned, and unsold stock.

- Banning exporting textile waste solely for disposal. This will eliminate the "dumping" of textiles to other nations, and prevent the subsequent disruption of local markets and environments. ∎

INVEST IN EDUCATION ON RESPONSIBLE AND SUSTAINABLE INDUSTRY PRACTICES TO SUPPORT CHANGE

This pathway calls for investment in delivering education and upskilling programs to build knowledge and capacity for implementing responsible and sustainable industry practices. Programs should be designed and delivered for people within the fashion and textiles sector, the broader community, and all three levels of Australian Government.

1. Education, training and development for people within industry to include all levels - especially board and leadership. Education focus areas could include:

   ▪ Sustainable practices across the life cycle of textiles, including what material to source and why, and ways to reduce waste in the design phase.

   ▪ Sustainability practices linked to textile production and consumption, including an understanding of planetary boundaries limits and resource use.

   ▪ Alternative and complementary business models to the standard model of growth, including those within the circular, sufficiency and well-being economy.

2. Education focus areas for the broader community and government could include:

   ▪ Developing public awareness-raising campaigns to create a cultural shift in purchasing behaviours; identify the link between fashion and sustainability; to influence behaviour towards decreasing consumption; and to adopt alternative models i.e. the sharing economy or Australia's own, Slow Clothing Manifesto by Jane Milburn of Textile Beat.

   ▪ Support and invest in scaling the development of education materials on what is sustainable textiles and fashion practices of care, repair (mend) and reuse (alterations), including how clothes are used, and the pace of consumption.

   ▪ Incorporate curriculum content at primary, secondary and tertiary levels on sustainable development, planetary boundaries, ecological literacy, and climate impact.

4 QUALITY EDUCATION
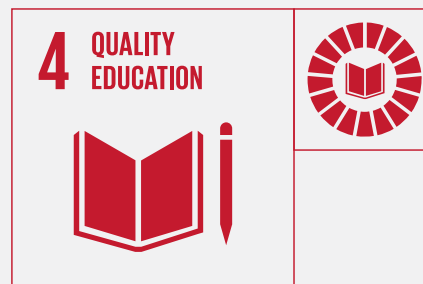
**Target 4.7** By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development. This includes, but is not limited to, education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity, and of cultural contribution to sustainable development.

THE CIRCULAR STORIES T-SHIRT GUIDE

The Circular Stories T-Shirt Guide (see Figure 5) is an educational tool for stakeholders within the fashion and textile eco-system. Aimed at producers, retailers and consumers, it seeks to increase understanding and build capacity of circular economy solutions (see CE principles as set out by Circular Stories next page). ■

