

# Farmers of Fashion

## A Farmer's Response to a Global Wardrobe Crisis

A report for



By Tamara Uebergang

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# Executive Summary

Fashion and textiles are a global juggernaut of industry and influence. The cotton supply chain is simultaneously convoluted and disjointed, but dynamic; fast and 'just-in-time'. Hence, it is difficult for farmers to connect directly to connect with consumers. This supply chain is ripe for disruption.

As all are sustainable by all current metrics, Australian cotton is well placed to participate in future fashion markets, including the circular economy, carbon neutral products and 'business for good'. There is an opportunity to garner additional value in a sustainability and provenance proposition.

Australia is rich in infrastructure and knowledge. This would easily facilitate the adoption of block-chain technology. This approach would provide full traceability and transparency to the farm gate, cost being the only inhibitor. Modern slavery is a hot-button issue in fashion, but the Australian cotton can humbly, and confidently, invite scrutiny into workplaces. Hence, the industry is well poised to align with 'brands with purpose'. There are already several certifying schemes for textiles, some are aimed at brand protection while some signify luxury niches.

'Australian cotton' is not an existing identity fibre, owing to inconsistent supply and the unique qualities the lint can bring when blended with lower qualities into yarn. Australian cotton's ultimate competitor is synthetics, though the dangers of microplastics washing into the natural environment are not widely known. A growing awareness of this is a great opportunity for cotton.

The objectives of this study were to understand the customer and how they are influenced, explore the cotton value chain, identify trends and disruptions in the textile market and seek technology that clarifies traceability and transparency.

Traditionally, an Australian cotton grower's customer is a spinning mill buying raw lint as a bulk commodity. The advent of a discerning customer and technology to trace raw materials to the source is changing this. Being that Australian cotton has already done the heavy lifting regarding water, pesticide and energy use, the industry is well placed to align with a conscious customer.

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# Foreword

*Sustainable* and *sustainability* were two words I purposefully excluded from my Nuffield Scholarship application. Marketing and 'Greenwash' has cheapened the concept of sustainability, one of the pillars of Australian agriculture. In our farming system, sustainability represents a 'baseline' or survival, not luxury or exclusivity. This is where I have found the deepest chasm between the producer (Australian cotton growers) and the customer. Farmers lament a growing urban/rural divide and misguided consumers, however, as bulk commodity producers, we find ourselves powerless to engage with the masses. Activists and industry campaigners are both shouting into echo chambers, and wondering how we can find common ground with the final purchaser.

At the Nuffield Contemporary Scholars Conference, I was challenged to 'connect to the customer'. Further than just sharing our journey on social media and reinforcing unconscious bias, I have taken a deep-dive into 'sustainable fashion'. I didn't expect to be chatting with fashion designers and influencers; furthermore, my 'farmer' wardrobe was certainly not equipped to deal with this! It is a fascinating rabbit hole, punctuated with past atrocities and present practices that will confront generations to come.

My family have been farmers for generations, and recognise a deep privilege in growing food and fibre. We take our role as stewards of the environment very seriously. I was horrified to learn of the waste, pollution, human exploitation and innumerable perils of the fashion industry.

As a custodian and legacy builder, the realisation that we are at the very beginning of this supply chain begs four serious questions:

- Organic production is the obvious path to an end user who shares our values. Unfortunately, in our context this production system is not the best use of limited water resources.
- One of our primary goals is to increase organic carbon in the soil, inherently, we aim to be 'carbon positive'. Circular farming through the composting of local waste (manure) and adoption of renewable energy mitigate our carbon footprint. How can we enhance the commercial viability of environmental improvement?

- I would love to support products with heart. I would rather not continue to feed the fast fashion beast. Consumerism has potential to enhance communities and change lives through skills. How can I contribute to supply chains that align with personal values?
- What technologies are available to disrupt supply chains and connect with customers?



***Figure 1: A journey of unexpected twists and turns, including a campaign with Country Road. Author (left) pictured with 2013 Scholar and Nuffield CEO Jodie Redcliffe***

# Acknowledgments

I am ever grateful for the people in my life who encourage, challenge and inspire me. Particularly my parents, who have not only kept the ship sailing at our family farm and home, but given me the freedom and courage to immerse myself in this somewhat selfish experience.

The Nuffield network, both in Australia and abroad, have been wonderful in practical and educational supports. Particular thanks to 2014 Scholar Nigel Corish for solid mentoring.

To the innumerable people who have kindly introduced me to interesting and motivated companies; the many who have freely shared your contacts and enabled me to conduct this research, thank you.

The Charles and Sylvia Viertel Foundation primarily supports medical research, particularly in areas of illnesses related to blindness and ageing. In light of this, I am deeply humbled that they have invested in this programme, agriculture and myself.

# Abbreviations

|       |                                     |
|-------|-------------------------------------|
| BCI   | Better Cotton Initiative            |
| CA    | Cotton Australia                    |
| EFC   | English Fine Cottons                |
| EMF   | Ellen Macarthur Foundation          |
| GHG   | Greenhouse gas emissions            |
| MMF   | Man-made fibre                      |
| myBMP | my Best Management Practice         |
| NGO   | Non-government organisation         |
| QUT   | Queensland University of Technology |
| RA    | Regenerative agriculture            |
| rPET  | recycled polyethylene terephthalate |
| UK    | United Kingdom                      |
| USA   | United States of America            |

# Objectives

- Understand who our customer is, and who influences them
- Explore supply chain
- Identify trends and disruptions in textile market
- Connect fashion demands to agriculture
- Define circular fashion and the role of textile waste management
- Clarify transparency and traceability technology

# Chapter 1: Introduction

## 1.1 Global context

Clothes provide comfort, protection and an avenue of self-expression. Indeed, nearly all people, all the time, encounter textiles. Rituals of daily life are hallmarked by drapery, waking up in sheets, bathing with towelling and dressing for functionality and decoration. Homes are mostly a collection of fabrics; curtains adorning a window, cushions on the seats of chairs, or carpets beneath feet. Cotton has been discovered at ancient tombs dating back to 614 AD, and today maintains a place as a commodity of global significance (St Clair, 2018).

Man-made, or natural, textiles are all part of the juggernaut that are materials. Presently, textile production generates USD 1.3 trillion dollars and employs 300 million people; making it one of the most significant pillars of the world economy (St Clair, 2018). Approximately 25 million tonnes of cotton are produced every year, and are used to make 45% of all clothes, household goods and other consumer products (Cotton Australia, 2020).

According to the United Nations, climate change is the *“defining issue of our time and we are at a defining moment”*. Without drastic action today, adapting to these impacts in the future will be more difficult and costly (UN, 2019). The apparel sector is currently responsible for 10% of carbon emissions. Unless action is taken, this is predicted to increase to 25% by 2025 (UNFCCC, 2018). As more influencers and trend leaders acknowledge the climate crisis, the apparel industry is experiencing a moment of self-reflection, inducing its own deep disruption.

Agriculture is not known to pursue fickle trends; sustainability has long been considered a ‘baseline’ in agriculture. Representing an opportunity to connect with the final customer, McKinsey/Business of Fashion has identified sustainability as one of the top five trends affecting fashion today (Business of Fashion, 2019).

The population is being called to reduce consumption, upcycle, recycle, consider end of life and know supply chains (Payne, 2019). As a majority fibre, cotton, particularly, has been in the spotlight for its environmental and social impact. Major issues such as Xian Jang prison camps, draining of the Aral Sea in Uzbekistan, farmer suicides in India and local Murray Darling Basin issues seem to drown out the positive attributes of a compostable, renewable product

that has the potential to enhance communities and build wealth in some of the most marginal areas on the earth (EJF 2012).

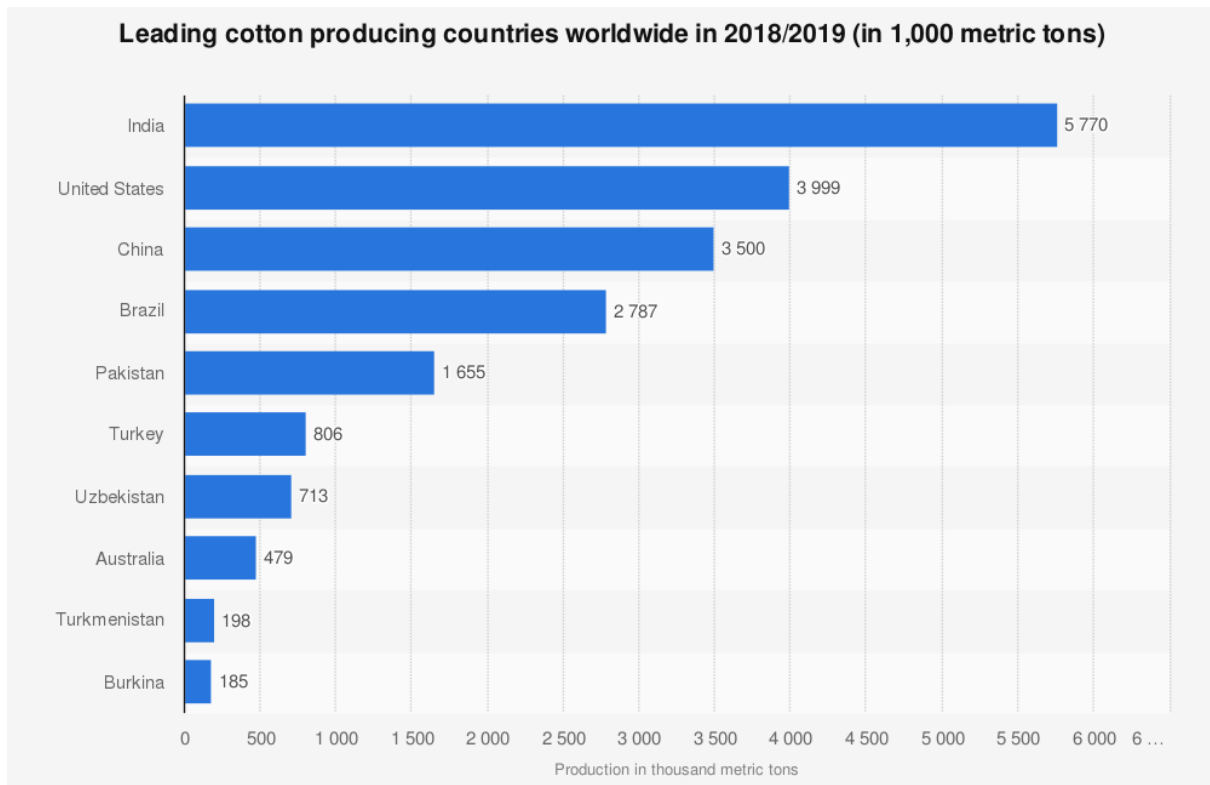
Growers of a raw product feeding a complex value chain that is ripe for disruption are also at a precipice. Is it possible to future proof the demand for cotton? In a world that is seeking new 'greener' products and embracing recycling, how do virgin fibres remain relevant? What is the point of difference and value proposition? There are certifications and endorsements abound, but how can farmers influence their regulatory burden? Ultimately, is it possible, or indeed moral, to generate a fiscal return for best practice?

