

Submission to the National Waste Policy Taskforce

The National Association of Charitable Recycling Organisations

March 2009

There is no doubt that without the recycling activities of the charitable recycling organisations (the proceeds from which fund welfare programs), both State and Federal governments would have significantly higher social costs in addition to an unmanageable volume of landfill, the management of which would be funded through increased taxes and a massive bureaucracy.



1 About NACRO

NACRO, the National Association of Charitable Recycling Organisations, is the peak body representing a broad spectrum of charitable recycling organisations throughout Australia. The business of our members is to generate social capital through recycling activities to fund welfare programs. Indeed, millions of individuals benefit from the products, operations, and programs created by our members.

Members accept a myriad of donated goods including used clothing (textile waste) household goods, toys and books. The volumes are significant. Whilst there is little data available, through its efforts this industry diverts approximately 75 percent of the post-consumer textile waste from our landfills. ¹

NACRO provides a forum for the exchange of ideas, information and advice between member organisations; assisting them to continuously improve their recycling operations so that they can provide optimal funding for their charitable aims in the community.

NACRO advocates educating the community to donate goods responsibly to provide maximum profits for social welfare with minimum cost to the environment. It represents its members at a local, state and national level, when legislation affecting this industry is being drafted or reviewed.

In many councils, NACRO is the accredited body for clothing bins. An application for any placement of a clothing bin should be made to a given council and will only be approved if the owner of the bin is a member of the NACRO. Proof of membership is to be submitted with the application for approval. Approved bins must clearly show a label, as issued by NACRO, identifying that the owner is a member of that organisation.

Our members range from those that manage individual shops to the largest national charities that collectively run thousands of shops around Australia. Collection of second hand goods are either made by donations deposited into charity bins, thousands of which are located across Australia, and/or drop-offs directly to charity shops.

There can be no doubt of the important role these organisation plays in the community. State and Federal governments would have significantly higher social costs in addition to an unmanageable volume of landfill, the management of which would be funded through increased taxes and a massive bureaucracy.

Members of NACRO represent the following charities:

- Adventist Development & Relief agency (ADRA)
- Aid for the Blind
- Anglicare
- Australian Red Cross

¹ The Textile Recycling Association in the United Kingdom

- Diabetes Australia
- Dunamis Community Care
- Endeavour Foundation
- Epilepsy Foundation
- Fusion Australia Ltd
- Learning Links Ltd
- Life-Gate Inc
- Lifeline Australia
- Lifeline Central
- Lifeline Community Care
- Living Water Uniting Church
- Mission Australia
- Orphans & Widows
- Paraplegic-Quadriplegic Association
- Paravin
- Presbyterian Recycling & Retail
- Rythms
- The Salvation Army
- St Vincent de Paul
- The Asthma Foundation of Queensland
- The Brotherhood of St Laurence
- The Smith Family
- Uniting Care Wesley
- Vincent Industries Inc
- Work Ventures
- YMCA Victoria
- Young Adults Disabled Association

1.1 What is post-consumer waste

Post-consumer waste consists of any type of garments or household goods (sheets, towels, glassware and furniture) that the consumer no longer needs and decides to discard, either because they are no longer of use, worn out, damaged, outgrown, or have gone out of fashion. Traditionally, the bulk of post-consumer waste has been of reasonable-to-good-quality garment that can be recycled by another user as second-hand clothing, much of which is sold to third-world nations. Clothing that is unlikely to be worn again is also potentially functional as it may be cut to produce industrial wiping rag or shredded into fibre to be reprocessed. Appendix 1 outlines regenerating technologies and opportunities.

1.2 Recycle/reuse

The multi-billion dollar worldwide recycling industry performs a vital social and environmental function. The industry has no peer in terms of conserving the world's resources while the various stages of the recycling process provide significant employment around the world.

Garments or household goods can effectively be recycled by sale or gift to another user. Of the post consumer waste recovered by the charities, 60% is

items of clothing that can be reworn or reused and 15% can be torn into industrial wiper cloths. Disturbingly, 25% is unusable and sent to landfill.

2 The role of charitable institutions - recycling/reuse of post consumer waste

The organised recovery of post-consumer waste (mainly used clothing and household goods) in Australia is mainly undertaken by charities. According to an estimate from the U.K. based Council for Textile Recycling, nearly half of second-hand clothes discarded by the community are contributed to charities that either give them away or sell them at discounted prices in second-hand stores.