Figure 5. Circular stories t-shirt guide
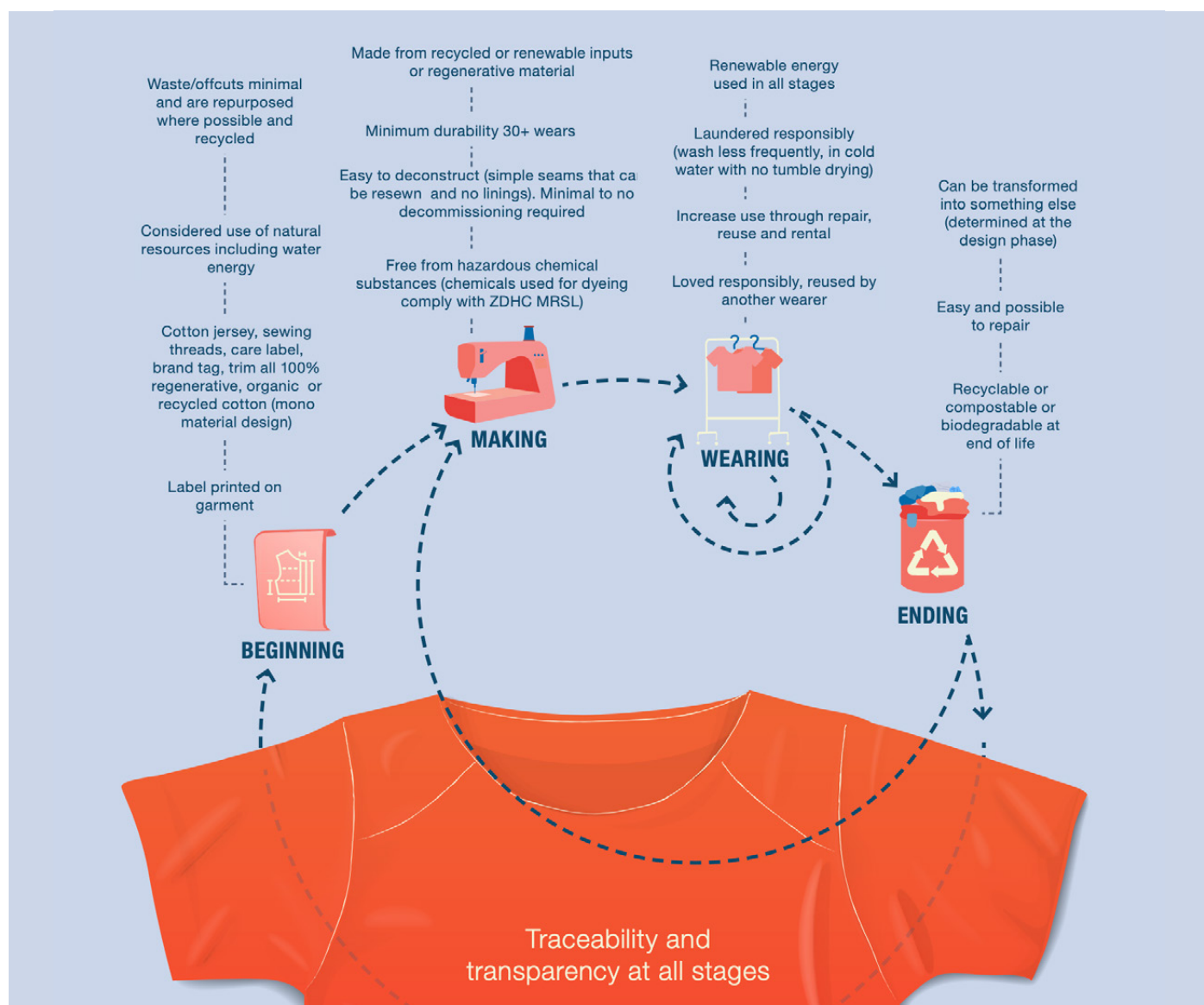
CE PRINCIPLES AS SET OUT BY THE CIRCULAR STORIES GUIDE

An MSDI-led circular economy (CE) collaboration project in 2021 brought together a collective of Australian designers, distributors, re-users, recyclers, and researchers committed to raising awareness of what a circular textiles economy means in an Australian context. Four principles of CE were developed:

- Reduce: redesign, reimagine, reuse, remove
- Revalue: repair, return
- Regenerate: regrow replace
- Respect: rights, revere.