In today's political and social arena, growers must connect with consumer to maintain not only market share, but social licence to operate.

## **1.2 Production**

In an average year, the cotton industry in Australia produces enough fibre to clothe 500 million people. Over 1,500 farms cotton production contributes two billion dollars of export earnings annually. Approximately 90% of Australian cotton farms are family owned and run. Thanks to advances in biotechnology and precision irrigation, Australian growers are the world's most water efficient (Cotton Australia, 2020). Consistently high yields, quality (particularly colour), traceability and environmental standards have bolstered the global reputation of the industry (ACSA, 2020).

The cotton plant requires a warm summer, minimal frost and 500-700mm per hectare of water during the growing season, hence climatic conditions dictate the major production areas across the globe. Cotton production takes up 2.5% of the world's arable land, and accounts for nearly 40% of global textile production, making it the second most used fibre after polyester. More than 90% of cotton farmers live in developing countries (Figure 2), where cotton employs 7% of the total labour force (EJF, 2019).



**Figure 2: Leading cotton producing countries worldwide 2018-19. Source: Statista, 2021**

### 1.3 Marketing

Presently, most Australian growers sell 227kg bales of raw lint to merchants. Usually, these global trading houses have developed several different grower contracts, designed to alleviate some risks for growers. A merchant can then engage in various strategies to manage risk on-behalf of a grower. The worth of a cotton crop is determined by pricing elements including currency rates, basis levels and futures. These are driven by financial markets and overseas mills (ACSA, 2020). Following ginning, lint is classed according to quality metrics, then premiums or discounts are applied for variations from 'base grade'. It is usually at this point the grower totally loses contact with the product.

Farming is a multifaceted business, often demanding a broad skill set. Hence, this system appeals to farmers whose expertise is not in commodity trading, hedging or the complexities of cotton supply chain. Historically, growers are focused on increasing profitability through yield and input efficiency rather than uncontrollable market forces.

Despite being a small global producer – and owing to the fact Australia have no onshore processing facilities – it has a unique position influencing global supplies. Australia is between the world's third to sixth largest exporter of raw lint; seasonally dependant (EJF, 2020).

Traditional marketing has effectively provided farmers with minimal counter party risk and an access to a global market. However, this system does not take advantage of opportunities presented by traceability platforms, the value of sustainability or the customer's burgeoning interest in provenance.

## **1.4 Spinning and milling**

Historically, import quotas and protectionism restricted the global trade of textiles and apparel. When the World Trade Organization eliminated restrictions, retailers and apparel companies expanded their supply chains to low-cost producers. Subsequently, manufacturers and retailers have 'chased the needle' around the globe, seeking the lowest cost of production.

The spinning industry and production of yarn is often referred to as the 'black box' of the supply chain (Clack, pers. comm., 2020). To produce a cost-effective product, yarn is nearly always a blend of several origins of fibre, sometimes including synthetic yarns. It is at this point that transparency and provenance is compromised. Essentially, mills want cheap lint. Hence, fibre from unknown sources can enter the supply chain as higher quality bales are 'cut' or blended to lift the value of poorer quality lint.

Margins are tight at every step of the supply chain and in their defence, blending varying qualities is a competitive necessity to a fabric mills financial viability (Andy Ogden, pers. comm., 2020). Some spinning mills "only care about price". In this instance, it could be argued that they are out of step with the rest of the supply chain. As producers of lint and retailers are pushing from both directions to improve transparency in the middle of the chain, scrutiny will intensify.

Australian cotton is some of the most expensive in the world. Mills invest in Australian bales to minimise breakages and stoppages, improve uniformity of yarn and increase throughput. Although desirable, the drawback of Australian cotton is a lack of consistent supply. Erratic climate and water availability do not facilitate reliability. Cotton growers in Australia are not

restricted to a monoculture. Most growing regions support several crops; hence, farmers will swap away from cotton if another crop fits their farming system; further unsettling supply.

In a stroke of irony, it is interesting that the start of the modern cotton industry was encouraged by a federal government subsidy to reduce costs of imports for local spinning mills. Owing to a high cost of labour and electricity, Australia has virtually no cotton spinning; nearly 100% of today's production is exported to Asia (Cotton Australia, 2021).

### **Case Study: English Fine Cottons**

English Fine Cottons (EFC) is one spinner that recognises a gap in the market and is producing a single origin yarn. EFC refuses to buy cotton from farmers they do not know and refuses to be bent on quality. Their customers include Burberry, capitalising on British nostalgia and local manufacturing as value proposition. They have steered away from certification programs, instead keeping their supply chain short and honour based. Limitations include a lack of scalability and accessibility.

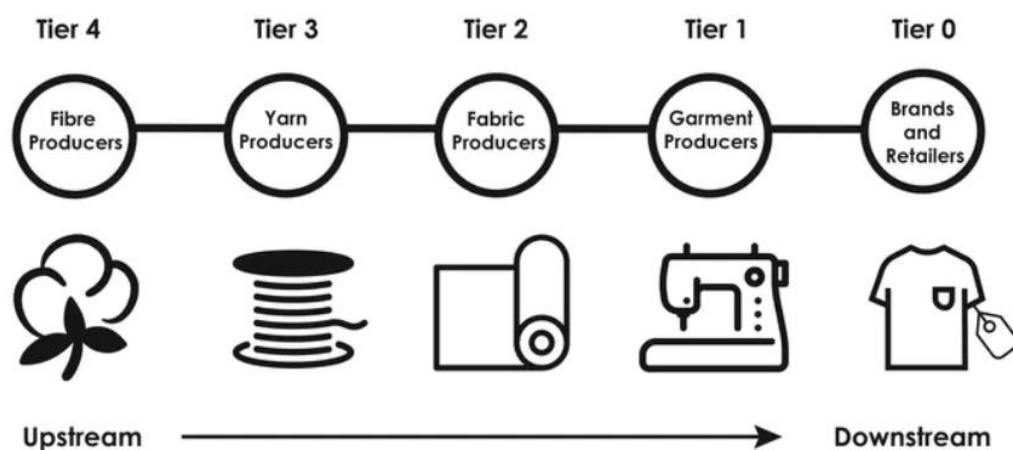
The parent company, Culimeta Saveguard, traditionally manufactured textiles for the automotive industry, particularly sound deadening sleeves for diesel motors on luxury vehicles. They recognise imminent disruption owing the adoption of electronic vehicles.

# Chapter 2: Who is the customer and what do they care about?

## 2.1 Long supply chain

Ultimately, the customers are citizens purchasing clothes, furniture and all manner of textiles. However, it is worth remembering that this has very little bearing on the price of lint at the farm gate. The author has observed Australian farmers focus on Australian customers and local perceptions. Although this does nothing to influence fiscal return, it does ensure market access and a social licence to operate.

Fashion Revolution (2020) estimate that a t-shirt will pass through 88 sets of hands before it reaches a customer. This lengthy value chain (Figure 3) disconnects sustainable producers from customers who share their values; likewise, customers who may be willing to invest in practices they support or virtue signalling.



**Figure 3: Textile Supply Chain. Source: Payne, A. (2019)**

## 2.2 Cotton and market share

Cotton has been struggling to maintain market share since the advent of man-made fibre (MMF). A 1960s wardrobe was comprised of 68% cotton, whereas projections for 2022 are 27% of fibre demand. In 2011 global prices reached a historical peak; this, coinciding with a trend towards “athleisure” or active wear; was deeply damaging to cottons market share. Synthetics simply were functional, fashionable, and cheaper (St. Clair, 2019). Being subject to

weather, cotton can fluctuate in quality and availability; synthetics; conversely, can be reliably produced at consistently low prices.