Through the efforts of the charitable recycling organisations, approximately 75 percent of the collected post-consumer waste is diverted from our landfills and recycled¹ and that the worlds poorest are clothed.

Collection is by means of community donations deposited into charity bins, thousands of which are located across Australia, and/or drop-offs directly to charity shops. Given that the business of these charities is to clothe and equip those in need in the community and to generate social capital to fund welfare programs, these organisations don't classify themselves as waste collection agencies.

There are many more examples of creative collection methods that mitigate landfill. The "Phoenix Fridges scheme" is run by the Brotherhood of Saint Laurence. It collects used and unwanted refrigerators free of charge and either recycles them for parts or refurbishes them so that they use less electricity (which is good for the environment) and sells them at low cost to families on low incomes. Needless to say these services are costly to run.

A representative of the NACRO estimates that over 80-100 million kilos of textile waste is collected by Australian clothing recyclers through charity bins and donations. The point must be made that this collection is at no cost to the government and/or councils. Much of this can be reclaimed and recirculated through charity shops or reprocessed into functional textiles. However, 20 -25% is unsuitable for reclamation and is sent to landfill.

In contrast to the national waste industry, a character of the charitable recycling organisations is that women represent a significant proportion of charity employees and recipients of the service.

2.1 Trade in waste

All countries with industrial production capacity have a need to consume raw materials and so demand for recycled commodities is truly global. International trade in secondary materials is necessary to supply steelworks, foundries, paper mills, textiles industry and rubber etc. with feedstock

material for further environmentally sustainable production. As the focus of industrial production shifts away from industrialised nations towards the developing world, so there is also a shift in flows of secondary raw materials. Today, for example, huge volumes of scrap metal recovered from end-of-life products in the Western World are being shipped to China and other, rapidly-industrialising countries in Asia. Put simply, there is potential to achieve a return on investment through trading in waste.

2.1.1 Exporting donated goods

There exists a healthy international market for second-hand clothing. In Australia, the major exporters of worn clothing and worn textile articles are the large charities such as the Smith Family Commercial Enterprise and Life Line. The multi faceted benefits of these exports cannot be underestimated. While ameliorating poverty in the receiving country, these shipments mitigate Australian land fill and at the same time as earning export income for Australia; the earnings for which provide Australian charities with social capital that is reinvested into welfare programs.

In Australia the two relevant tariff codes are as follows:

- 63090010 the description for which is "Worn clothing", and
- 63090090 the description for which is "Worn textile articles (excl. clothing)" which includes shoes, handbags etc.

The Australian Bureau of statistics records that in the above two tariff categories, approximately 50,000 tonnes is exported annually to 44 countries, most of which are in the third world. This equates to around 2,500 40 foot shipping containers. The major destination is the United Arab Emirates, no doubt for transshipment to gulf countries. Malaysia is the second largest importer of textile waste from Australia, with Pakistan and New Guinea running third and fourth. African nations such as Togo, Tanzania, Mozambique, Nigeria, Tunisia, Dem Rep of Congo, Zaire, Zambia, Benin and Malawi and all large emerging recipients of Australian charitable clothing donations; so too south pacific nations such as Papua New Guinea, Kiribati and Vanuatu, to name a few.

Regardless of their final destination, used textiles have a relatively stable and reasonable price that, like all exports is influenced by exchange rates and larger overseas competitors.

While second-hand clothing makes up a small part of global trade in textiles and clothing, for some countries it plays a more important role than for others. The trade supports hundreds of thousands of livelihoods in developing countries. These include jobs in trading, distributing, repairing, restyling and washing clothes. Oxfam's research in Senegal estimates that 24,000 people are active in the sector in that country².

² The impact of the second hand clothing trade on developing countries; Sept 2005, S Baden & C Barber for Oxfam

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3 Facts and figures

Members of NACRO know of no formal study/ies on donated goods and/or post-consumer waste that have been conducted in Australia. Facts and figures tend to be anecdotal and reasoned from overseas studies. A number of waste composition studies in Australia indicate that unrecovered textile waste accounts for approximately 4 percent of the content of our landfills. Data on the US Environmental Protection Agency website is in accord with this, noting that:

- An estimated 11.9 million tons of textiles were generated in 2007, or 4.7 percent of total municipal solid waste (MSW) generation.