Learn more at www.monash.edu/circular_fashion
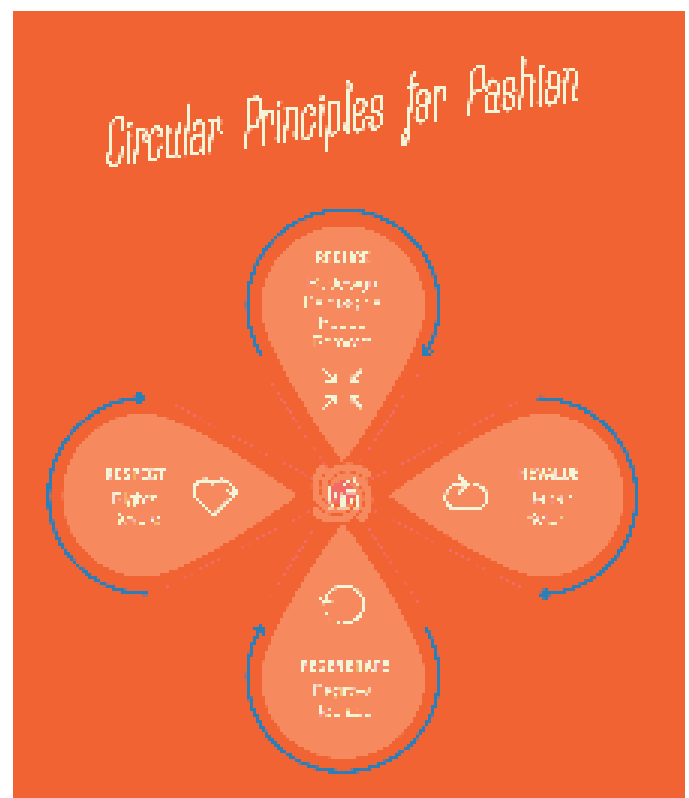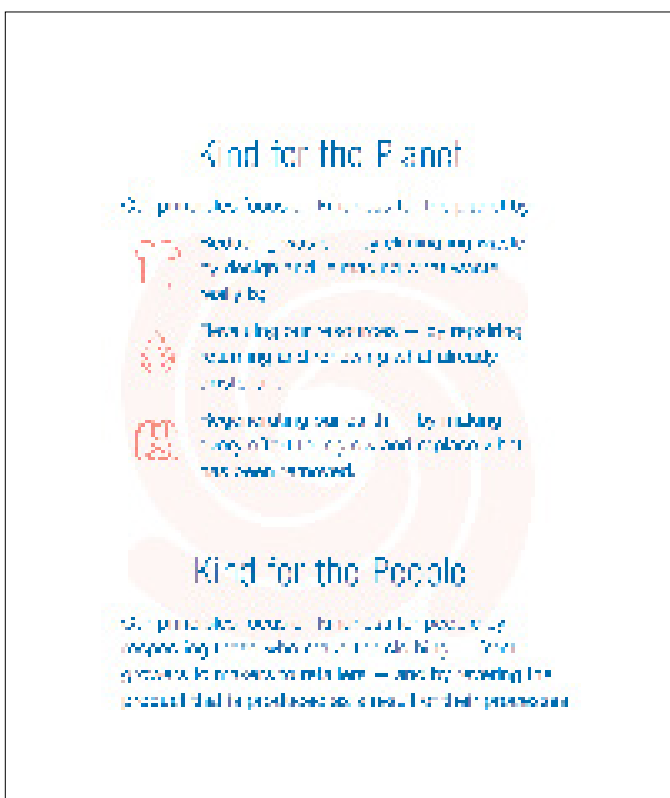
ACCELERATE GOVERNMENT SUSTAINABLE PROCUREMENT

Designing and implementing sustainable government procurement guidelines (both federal and state) for textile purchasing and end of life processing is the first step that governments could take. This step would encourage the private sector to follow suit and to have the confidence to experiment and invest in new, sustainable production and consumption models.

We recommend two priority actions be taken here as part of an overall approach to implementing sustainable government procurement.

- Procurement of uniforms to prioritise sustainable textiles.

- Explore options for extending the life of uniforms.

We note and also agree with the recommendation from an EY Industry Modelling report produced in collaboration with Australian Fashion Council (2022a), which recommended two actions:

- Incentivise an Australian-first uniform purchasing policy for Australian Government agencies including the Australian Defence Force and the Australian Federal Police.

- Purchase from Australian-owned businesses with local manufacturing wherever possible.

We further suggest the use of sustainable textiles in all Australian government-funded organisational uniforms, workwear, and protective gear.