Many consumers find out about cotton via online sources. Like many 'facts' published on open forums, their authors have self-serving bias. Whether published by companies, non-government organisations (NGOs) or environmentalists, the information regarding cotton is overwhelmingly negative and inaccurate (Antoshak, 2020). Furthermore, traditional methods of news reporting and information sharing have drastically changed with the advent of social media. Reinforced biases of the eco-conscious customer amplify or indeed create issues around a certain product. It appears that conventional cotton is a casualty of unqualified and uneducated opinion.

Unfortunately, this criticism is not entirely baseless. Indeed, cotton has close historical ties to slavery and the American civil war. There is also no escaping that the production of cellulose based fibres requires the application of chemicals and fertilisers, nor that the land that could otherwise be used to grow food. Despite accounting for 2.5% of agricultural land globally, cotton production uses as much as 16% of all pesticides used and 4% of nitrogen and phosphorus fertilisers (Textile Exchange, 2018). Overuse of these inputs leads to soil degradation and water pollution.

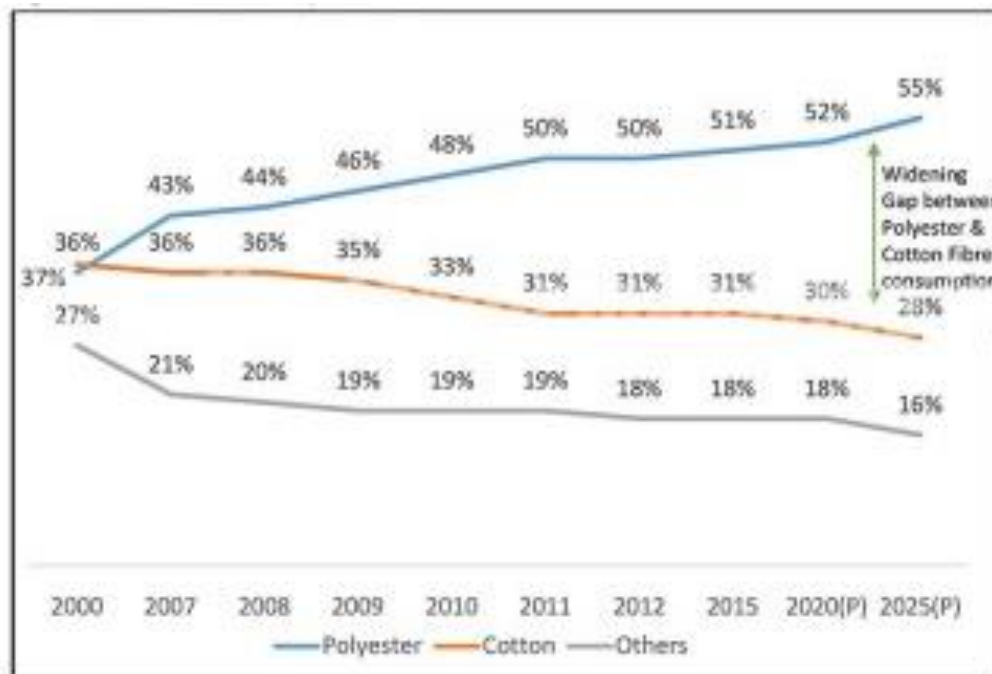
Overall place of clothing in the consumer budget must now compete with electronics and travel, relegating expensive 'natural' fibres to a luxury mind-set. For cotton, the challenge is how to tell a compelling story, while remaining price competitive. As seen in 2011, lint prices above 80c/lb can have drastic effect on overall demand for cotton; with spinners readily swapping to synthetics (Antoshak, 2020).

### **2.2.1 Active wear**

'Ath-leisure' and active wear has been a phenomena. The 'uniform' of the 80s and 90s was denim jeans and a cotton t-shirt, this has largely been replaced with various forms of sportswear comprised of MMF for stretch, durability and ease of product care.

Wide acceptance of MMF in end use categories like sportswear, leisurewear, women dresses, home textile, automotive, carpets and other industrial sectors has increased the market demand of MMF. As a result, polyester is expected to dominate textile markets in almost all

end use categories while cotton will slowly lose its share; from 31% in 2015 to 28% in 2025, while during the same period, polyester will grow from 51% to 55%, implying that by 2025 global consumption of polyester will be almost double than that of the cotton fibre (Figure 4) (PCI Analysis, 2019). It is unknown whether post-2025, a growing awareness around the environmental perils of micro-plastics, and the end-of-life problems with polyester will reverse the direction of this graph.



**Figure 4: Global fibre consumption trend Source: PCI Analysis, 2019**

## 2.2.2 Health, wellness and sustainability trends

Fashion is by its very definition, fickle, and one such trend is sustainability. Although this will mean different things to different people, the consensus is a general need to ‘do better’. Some fast fashion culprits are now exploiting ‘sustainability’ as a trend. For example, in 2020 Accessorize is advertising a “Vegan” collection; entirely free of animal products, but completely non-compostable; made at an undisclosed factory. The full impact of this product is potentially far more damaging to the environment, but an informed consumer will feel absolved of their environmental guilt. Known as ‘Greenwash’, occasionally companies making these claims are called to account and are often found wanting. Genuine sustainability initiatives in fast fashion retailers are commendable. However, the core of the issue is a business model reliant on overconsumption of under-valued goods.

Changes in consumer lifestyle like increasing emphasis on fitness, rising brand consciousness, fast changing fashion trends, increasing women participation in the workforce and hygiene consciousness are driving the trends in the end products. The impact of such trends is passed along the textile value chain which in turn has resulted in high demand of the fibres that can fulfil these requirements at affordable price. In this context polyester is the most cost effective and adaptable fibre. As a result, polyester is expected to dominate the global textiles in foreseeable future in almost all end use categories while cotton will slowly lose its share.

### **2.2.3 Fast fashion**

Fashion has long been an indicator of wealth or status. Enabled by mass production and briefly praised for its 'democratization of fashion'; "Fast fashion" is the practice of single use, low value items appealing to a flippant consumer. As celebrities have embraced 'disposable' clothing, they have unwittingly endorsed retailers such as H & M, Zara, TopShop, Boohoo and Primark; who aim to make cat-walk or celebrity styles available to ordinary consumers cheaply and quickly. The bargain hunter (or hunted); may have noticed an article of clothing on social media in the morning and can have it delivered by Amazon in the afternoon. Tragically, these garments may only be worn once; or not at all. Often goods are sold so close to the cost of production, the business is relying on sheer volume of sales. This marketing strategy is contributing to textile demand. However, it is creating a monstrous amount of textile waste, pollution and social degradation.

### **2.2.4 Textile waste**

Ideally, and simplistically, textile waste would be collected, sorted, composted, and re-made into garments and ultimately returned to the soils that produced the raw materials. Technology is available to recover fibres and recondition into new materials, though is constrained by a lack of recycling facilities and financial incentive; and will not succeed without government intervention. Locally, there is a thriving second-hand / thrift store trade, laying a solid foundation in the steps towards a circular economy.

The United Kingdom (UK) and Europe are addressing textile waste with recycling incentives and tariffs on garments unsold that are destined to landfill. This radical approach is expected to generate £35 million which will be re-invested in salvaging or reprocessing. Locally, legislation against single use plastic bags was introduced in Queensland in 2018. Although this

is a blunt instrument; regulation has reduced wasteful choices of consumers. As society continues to shamelessly discard unwanted clothing, perhaps a signal from government would curb these habits? After conducting feasibility studies in Goondiwindi, Coreo Circular Economy Explorers (2019) believe there is great potential in recycling cotton trash (produced at ginning) and also discarded clothing in Australia's south-east. Effective textile recycling is unlikely to curb global demand for raw lint. Due to its biodegradability, virgin fibres will always be required to strengthen yarns.

## **2.3 The rise of slow fashion and conscious consumers**

In 2013, the collapse of Rana Plaza in Bangladesh brought the true impact of fast fashion to contemporary consciousness. The unsafe factory housed approximately 2,000 employees making clothes for iconic western brands such as Zara and Primark, when it dramatically collapsed, killing 1,134 factory workers (Fashion Revolution, 2020). Fashion Revolution argue that the Rana Plaza tragedy was the *“direct result of the opaque, complex and speedy way in which the industry functions today”* (UK Parliament, 2019). This disaster shocked the collective conscience of consumers and decision makers, accelerating efforts to uphold the rights of workers throughout the apparel industry. Customers began demanding more information around sourcing, supply chains origins of their ‘cheap’ fast fashion fix. Historically, import quotas and protectionism restricted the global trade of textiles and apparel. When the World Trade Organization eliminated restrictions, retailers and apparel companies expanded supply chains to inferior producers. Subsequently, manufacturers and retailers have ‘chased the needle’, seeking the lowest cost of production. Unintended consequences include exploitation of women and children as factory or field workers.

Baptist World Aid (2020) responded to the Rana Plaza disaster by publishing an Ethical Fashion Report. This publication assesses each company's ethical sourcing system according to 44 specific criteria, located at three critical stages of the supply chain: raw materials, inputs production and final stage manufacturing. Their annual report is now an influential ‘naughty and nice’ list, guiding purchasing decisions for millions of consumers.

Mentioned specifically in the *“Fixing Fashion: Clothing Consumption and Sustainability”* report from the Environmental Audit Committee in UK Parliament (2018); Modern slavery is cited as one of the major issues in the fashion supply chain. *“It is a widely accepted fact that*

the nubile fingers of children are preferred in the organic cotton fields of India” (Press, C., pers. comm., 2018).