INCENTIVISE USE OF RECYCLED, NON-VIRGIN MATERIALS

To encourage businesses to increase their use of recycled materials - and *recyclable* materials - efforts need to be directed towards prioritising the sourcing and using of these materials. Part of this work involves improving the technical systems that underpin a secondary market; i.e., the collection, processing and manufacturing of fashion and textile items.

Our analysis indicates the following actions would assist in prioritising the use of recycled and recyclable materials:

- Establish infrastructure for capturing, sorting and separating materials to facilitate recovery, re-use and reprocessing of clothing and textiles. Funding initiatives for textile collection and sorting and, where possible, connect collection, sorting, and recycling systems.

- Establish targets for reusing and recycling fashion and textile product, *and* for using recycled and recyclable content in new fashion and textile products.

- Develop targets to limit and ultimately phase out the use of virgin materials in fashion and textile products.

- Invest in technology and manufacturing for innovation in recycled content, including support and incentives for fibre-to-fibre recycling (i.e., sustainable mechanical and/or chemical processes).

Examples of fabric and fibre recycling include Green Machine Labs, Evrnu, Circ, Sulzer, and Renewcell.

USEDFULLY

A 2021 White Paper published by New Zealand group, Usedfully, recommended NZ government procurement contracts should include both the requirement and budget for end-of-life processing of textiles and clothing (Casey & Johnston, 2021). ∎

RENEWCELL

Market leaders in this space, Renewcell created a new recycled material through shredding and chemically dissolving end-of-life jeans (while meeting Sweden's strict environmental protection regulations). Used as a replacement for cotton, viscose, or synthetic fibre, the fabric can be recycled indefinitely. ∎

INCREASE AND REGULATE TEXTILE TRANSPARENCY, TRACEABILITY, AND VERIFICATION

We recommend a review of global best practice guidelines and standards, with a view to adapting and implementing measures to ensure the traceability and transparency of clothing and textile content within the Australian market.

International examples of standards/certifications to reference include:

- The United Nations Economic Commission for Europe (UNECE) project Traceability for Sustainable Garment and Footwear has developed data standards 217.

- GS1 - standards for barcoding.

- ISO - all manner of standards.

DENMARK'S APPROACH TO COUNTER GREENWASHING

The Danish Ombudsman states that health, social and ethical issues must be considered when making sustainability claims and – tellingly – acknowledges that it is therefore, "very difficult to call a product etc. sustainable without being misleading."

Denmark: Anti-Greenwashing Guidelines (Danish Consumer Ombudsman, 2014):

The Danish Guidelines require clear evidence of import businesses to support their environmental claims, based on lifecycle data analysis. The guidelines include considerations around health, social and ethical issues as being part of sustainability, and provide businesses with examples of guideline violations.

TRANSPARENCY PARTNERSHIP

Global Fibre Impact Explorer (GFIE), is a partnership between Google Cloud and WWF. The tool assists fashion brands to identify high risk fibres in brands' portfolios, then recommends how to support local initiatives to improve their environmental impact. Impact is defined in five categories: air pollution, forest, biodiversity, climate and water usage and quality.

TRANSPARENCY LAW

The State of New York Fashion Sustainability and Social Accountability Bill requires transparency of environmental impact for at least 50% of goods sold - from raw materials to shipping. It requires supply chain mapping and due diligence disclosure.

TRACEABILITY INITIATIVES

Knitwear label Sheep Inc., has introduced an NFC (near-field communication) tag attached to its sweater hems allowing customers to track the supply chain of its Merino wool sweaters.

Sustainable Markets Initiative Fashion Taskforce launched "Digital ID," in 2021, which traces a fashion item from production through to sale and resale.

British start-up Provenance has developed software to trace the supply chain of items from field to finished garment.

ACCC Speech to SMH Sustainability Summit

The Australian Competition and Consumer Commission (ACCC) recently announced it is beginning work to update guidance for businesses and information for consumers on environmental claims, including clothes, noting that *"it might be necessary to consider introducing clearer standards and regulations."*

In a speech to the SMH Sustainability Summit on 20 September 2022, ACCC Deputy Chair, Ms Delia Rickard, outlines four steps that businesses can take now to improve their environmental claims.

1. Ensure claims are clear and specific, and avoid using vague language.

2. Ensure the entire product lifecycle is taken into account when making claims and be specific about whether the claim relates to the whole product or part only.

3. Be transparent, truthful and robust about their products and environmental policies and indicators used

4. Collaborate with reputable third-party certification bodies and apply certifications correctly.

"Before making any environmental and sustainability claims about your product or overall business, consider the following questions:

What does an ordinary consumer understand these claims to mean?

Does your product or business live up to this understanding?

If the answer to the second question is no, I encourage you to take a step back and consider whether you are at risk of greenwashing."

EU LABELLING REGULATION

The EU eco-design directive is focused on ensuring more energy-efficient products are placed on the market, and consumers are sufficiently informed to purchase the most efficient products.

The directive establishes requirements for businesses to adapt design and manufacturing practices to meet energy use, recyclability, waste, and water use standards.

> *"Systematically tackling material efficiency issues such as durability and recyclability".*

By 2023, all clothing sold in the European Union will have to include an eco label informing customers about the products' environmental impact (European Commission, 2020). Exactly what the information must include is still under consideration, with the European Commission currently reviewing options including "mandatory sustainability labelling" for products and using the Product Environmental Footprint (PEF) methodology to substantiate claims.

MAKE THE LABEL COUNT

The "Make the Label Count" campaign is an international coalition of organisations focused on ensuring credible clothing sustainability claims in the EU. They are asking European Commission policymakers to update the PEF methodology in particular, to help inform consumer purchasing (see Figure 6 next page). ■

···

Figure 6. Proposed fashion and textile label inclusions

WHAT CONSUMERS SHOULD KNOW

Consumers should be able to trust sustainability claims on their clothing labels. We are asking European Commission policymakers to update the PEF methodology to make the label count for consumers. Here is where we can start:

Renewability & Biodegradability

Only products made from renewable raw materials can be truly sustainable. The inherently circular attributes of natural fibres, including renewability at start-of-life and biodegradability at the end-of-life need to be accounted for in a credible product claim. Inclusion of parameters to account for biological circularity could address this limitation.

Accounting for microplastics

The environmental impacts of microplastic pollution should be included to inform consumer choices. Laundering synthetic clothes accounts for 35% of primary microplastics released into the environment.

Equitable comparison of fibres

The impact of forming natural fibres is fully accounted for in PEF, whereas the impact of forming fossil fuel-based fibres starts at extraction. With clothing made from fossil fuel-based fibres receiving an environmentally 'free' raw material (ie oil), it's not possible to have an equitable comparison of products, and technically sound solutions to this problem have been proposed.

Duration of service

The use-phase has a major influence on a garment's environmental footprint. Factors that extend the lifetime of clothing, including adjustable fit, odour resistance, wrinkle resistance, less frequent laundering and the rate of reuse by further owners should be included in PEF methodology.

Social impacts

The socio-economic impact of fibre production and textile manufacturing is not considered in the PEF methodology. Credible measures of sustainability encompass planet, people and prosperity.

Production practices

The impacts of fibre production are assessed without considering whether sustainable agricultural and mining management practices are used. By failing to assess and incentivise sustainable production practices, an important opportunity to achieve the EU's goal of *'protecting and restoring natural ecosystems'* is lost.

Note. Image sourced from Make The Label Count (2022).

INCREASE SUPPORT FOR THE DEVELOPMENT AND EXECUTION OF CLOTHING EXTENDED PRODUCER RESPONSIBILITY

Extended Producer Responsibility (EPR) is a policy approach where producers are given financial and/or physical responsibility for products they bring to market, including their end-of-life processes, to ensure products are recycled, or repurposed responsibly (OECD, 2022b). This term is often used interchangeably with 'Product Stewardship'. EPR policies incentivise waste prevention at the source, promotes beyond-scope eco-design, and supports public recycling and materials management goals (OECD, 2022b).