Many companies now conduct self-imposed supply chain audits and addressed problematic business partners. If brands are not actively distancing themselves from certain production regions or practices, they are condemned as complicit.

### 2.3.1 Fashion and the United Nations

Australian producers have a unique opportunity and willingness to collaborate, especially in environmental and social arenas. Cotton Australia has acknowledged there are many synergies between Australian grown fibre and the United Nations Sustainable Development Goals (Figure 5) (Cotton Australia, 2019).



**Figure 5: Sustainable Development Goals. Source: United Nations**

However, Goal 12: Responsible Consumption and Production, is a major challenge for fashion retailers. Many business models rely on rampant consumerism and exploiting a human desire to follow trends. Even businesses with the most genuine commitment to sustainability and ethics require economies of scale and stock turn over. There is a complicated calculation when considering the economic development opportunities industrialisation brings to a nation. It is possible to achieve this balance.

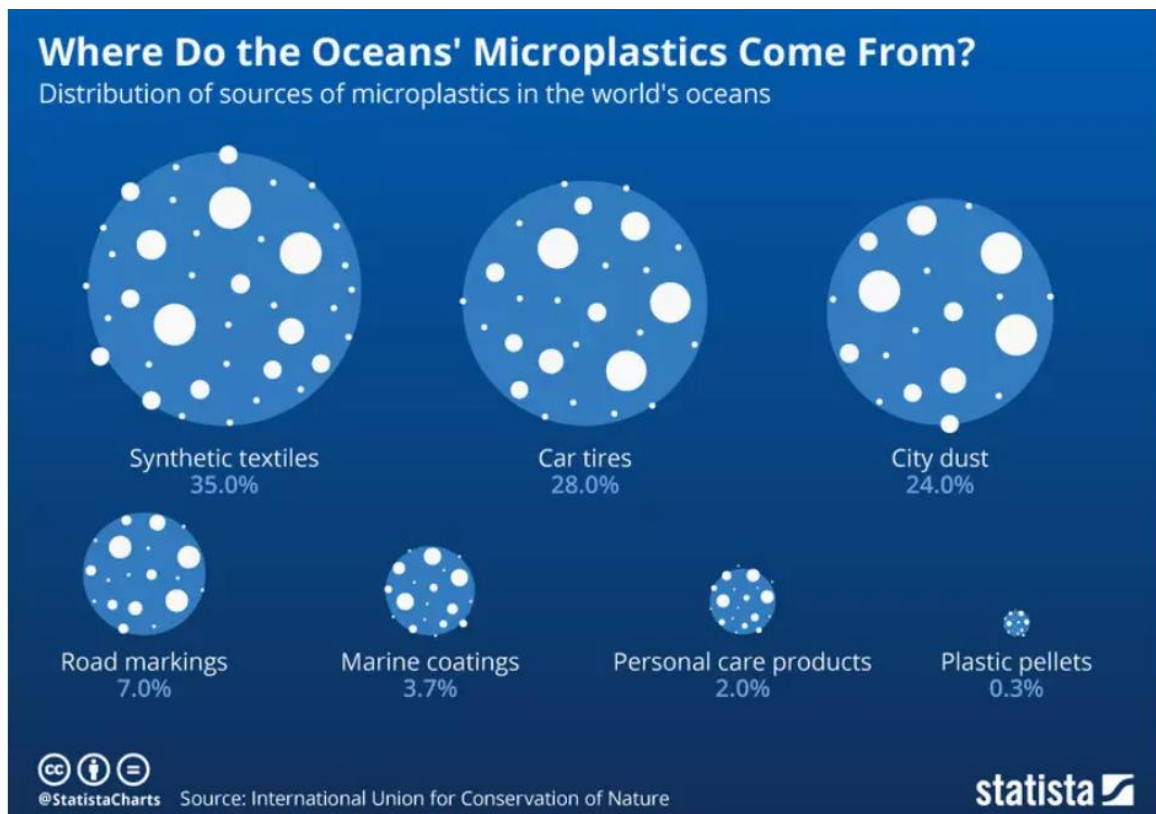
The fashion industry is responsible for *“around 10% of all global greenhouse gas emissions due to its long supply chains and energy intensive production,”* according to the United Nations Framework Convention on Climate Change. These very statistics were quoted by Alice Payne, Queensland University of Technology (QUT), when discussing the future of fashion. Design colleges are leading the charge in educating the next generation of influencers to lessen their climatic impact.

### **2.3.2. Environment and microplastics**

Microplastics are less than 5mm and their significance globally is impossible to measure accurately. There is a growing amount of concern that the world’s oceans are harbouring thousands of tonnes of virtually invisible plastics. Some particles are so small, they are likely to enter the food chain and have been found to cross the blood-brain barrier in fish (CSIRO, 2019).

Dr Mitchell from CSIRO highlights this a positive point of difference for cotton. *“Cotton is a natural, renewable fibre unlike synthetics which are made with petrochemicals. Every time you wash synthetics like polyester and nylon, thousands of tiny microfibers of material are pulled free and enter our waterways. These are not degradable and can build up in the food chain”* (Figure 6).

There is certainly a place for synthetic materials, especially in the case of materials requiring constant and vigorous use. A small percentage of polyester, spandex or nylon, for example, can provide essential performance properties, or a chair on public transport can be utilised thousands of times over; while maintaining a fresh and tidy appearance. Regrettably, these fabrics are often derived from finite, petroleum-based sources.



**Figure 6: Sources of microplastics in the world's oceans Source: Statista, 2021**

If the average consumer in the developed world was cognisant of the perils of polyester, they would likely preference natural fibres for their ability to be recycled and lower carbon footprint. Greater consumer awareness of this, supported by price signals implemented by government, is the only way to progress to a truly circular and sustainable fashion industry. In poorer nations, price is will remain the overriding factor in textile choice.

Cotton Seed Distributors and CSIRO have a 30-year partnership that has seen Australian cotton reduce pesticide use by 85% and herbicides by 60%. The team are working on a cotton that mimics the properties of synthetics, but maintains biodegradability (CSIRO, 2018). Nylon and polyester is cheap, fast, will stretch, and doesn't need ironing. However, being derived from non-renewable petrochemicals is a major environmental drawback. Coupled with the issues of microplastics, there is an environmental imperative to bring these new fibres to market. This could well become a 'silver bullet', but to be truly sustainable, it is vital to overcome the existing supply chain issues of blending and substitution, which are compounded by the lack of onshore processing resources.

In the time it takes to develop 'stretching cotton', the industry needs to alert the consumer to the perils of synthetic fibres. At the risk of being negative and simply throwing rocks at other materials; a guerrilla campaign of advertising may contribute to maintaining market share. Secondly, broader engagement with large buyers of textiles (such as government) could stem the consumption of synthetics. If each school mandated cotton only uniforms or hospital purchased cotton-only sheets, that could solve a double-sided problem.

# Chapter 3: Defining Sustainability

## 3.1 Certifications and Identity cotton

As awareness around 'sustainability' grows, brands are turning to any source they can find. Through this information vacuum various players have emerged, many who have vested interests. There are 22 different programs listed on the preferred cotton matrix compiled by the Textile Exchange (2020). Textile Exchange is an influential membership platform 'helping to navigate the complicated maze of textile industry'. They display an unapologetic bias towards organic production and offer certifications of "responsible" down, leather, mohair, wool and bio-synthetics.

As well as creating confusion, customers are often unaware that certifications may only highlight one part of the supply chain. For example, organic production may also include children as part of a labour force, or require chemical dyes or softeners on the final product and finishes. Just because there is 'one feature', such as organically grown does not equate to a wholly 'more sustainable' product.

### 3.1.1 myBMP, Australia's sustainability proposition

It is not just government that holds industry accountable. Increasingly, societal pressures drive reform. Inaction can result in an extreme government response that not only increases regulation, but also impacts trade and market opportunities. Examples include the proposed EU palm oil ban in 2018 or the ban of the live cattle trade in 2011.

Hence, the Australian industry is regulated by laws and is self-governing through a world standard Best Management Programme, known as myBMP. The BMP was developed in the 1990s in response to community concerns regarding pesticide use in cotton fields. Initially a document to defend social licence, it has now morphed into a standard 'championing environmental standards', technology adoption and social contribution. It is acknowledged as reciprocal to other sustainability standards such as CottonLEADS and the Better Cotton Initiative (BCI). Anecdotally, certified BCI bales attract a premium between AUD \$2 and \$5/bale. Rabobank has found that attracting a price premium is the leading driver to participate in voluntary sustainability standards (Twomey, 2018).