To strengthen work currently being undertaken to develop a National Product Stewardship Scheme, we are calling for increased government support, particularly to ensure EPR policies are developed in line with circularity principles (waste prevention, product life extension, and recycling). This action will improve sustainability outcomes, as recommended by the Australian Fashion Council (2021).

We also endorse the introduction of a levy on all textile products brought to market. These funds will assist in resourcing the infrastructure needed for the recycling and reusing of textile products. While it may be appropriate to begin with voluntary participation, we would encourage that this be regularly reviewed with an option of moving to a mandatory system to ensure participation targets are achieved. ■

AUSTRALIAN FASHION COUNCIL PRODUCT STEWARDSHIP SCHEME

In November 2021, the Australian Fashion Council (AFC) secured a $1 million grant from the Federal Government to lead the development of Australia's first National Product Stewardship Scheme for clothing textiles. In addition to the AFC, members of the consortium include: Charitable Recycling Australia, Queensland University of Technology, Sustainable Resource Use, and WRAP.

The Scheme aims to improve the design, recovery, reuse and recycling of textiles, providing a roadmap to 2030 for clothing circularity in Australia, in line with National Waste Policy Action Plan targets. The scheme is to be ready by March 2023. ■

> *"The 'shovel-ready' Scheme will provide clear plans for the sector and a long term self-sustaining economic model in place, underpinned by evidence, to transition to a circular clothing economy; The outcome being that most Australian clothing sector stakeholders from across the supply chain, will be committed to progressing action once the Scheme is launched."*
>
> *(AFC, 2022b).*

SUGGESTED NEXT STEPS

Before work on the transition pathways can commence in earnest, we recommend a focus on two actions areas: Building a 'coalition of the willing', and designing a 'shared vision of transition'. These two actions will unify and solidify a large and diverse group of stakeholders, and amalgamate a vast wealth of knowledge with the capacity to enact this vision of change.

A COALITION OF THE WILLING

A project of this magnitude needs enthusiastic contributors. Cramer (2022) discussed the importance of a convening power for effective systems change (see Figure 7). It is clear no one organisation can implement initiatives of broad systems change alone. A 'coalition of the willing' is needed to engage, contribute and participate together if transformative change has a chance of being successful.

To build a multi-stakeholder initiative, we recommend:

- Drawing together relevant stakeholders from industry, government, academia, and consumer groups to gather a diverse and rounded perspective for planning.

- Creating a systems-wide convening body to collaborate on advancing policy, research, and actions.

- Fostering trans-sector networking and collaboration, and consider training if necessary.

- Emphasising the importance of information, opportunity and resource sharing in effective partnership collaborations.

A sustainable, circular, regenerative textile sector considers each sector as one part of an interrelated whole, rather than individual discrete sectors in isolation. With the industry working together to address sustainability and circularity goals, responsibility will be more equally shared, and the targets become achievable (AFC, 2021).

TEXTILE WORKSHOP INFORMS CEBIC 2021-2022 FOCUS AREAS

As part of a collaboration with Sustainability Victoria and DELWP, MSDI CE Textiles co-designed a workshop hosted by Circular Economy Business Innovation Centre to inform planning and delivery of the 2021-22 focus area. More than 30 stakeholders from small and large retailers, manufacturers, recyclers, peak bodies, research institutions, consulting firms and government took part in the 'Progressing Circular Textiles Opportunities' industry consultation workshop. The group identified the next steps towards greater circularity in the textiles sector.

Figure 7. Relation between public governance and network governance.
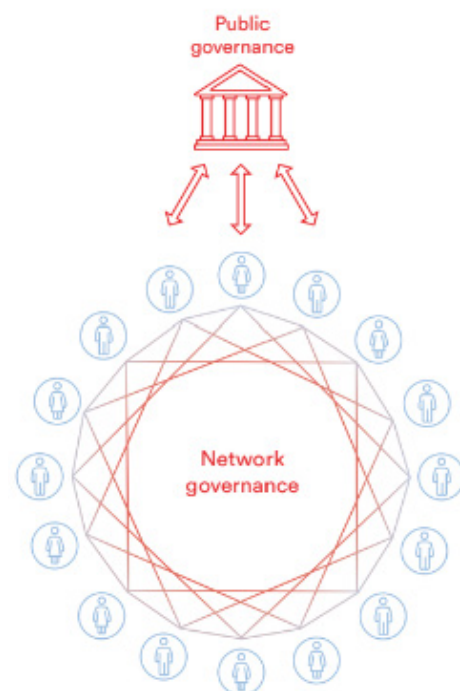
Note. Image sourced from Cramer, 2022, p. 30.

17 PARTNERSHIPS FOR THE GOALS

SDG 17 emphasises collaboration amongst all stakeholders, including multi-stakeholder and cross-sector initiatives /platforms, on the case for change. Examples of collaboration include:

- Government, industry and consumers working together to challenge patterns of excessive production, consumption, and waste creation.

- Brands/businesses collectively piloting innovations, ie novel materials, processing methods and recycling technologies, by harnessing knowledge/expertise/funds/capacity and foregoing competition.

FASHION FOR GOOD INITIATIVE

Fashion For Good (2022), a global initiative driving collective movement to make fashion a force for good is an example of effective stakeholder collaboration. Fashion for Good provide a platform where those working on sustainable innovation connect with brands, retailers and funders to bring new ideas and technologies from niche to norm.

TEXTILE SECTOR MULTI-STAKEHOLDER INITIATIVES

MSIs enable concerted focus on specific issues and facilitate connections. Global standards and practices initiated by MSIs include:

- The Global Fashion Agenda.

- Sustainable Apparel Coalition.

- The Waste and Resources Action Programme (WRAP).

- European Clothing Action Plan, Textile Exchange.

- Association for Contract Textiles.

- Zero Discharge of Hazardous Chemicals.

NORDIC ACTION PLAN

The Nordic Action Plan for Sustainable Fashion and Textiles, 'Well Dressed in a Clean Environment' (Nordic Council of Ministers, 2015) is a world leader in sustainable design, consumption and production. This action plan makes a positive contribution to sustainable development and green growth, both in the Nordic region and globally.

The Nordic Action Plan for Sustainable Fashion and Textiles contains four focus areas:

- Promoting sustainable Nordic design

- Lowering the environmental impact in production

- Increasing the market for environmentally friendly fashion and textiles

- Encouraging a market trend toward more recycling and reuse

IDENTIFY A COMPREHENSIVE VISION FOR THE FUTURE AUSTRALIAN FASHION AND TEXTILE ECO-SYSTEM

Developing a comprehensive vision for the future should start with researching what are appropriate levels of economic growth, and how responsible growth can align with planetary boundaries and sustainable development objectives.

To design an appropriate and evidence-informed vision, we recommend:

- Mapping stakeholders, their position along the fashion and textile life-cycle, and their specialised knowledge to effectively leverage skill sets for change.

- Engaging in open and honest discussion around limits to growth:

  □ Consider ways in which objectives can include offsetting economic growth with reduced environmental footprint.

  □ Identify ways the sector can be motivated to shift the business focus from simply one of growth, to one of growth grounded in a textiles sufficiency model.

- Developing targets that are specific, measurable, achievable, relevant and time-bound.

- Establishing responsibility for achieving vision objectives.

There is an opportunity to harmonise individual business targets into a collective industry sustainability goal. Many individual sector challenges are shared. For example, issues facing the recycling and waste sector are intimately related. As the AFC National Clothing Product Stewardship Scheme's Global Scan Report states "problems... are not the result of any one brand 'behaving badly', but are structural issues that need structural solutions" (AFC, 2022b). Collaboration at this overarching systems-level brings opportunity to develop inclusive, far-reaching solutions.