### 3.1.2 Organic cotton

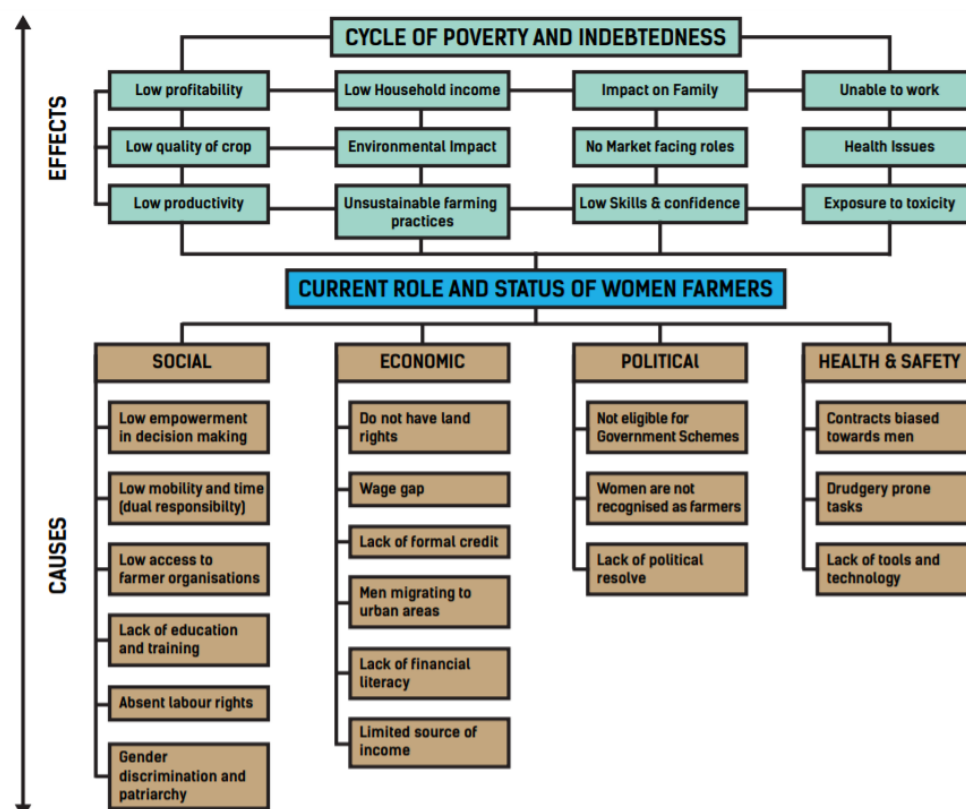
Average consumers perceive organic as better for the environment and health. Organically grown cotton is highly palatable to a brand and consumer. Unfortunately, it is prone to fraud and substitution. Nineteen countries currently produce organic cotton, with 92% grown in the following countries: India (67%), China (12%), Turkey (6%), Kyrgyzstan (5%) and the USA (2%) (Textile Exchange, 2018). With the exception of the USA, there are murky connections between growers, accumulators, processors and traders. A genuine 'organic' standard is not clear. Figure 7 compares varying standards highlighting that without certification many claims of 'organic' are unvalidated. Certifying body Textile Exchange are constantly updating their database of companies they have blacklisted for unsubstantiated claims of organic cotton.

#### How do the GOTS and OCS organic certification standards compare?



**Figure 7: Comparison of the Global Organic Textile Standard and Organic Content Standard certification standards. Source: Textile Exchange, 2020**

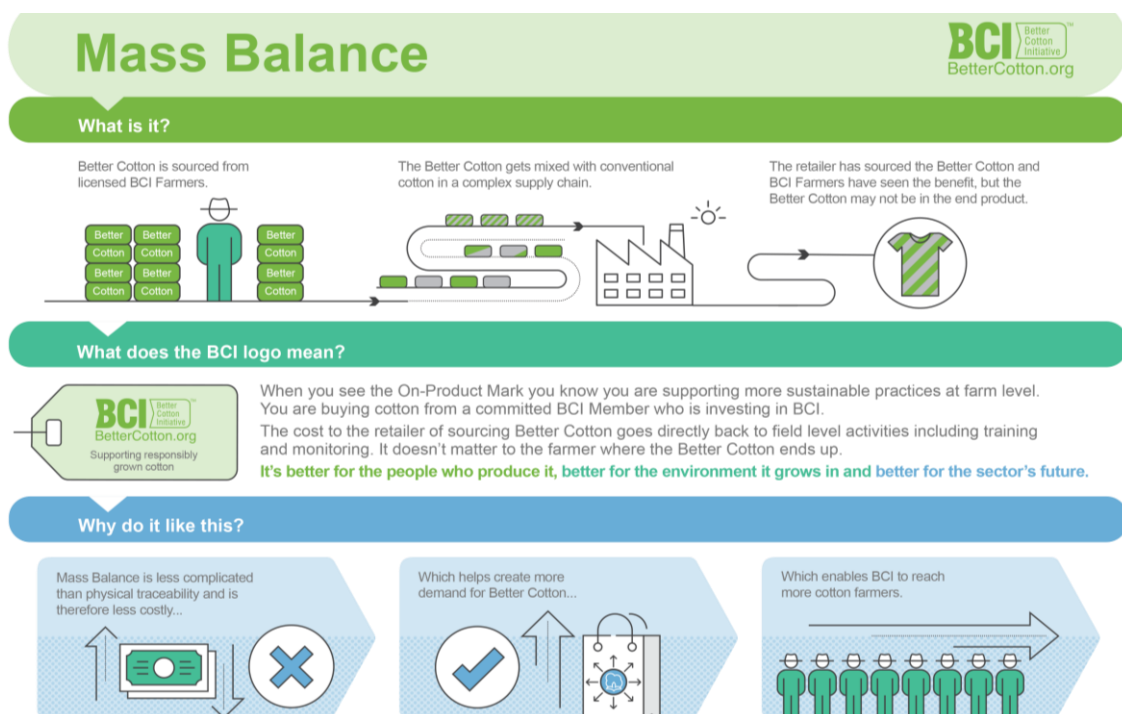
Greenwashing is rife in this space. One promotion claims that: *“Organic farmers use soil management techniques such as crop rotation, green manures and cover crops to naturally boost the soil. Cover crops not only improve soil fertility but they can also reduce soil erosion, as their roots hold soils in place. They can also mitigate the effects of drought in the long-term by preventing evaporation of moisture and improving soil structure, thereby improving their ability to absorb more water”*. While this is commendable, it is not exclusive to organic farming. One could argue that many conventional Australian farmers are dedicated to these practices but are constrained by water and embrace GMO technology, negating the opportunity to align with a customer’s perceived desires.



### 3.1.3 Better Cotton Initiative (BCI)

One of the simplest steps to improve sustainability credentials is the adoption of minimum sourcing targets or through certification. Owing to inconsistencies between production regions and their local practices, a voluntary standard that exceeds simple legal requirements is one method of providing assurance. These straightforward systems have been widely embraced by the textile industry, growing from 1% market share in 2008, and assumed to certify 30% of the world's cotton by 2020 (BCI, 2020). Grown in conformity to a standard, this offers brands protection from scandals, but is not necessarily seeking premium status, lifting 'baseline' producers towards achievable targets.

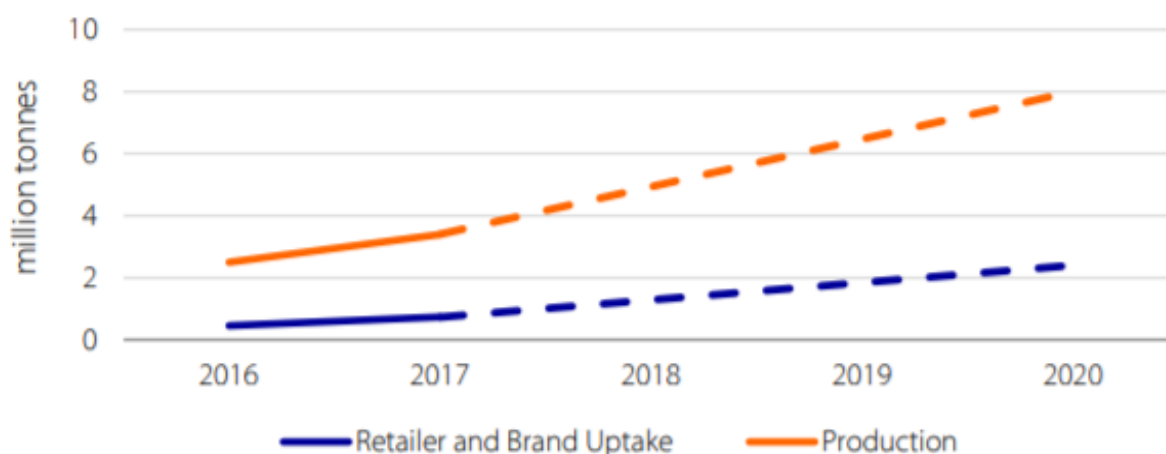
BCI operates on a mass balance system (Figure 9). It aims to demonstrate that multiple stakeholders working together can shift a global system so sustainability becomes the mainstream. BCI has been endorsed by some of the world's largest consumers of raw cotton such as IKEA (1%) and is currently 19% of global cotton (BCI, 2020). Better Cotton Claim Units are applied at the gin but are not physically connected with the fibre. These credits can be bought and sold similarly to any other commodity. This is a transitional model as technology and traceability increase. As the cotton and the credits are separate, it is more affordable than tangible tracking.



**Figure 9: Better Cotton Initiative Summary Source: BCI website 2020**

Affordability is key to scaling this system. It seems a win-win: companies can satisfy social demands, consumer preferences, and brand protection, but are not sacrificing profits. This strategy has its foibles and detractors, but it is certainly having an impact on volume.

Modules on employee management, pesticide and fertiliser use, soil health, water efficiency, energy, work-place health and safety and demonstration of continuous improvement give a comprehensive assessment of a business's impact. For many cotton producing nations, BCI accreditation indicates a large variance from standard growing practice, basically requiring it for market access. Brazil is the biggest supplier of BCI cotton. As this country is familiar with international scrutiny regarding the Amazon Rainforest they have proactively invested in certification. As Brazil seeks to shake its history of extractive industries and be seen as ecologically responsible, a recognised endorsement is vital to improving their social licence and trading options. Conversely, Australian agriculture exceeds minimum standards on many fronts, the primary motivation for growers to enrol in BCI is a bale premium. Unfortunately, as the production of BCI Cotton outstrips demand, this is unlikely to be realised (Figure 10).



**Figure 10: Supply of certified BCI cotton forecast to outstrip demand making attracting price premiums difficult. Source: BCI, 2017**

Aimed at the lowest common denominator, BCI is a great tool to improve outcomes in developing nations. However, aligning Australian cotton with BCI equates our highly regarded and sustainable fibre with producers who are simply seeking market access.

Presently, financial incentive is the primary motivator for growers to complete certification. This is unlikely to be realised as supply outstrips demand. Furthermore, BCI is only recognised

by discerning customers and does not further awareness of cotton growing or genuine sustainability in the Australian context, hence, will not improve local social licence.

The author does not recommend abandoning BCI, however, a logical step would be to lobby to have all Australian grown cotton included in the platform. Accreditation of the whole industry acknowledges that regulatory standards, proven water and pesticide use, management of natural resources and human rights standards are world leading.

#### **3.1.4 Upland vs Egyptian long staple**

‘Identity fibres’ refer to materials that are recognisable either by geography, quality or variety. Most cotton grown in Australia are “upland” varieties and are generally not differentiated. The typical use for Australian cotton is blending with lower quality lint; and high-quality shirting fabric. Geographical indicators are as active in textile markets as food. Egyptian cotton is long regarded as the gold standard of quality and marketing, however, very little of this highly recognisable brand is actually grown in Egypt. An Egyptian Cotton mark guarantees the product is made of 100% *Gossypium barbadense* variety. Also referred to as Suvin, Sea Island or Pima, all brandings are defined as Extra Long Staple (ELS) cotton, a silky fibre longer than 34mm. This lends itself to higher thread counts, finer quality fabrics, and a significant price premium. This perennial crop has lower yields and more specific climatic requirements, mostly not prevalent in Australia (Cotton Seed Distributors, 2019).

Ginning facilities also dictate the growing of ELS vs Upland. The machinery used to separate the lint from the seed is vastly different for each style. A roller gin (used for ELS) is significantly smaller and more energy intensive; but much gentler on the lint. Nearly all ginning facilities in Australia are saw gins, further limiting the viability of this category of cotton production (Back, pers. comm., 2019).

#### **3.1.5 Carbon neutral**

Examples of cities, businesses and nations aiming for carbon neutrality are plentiful. When the luxury French fashion house Kering, declared its goal to be carbon neutral across entire supply chain, the business was honouring their ethos of ‘care, create, collaborate’. As the parent company of brands such as the parent company of Gucci, Alexander McQueen and

Saint Laurent, they are an industry heavyweight, leading in areas of ethical design and luxury marketing.

Farming enterprises contribute about 20% of Australia's total greenhouse gas (GHG) account. QUT has developed a calculator to estimate farm-based emissions (QUT, 2020). Though this tool is based on the best available information, it is not definitive. There is an element of uncertainty associated with estimating GHG emissions from ecosystems and agriculture.

In 2011, Kering developed an 'Environmental Profit and Loss' methodology to attribute a financial figure to environmental impacts of the brand and have proactively been linking 'sustainability and luxury' (Kering, 2020). Brands are strengthening their language regarding climate change. Helen Crowley, Kering's Head of Sustainable Sourcing and Innovation, said *"We can no longer wait to take real action. We all need to step up as businesses and account for the greenhouse gas emissions that we generate in total"*. Carbon Neutral heralds a new standard of environmental awareness and platform for improvement. The group is aiming to mitigate carbon by investing in renewable energy, purchasing carbon-neutral raw materials and purchasing offsets for unavoidable emissions; equating to a US\$8.4m investment.

The maintenance of soil organic carbon in terrestrial ecosystems is critical for long-term productivity. Cotton has a great opportunity to step forward as a carbon positive crop. Presently, farmers have access to remuneration for sequestration or abatement through Australia's Emissions Reduction Fund. At the risk of adding further confusion to a saturated identity cotton market, carbon positive is a gap in the market. An additional level in myBMP may future proof the industry.

### **3.1.6 Environmental profit and loss**

To communicate with business leaders, Kering Group have commissioned Price Waterhouse Coopers to devise an environmental profit and loss (EP&L) accounting methodology to evaluate the entire value chain (Figure 11). A tool such as the EP&L frames the conversation in a business context, causing CFOs and CEOs to pay attention, and enables a more objective view of meeting goals and targets.

## UNDERSTANDING OUR FOOTPRINT

TO MEASURE OUR TRUE ENVIRONMENTAL FOOTPRINT WE EXAMINE:



AND TO REALLY UNDERSTAND OUR IMPACT  
WE ANALYSE THESE FACTORS THROUGH OUR VALUE CHAIN:



**Figure 11: EP&L metrics as according to Kering. Source: Kering, 2020**

Helen Crowley claims Regenerative Agriculture (RA) is the way forward. Kering defines this as a system of farming principles and practices that “*seeks to rehabilitate and enhance the entire ecosystem of the farm by placing a heavy premium on soil health with attention also paid to water management, fertilizer use, and more. It is a method of farming that can improve the resources it uses, rather than destroying or depleting them*”. Kering acknowledges that fashion is deeply tied to agriculture and we need to commune more with farmers. While these statements are well intentioned, these statements do not demonstrate a tangible understanding of agribusiness or farming.

### 3.1.7 Biodiversity

Many farms are naturally rich in biodiversity, and this is an area of environmental concern fashion is awakening to. Farmers recognise the value in healthy eco-systems, as it is elemental to integrated pest management, strong water ways and productive soils. The real task is to effectively publicise this. An industry-wide approach to mapping and measuring and communicating these areas of shelter would engender discussion and positive engagement with environmental groups.

### **3.2 Minimising GHG emissions on farms**

Agriculture is under pressure to minimise GHG emissions. As well as societal benefit, diesel, electricity and fertiliser are significant on-farm costs. QUT (2019) (supported by Cotton Research and Development Corporation) have a Cotton GHG Calculator available to help growers identify and action savings on their carbon footprint and improve profitability. The 'low hanging fruit' for energy saving practices include pump efficiency, transitioning from conventional to minimal tillage systems and streamlining larger operations such as picking. The biological release of emissions due to application of nitrogen fertiliser and soil disturbance can also be determined using this calculator.

Manures and waste products as a source of fertiliser are becoming mainstream. The most common barrier is location (distance between source and farm) and soil type. As more farmers embrace manures or compost, this has become an additional income stream for intensive animal farming. Australia is in a unique situation regarding nutrient management. In some parts of the world, stocking densities are constrained by their capacity to manage by-product. Having a much higher ratio of arable soils to nutrient production is a great opportunity for Australia to become more integrated and circular in our approach to nutrient management.

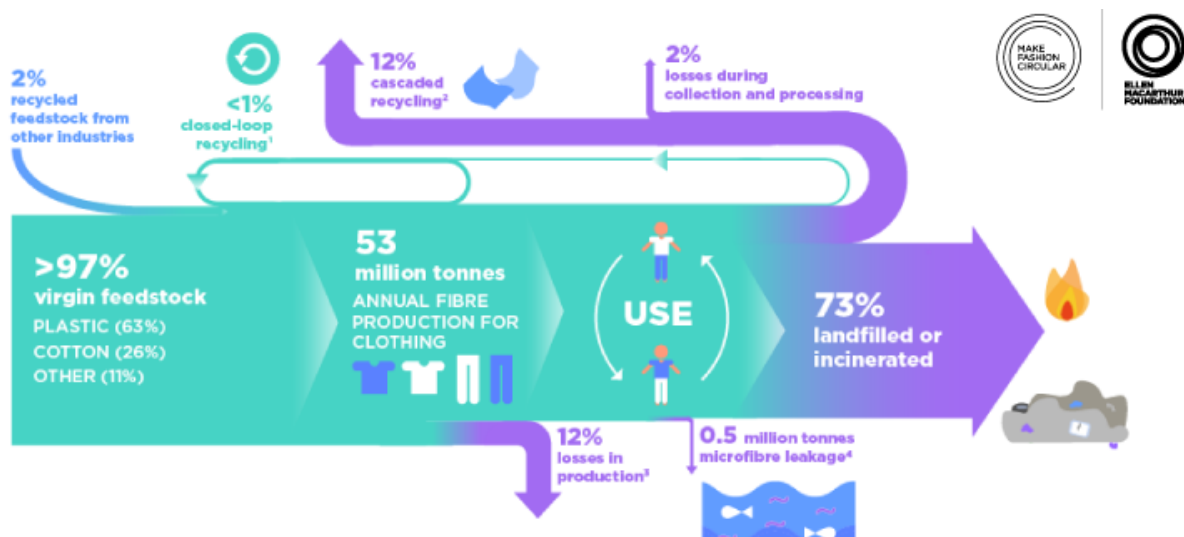
### **3.3 Circularity and opportunities**

Also known as 'cradle to cradle', circularity is heralded by QUT Creative Industries Lecturer Alice Payne, as a new era of sustainability (Figure 11). An estimated \$500 billion worth of value is lost every year due to clothing that are barely worn and rarely recycled, and if this continues, the fashion industry will continue to use 25% of the world's carbon budget. Australians are among the world's worst textiles waste culprits, throwing away 23kg of clothes each annually (Milburn, 2020). Until now, the tsunami of unwanted clothing has been held back by secondary markets, where clothing is resold into developing economies. These traditional markets are collapsing under the sheer volume of unwanted clothing, rendering them unprofitable. Globally, 87% of unwanted textiles are sent to landfill or incinerated, some of these garments have never been sold or have only be worn once; 12% is mechanically recycled by cutting or shredding into fibre, insulation material or rags, as this is the 'end of

life', this is colloquially known as "Down-cycling"; and the final 1% is chemically recycled back into raw materials (Textile Exchange, 2018).