THE UK WRAP TARGET

WRAP is a climate action group with a vision to secure a sustainable global future.

WRAP 'Textiles 2030' Initative (2022) aims to:

- Reduce the aggregate greenhouse gas footprint of new products by 50%, sufficient to limit global warming to 1.5°C in line with the Paris Agreement on climate change and achieving Net Zero by 2050 at the latest.

- Reduce the aggregate water footprint of new products sold by 30%.

- Address 'materials intensity' to reduce consumer-driven virgin textile materials use. This will work to displace supply chain impacts and achieve the stated environmental goals.

WRAP signatories will report annually, using 2019 (or their first year of reporting) as their measurement baseline (WRAP, 2022a).

Reporting metrics include, for example:

- The total market quantity of textile products (in tonnes).

- The total quantity of fibre breakdown of new products sold.

- The improvement actions taken, measured as a proportion of relevant products by weight.

WRAP signatories include Arcadia Group, ASOS (2022), Primark, and M&S (WRAP, 2022b). Voluntary targets include:

- Reduce clothing carbon and water footprints by 15% by 2020.

- Reduce waste by 3.5% by 2020 compared with 2012.

Conscious Consumerism

We would be remiss to engage in conversations around shifting the fashion and textiles space without a discussion on limits on consumption. In such a high-growth sector, a sufficiency approach seems essential in moving towards both a sustainable industry and a sustainable society. There is a pressing need to better understand how sufficiency can be integrated and implemented across the industry.

We need to radically shift the paradigm in which fashion and textiles exist. We need a future where we don't compromise the health of our planet - or ourselves - for our clothing and textile needs, and where we are conscious, active, and responsible global citizens - not simply consumers and producers. By grounding what we do and how we do it in equality and fairness for all with an intergenerational lens (Bocken & Short, 2020), we can build a fashionable future.

All of the pathways suggested in this report go some way towards addressing sufficiency. However, more deliberate, targeted action on the root causes of unsustainability can be taken. In particular, we suggest action on:

- Greater policy intervention to encourage and support change.

- Broad education initiatives across myriad consumer-based settings.

- Civil society participatory action across all consumer markets.

- New business models that incorporate sustainable principles.

- Further technology, product and process innovations. ▪

LAST WORD

"Cross-scale governance is a way to refer to the many interacting ways that societies can steer themselves through the transition to a planet-aware circular economy. The transition will require decisions about shifts in resource generation, investment, innovation, production, distribution and consumption. In short, many of the industry's current connections need to be reconfigured for a system-wide transformation. The transition can become an opportunity for more environmentally appropriate and socially equitable action – but this will require new ways to manage the diverse and interconnected organisations and interests that make up the global fashion and textiles system."

(Cornell et al., 2021, p. 33).

Today's opportunities won't wait forever. This is the decade crucial for charting a different course for humanity. The time is right now for diverse collaborative discussion about what is needed, and by whom, for successful transition at speed and scale. MSDI is ready, and well-placed, to convene and facilitate a coalition of willing stakeholder roundtable to unlock a better future for all.

We acknowledge change does not happen overnight. In many cases stakeholders need time to prepare for what is coming. But failure to capitalise on present opportunities, right now and with urgency, could have disastrous impact for both the Australian sector, and for the global fashion industry as a whole.

No one stakeholder holds all the answers. However, collaborative action has the power to place the Australian textile and fashion sector as a global industry leader in implementing responsible and sustainable practices before 2030.

"We believe there is an expansive opportunity for the industry to grow, innovate, transition and continue to play an important role in Australia going forward, in a way that places people and planet first."

MSDI Circular Stories Working Group

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CONTACT US

8 SCENIC BOULEVARD, CLAYTON CAMPUS
MONASH UNIVERSITY, VICTORIA 3800
AUSTRALIA

T: +61 3 9905 0124
E: MSDI-ENQUIRIES@MONASH.EDU

MONASH.EDU/MSDI

@MONASHMSDI

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