Present consumption models are linear. This historical model operates on a one-way path from production to waste. Circularity acknowledges there 'is no such thing as waste', and maintains value even after an article has served its first life. The Ellen Macarthur Foundation (EMF) are leading the charge in defining circularity and activating businesses to adopt strategies to reduce waste (Figure 12). The EMF even urges farmers to adopt RA, despite no known supply chain segregation for this.

An analysis of global material flows of textile fibres by the EMF found that just 13% of the fibre input for clothing is recycled. Less than 1% of this is closed-loop recycling, for example; fibre recycled back into clothing, rather than into lower value uses, such as cleaning cloths and insulation. This is estimated to equate to an annual material value loss of more than \$100 billion (Ellen MacArthur Foundation, 2017).



**Figure 12: Make Fashion Circular. Source: Ellen MacArthur Foundation**

Swedish brand H&M has committed to eliminating virgin plastics from its supply chain by 2050. This has led to a boom in the rPET (recycled polyethylene terephthalate). According to their 2018 Sustainability Report, they recover 325 million plastic bottles annually; making H&M the sixth largest consumer of rPET in the world. On face-value, this is a positive example of embracing circularity; however, this trend ultimately increases demand for rPET.

Unfortunately, rPET remains a derivative of fossil fuels, typically gas and petroleum with a breakdown time of hundreds of years.

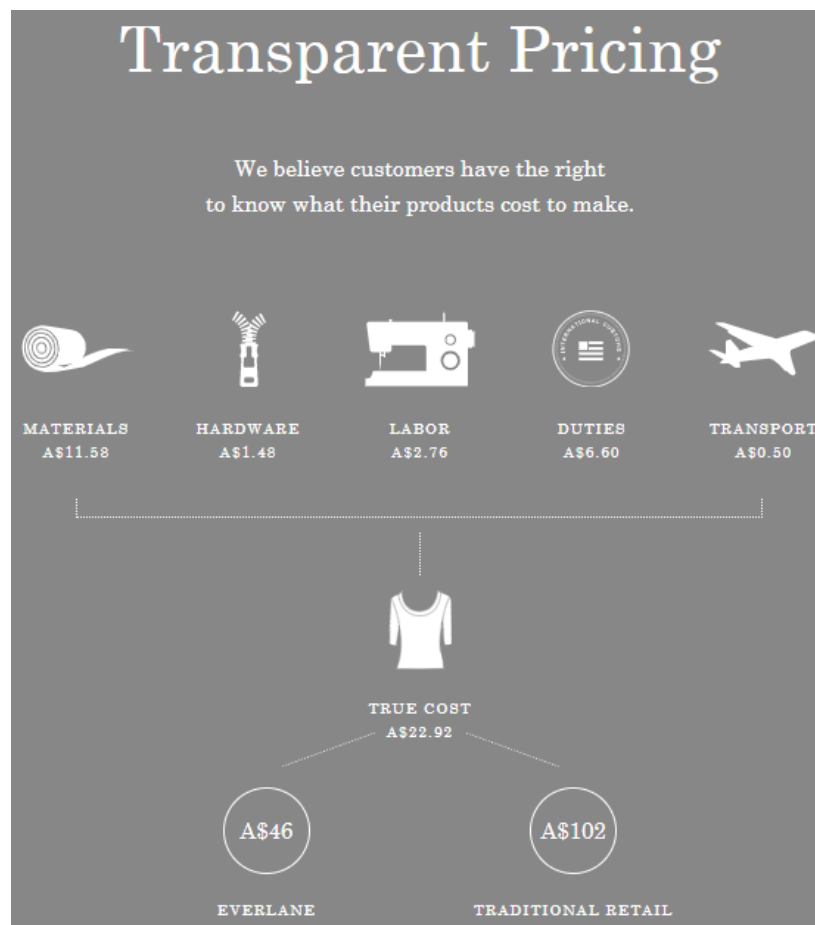
To realise the goal of circularity, the company has invested in UK based start-up Worn Again Technologies and USA company Moral Fiber. Recognising the latent value in textile waste, H&M is collecting used items at their stores for reuse and recycling. 2019 saw an increase of 16% in collections to over 20,000MT of textiles (Rhodes, pers. comm., 2020).

In seeking solutions to the “wicked problem” that is textile waste, circularity appears to be a saviour for the fast fashion model. Clare Press (pers. comm., 2020) observes that this has unwittingly given brands such as H&M the opportunity to continue with their ‘overconsumption’ model, while simply marketing themselves as ‘sustainable’. A recycling programme does not absolve all environmental crimes.

## Chapter 4: Transparency and Traceability

Price, quality and fashion were once the holy trinity for consumer purchasing decisions. Today brands must add transparency and traceability to the mix. For some consumers, how a garment is made is nearly as important as material or price. Food producers have actively pursued a 'paddock to plate' trend and model. The success of this segment demonstrates customers' eagerness to engage with the source.

"Radical transparency" is the catch cry of Everlane, an online retailer with no physical shopfront (Figure 13). Each step of production is detailed explicitly, including costs and mark-up. Against the trend of retail decline, they have prospered and grown. Their market is 'the affluent millennial'. This model presents an example of a successful disruption of 'business as usual'. As this space moves rapidly, there are brands whose entire proposition is founded on transparency. Everlane itemises costs of the entire supply chain, then draws comparisons, allowing customers more informed purchasing choices. desire to engage with the source.



**Figure 13: Everlane Transparent Pricing. Source: Everlane**

## **4.1 Traceability**

When accountability extends from government to the customer, businesses are motivated to improve practices and substantiate their claims. However, with an additional layer of administration, or extra value proposition, the question is “who is going to pay for this?” Indeed, some of the technology available is quite expensive and will not service a low-cost consumer. However, in products that are high value, but susceptible to fraud and lengthy value chains; there are many platforms, offering to guarantee product integrity through technology.

### **4.1.1 Oritain**

This verification uses’ forensic technology to identify fibre origin. Samples of the product are analysed, then matched to a DNA profile of the source. After the “Oritain footprint” is established, Oritain can conduct testing against a product to establish consistency with its claimed origin. This certification is incorruptible but expensive. The Country Road Group has partnered with the large corporate cotton producer, Auscott, to bring their cotton to customers, specifically through their nostalgic and patriotic “Heritage” line of t-shirts and jumpers (Spellson, pers. comm., 2020).

### **4.1.2 FibreTrace**

FiberTrace is an Australian tech-start up, requiring a rare earth mineral be applied to the fibre at ginning. This is then tracked through the value chain using blockchain. This boasts a consumer-facing module, which can show the journey of a product from start to finish through augmented reality. This is presently available for application at Wathaga Gin near Moree, New South Wales with the Sundown Pastoral Company (Danielle Statham, pers. comm., 2021).

Well known Australian label, Nobody Denim has taken a survey of customers and their willingness to invest transparency. Their “Truth Jeans” project illustrates the desires of customers and supports investment in traceability (Figure 14 and 15). By creating two similar articles, with the difference being a 20% premium for promise of traceability back to the farm. Overall, the advertisement for “Smart Jeans’ had a more engaged response, with 10% more ‘clicks’ and 5% more commitments to purchase.



Our Jeans Collection - coming soon



### Good Jeans - £48

Good Jeans are made in the most sustainable factory in the world from cotton approved by the Better Cotton Initiative. We design for style, fit and comfort with sustainable manufacture front of mind.

Our mission is to create the best pair of jeans that don't cost the earth.

RESERVE GOOD JEANS



### Smart Jeans - £58

Smart Jeans have the same great fit and colour as our Good Jeans, but we can guarantee their provenance by tracking their journey from a seed planted in the world's most sustainable cotton farm in Australia right to your door.

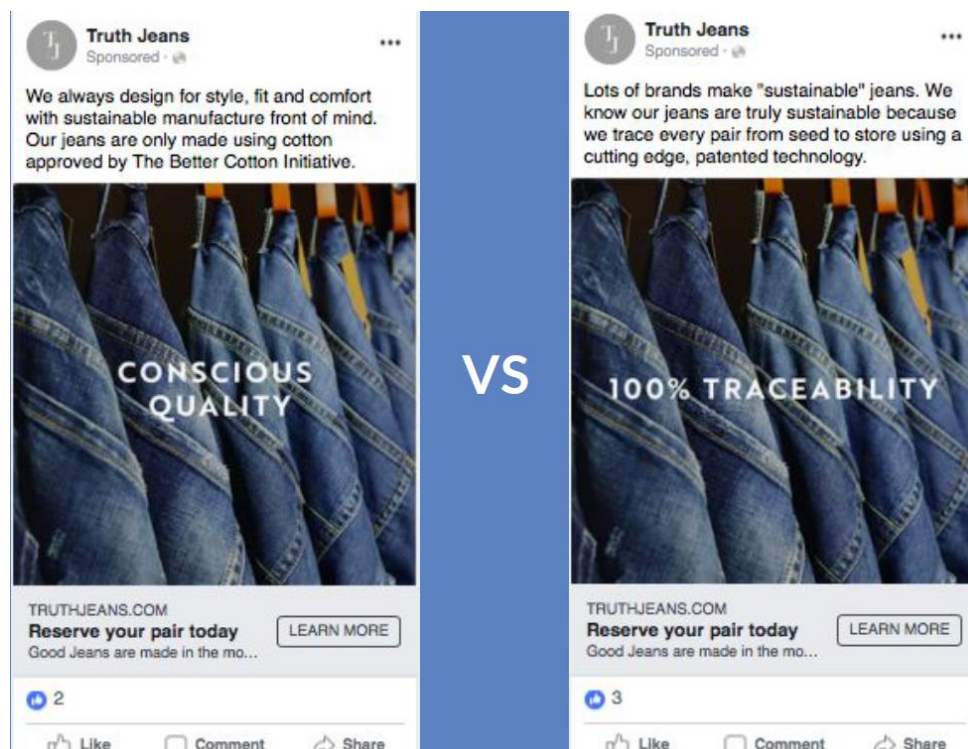
We're the only denim manufacturer who can do this.

We can prove our jeans are sustainable because we can track the cotton fibres all the way through the manufacturing process, using a new patented technology.

Your pair of Smart Jeans comes with a full personalised passport, so you know exactly where they have been, who made them and the environmental impact they have had.

RESERVE SMART JEANS

**Figure 14: Nobody Denim Article. Source: Danielle Statham 2021**



**Figure 15: Nobody Denim Article. Source: Danielle Statham, 2021**

## Chapter 5: More Than Clothes: BCorps

According to MindShare London advertising analyst, Ross Montagne, Corporate Social Responsibility is a basic assumption. Brands have identified purpose and virtue signalling as a valuable marketing tool.

Certified B Corporations are a new kind of business that balance's purpose and profit. They are obliged under the B Corp Standard to consider the impact of their decisions on their workers, customers, suppliers, community, and the environment (B Lab, 2021).

As customers demand more than lip service, they seek to 'vote every day'. As part of self-expression, customers buy a story and invest in principles. To align with this, industry might consider an industry wide pledge renouncing modern slavery, acknowledging its unfortunate presence in textile production, and undertaking to continue to empower individuals and communities through awareness and education. Although safe workplaces and employees are covered in myBMP; human rights and exploitation are extremely topical and emotive issues deeply intertwined with textiles. A separate statement covering the entire industry could engender more awareness and evoke a beneficial response from brands. The mechanics of each grower, merchant, supplier, advisor, researcher signing onto such a document would be a logistical challenge, but possible as an attachment to levy payments or a campaign from industry groups.

### Case Study: Outland Denim

A local success story is Outland Denim, jeans "made on purpose". Their social mission is to rescue victims of human trafficking, provide them with skills, employment and henceforth empowerment. Zero exploitation is a difficult standard to maintain, but close engagement with the supply chain and extremely strict vetting of their team, including any external contractors, suppliers or retailers.

James Bartle (Founder) is well versed on the complexities of the cotton supply chain, and personally believes conventional cotton to be more sustainable. However, in serving a customer and attracting crowd-funding; they are required to align with prevailing conceptions and values. In this case, organic cotton sourced from Turkey serves their needs. The brand

has considered using Australian cotton, however, in its infancy, is unable to take on brand risk.

Bartle advocates the great opportunities consumerism presents. Instead of donating to causes and feeding a charity cycle, he's calling for us to create products that serve a higher purpose, letting the customer support the artisans, and their families, out of poverty.

# Conclusion

The Australian cotton industry is not a volume producer, nor is it a producer of known niche fibres. Australia's sustainability and social proposition is strong through existing programs including myBMP, CottonLEADS and the Better Cotton Initiative (BCI).

Traditionally, a cotton grower's customer is a spinning mill buying raw lint as a bulk commodity. The advent of a discerning customer and technology to trace raw materials to the source is changing this. Being that Australian cotton has already done the heavy lifting regarding water, pesticide and energy use, the industry is well placed to align with a conscious customer.

*"Naturally the world's best"* is the 2030 vision of Cotton Australia. This resonates with growers and buyers alike. Broadly, industry goals and strategic plans are achievable and relevant. Industry bodies are constrained by funding, especially during years of limited production. Cotton Australia presently has a very broad remit, and with the limited resources they are allocated, are performing in the best interests of growers.

Australian cotton farmers can become carbon neutral, stepping forward as a carbon positive crop to further enhance the sustainability of the industry. An additional commitment to more biodiversity and environmental stewardship adds to industry competitiveness. Existing certification schemes are effective at improving the lowest common denominator, but also adds confusion to the customer.

As fashion becomes more circular, the Australian cotton industry will still need to compete with synthetics. In the time it takes to develop 'stretching cotton', the industry needs to alert the consumer to the perils of synthetic fibres. Broader engagement with large buyers of textiles (such as government) could stem the consumption of synthetics.

# Recommendations

The Australian cotton industry has unique points of difference such as a known carbon account, zero modern slavery, transparency and traceability. To remain competitive, unity between growers, policy makers and influences are key. Other recommendations include:

- **Generating awareness of synthetics (microplastics) versus cotton**

Greater consumer awareness of the carbon footprint of synthetic fibres, supported by price signals implemented by government, could ensure a circular and sustainable fashion industry. A guerrilla campaign of advertising may contribute to this, and schools mandating cotton only uniforms or hospital purchased cotton-only sheets could also assist.

- **Recognising all Australian cotton as BCI**

Have all Australian grown cotton included under the Better Cotton Initiative (BCI) acknowledges that regulatory standards including proven water and pesticide use, management of natural resources and human rights standards are world leading.

- **Account for the carbon footprint of the whole industry**

Cotton has a great opportunity to step forward as a carbon positive crop. An additional level in myBMP may future proof the industry.

- **Recycling strategy for textile waste**

There is potential in recycling cotton trash that is produced at ginning, as well as discarded clothing. However, effective textile recycling is unlikely to curb global demand for raw lint as due to its biodegradability, virgin fibres will always be required to strengthen yarns.

- **Local manufacturing to capture value in our provenance as a single origin yarn**

The only thing standing between Australian cotton and full traceability is cost. Local manufacturing, to produce a 'single origin yarn' would negate the need for investment in block chain as the supply chain would be drastically shorter.

- **Sell the sector as world-leading**

Farmers recognise the value in healthy eco-systems as it is elemental to integrated pest management, strong waterways and productive soil. Publicise this through an industry-wide 'mapping, measuring and communicating' approach to engender discussion and create more positive engagement with customers.

- **Industry wide pledge**

Human rights and exploitation are topical and emotive issues intertwined with textiles but an industry wide pledge renouncing modern slavery and highlighting safe workplaces is suggested. The mechanics of each grower, merchant, supplier, advisor and researcher signing this document would be a logistical challenge, but possible as an attachment to levy payments or via a campaign from industry groups.

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# Plain English Compendium Summary

| Project Title: Name of project: COMPLETE |  |
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| Nuffield Australia Project No.:          | 1906   |
| Scholar:                                 | Tamara Uebergang   |
| Organisation:                            | Nuffield Scholar 2019<br>Berwyndale Pastoral "Berwyndale"<br>Miles Q 4415  |
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| Email:                                   | <a href="mailto:tamarauebergang@outlook.com">tamarauebergang@outlook.com</a>   |
| <b>Objectives</b>                        | <p>Research what the customers of Australian cotton care about. Establish how to connect to them.</p> <ul style="list-style-type: none"> <li>• Identify trends and disruptions in textile market</li> <li>• Connecting fashion demands to agriculture</li> <li>• Define circular fashion and the role of textile waste management</li> <li>• Clarify transparency and traceability technology</li> </ul>   |
| <b>Background</b>                        | <p>Australian cotton is some of the highest quality, most environmentally sustainable in the world. There is a growing demand for more ecologically kind cotton, lead by conscious consumers who care who made their clothes and the impact of the raw materials they are buying. Cotton competes for market share and can also struggle with misconceptions regarding environmental impact.</p>   |
| <b>Research</b>                          | <p>Fashion houses, cotton merchants, sustainability consultants, textile manufacturers and engineers, brand owners, spinners, commodity traders, retailers and conferences were attended throughout Brazil, Japan, The Netherlands, USA, New Zealand, the UK and Australia.</p>  |
| <b>Outcomes</b>                          | <p>There is a demand for cotton grown to the highest environmental and social standards, creating an opportunity for Australian cotton to be known as an 'identity fibre'. The convoluted and disjointed supply chain prevents full connection between growers and garments. Our traditional customer is the textile spinner, who does not necessarily aid this goal as their margins come from blending cotton of various origins and specifics to create yarn. Further, cotton's major competitor is man-made fibres, and awareness regarding the true environmental cost (microplastics) of these fibres is low. Carbon neutrality, circularity and zero modern slavery in the Australian context should be taken advantage of.</p> |
| <b>Implications</b>                      | <p>Only 20% of the Australian crop is certified as "Better" (BCI). All Australian bales should meet this basic standard. Adoption of blockchain technology could aid in establishing ourselves as an 'identity fibre'. As environmental stewards, farmers should continue to focus on carbon neutrality, water efficiency and integrated pest management.</p>  |