In order to manage an environmental issue, it must first be measured and quantified. To that end the limited and inadequate data available in Australia is an impediment to intelligent and effective recovery and/or regeneration of post-consumer waste and is unacceptable. NACRO advocates for a study to be commissioned in the interest of the community.

NACRO Recommendation 1: The members of NACRO advocate for a study to be commissioned on the volumes and content of post-consumer waste and the community attitudes to donation practices.

4 Industry issues

Whilst the charitable recycling organisations are not-for-profit enterprises, they are subject to the cost structures of most businesses. Issues such as transport and landfill costs are significant. So too access and retention of skilled staff.

Again, like all businesses, the charities are subject to a common and complex supply and demand pressures. In good times, donations increase and demand is less. However in bad times, such as the current global economic crisis, supply reduces significantly as people cut spending and hold onto possessions and demand from those in need increases. At the time of writing, charities are reporting low donation levels due to the diversion of donated goods to the bushfire appeals.

Suffice to say that imprudent and/or stringent legislation has a profound effect on the operating environment with which these organisation function and, in turn, the income that ultimately funds welfare programs.

4.1 Collection bins

Thousands of collection bins are located across Australia on council, school and church grounds. Bins are usually dispatched from a collection depot that services a designated region. Once full, the bins are emptied and the contents transported to a depot where it is sorted and graded before being sent to various charity shops according to quality and the need of the community. Quality and goods in demand are important factors.

Some bin collection depots are large facilities. The Smith Family's Villawood operations employs 14 drivers to service between 700 and 800 bins located around NSW. The facility processes 40 tonnes of waste per day. To put this into perspective a single tonne of textiles fills roughly 200 black bin bags.

Members of NACRO argue that a prominently located charity donation bin is currently the most effective method of collecting donations. Its advantages are:

- Convenience for residents
- Cost effective by having to collect from a limited number of sites
- Relatively little infrastructure is required

The disadvantages of the bin system are:

- The bin is unable to accept all types of donations people want to make
- Some residents do not follow instructions as to what type of donation is acceptable, thereby often creating an untidy environment around the bin
- Not all residents know about the donation bins and some are uncomfortable leaving their goods in the bin

4.1.1 Councils pushing to eliminate collection bins

There are a number of acknowledged shortcomings to collection bins. They are often a subject of community complaints and thus have been the focus of council debates for a number of years. The main concern is the negative appearance and diminished aesthetics as a result of material deposited around the bins located in public and private lands in public view.

Despite this system diverting tons of post-consumer goods away from landfill, and that the income from the donations finances a plethora of worthy community welfare programs, some councils have made the decision to disallow collection bins in favour of contracting kerbside waste collection to an independent facility management company. Any push by local councils to eliminate collection bins from their precincts and/or commission private operators will reduce the volumes going to charitable recycling organisations and would be effective in redirecting post-consumer waste (that would have been donated) to landfill. The end result being significantly higher social costs to local councils as the charities would be forced to downgrade services in parallel with any reduction in income streams.

Members of NACRO advocate strongly against any policy to eliminate collection bins by councils and are advocating for an innovative re-think of waste collecting methods to overcome these issues.

(Repeated) The members of NACRO advocate for a study to be commissioned on the volumes and content of post-consumer waste and the community attitudes to donation practices.

The members of NACRO are seeking funds from the Department of Environment, Water, Heritage and the Arts to finance an information campaign on bin and store locations to aid the public access to these services.

4.1.2 Commercial operators

In Australia the organised recovery of post-consumer waste by way of collection bins is mainly undertaken by charities, although in recent times a number of private commercial operators have entered the market. NACRO members report that private commercial operators do not have equivalent infrastructures and/or code of practice as the charitable recycling organisations. Indeed, members of NACRO report that private operators are known to place bins next to NACRO members and are less than efficient in clearing their bins and the surrounding debris. NACRO members are often called upon to take responsibility by disposing of the debris from private commercial operators.

The members of NACRO advocate for an NACRO accreditation system for collection bins.

4.2 Community awareness

Recovery of post-consumer textile waste is dependent on donations from the public. Australians' attitudes toward waste issues are complex and constitute a barrier to improved resource recovery.³ The increased use of recycled materials in products and the increased recovery of material for recycling can be achieved with an educated public.

4.2.1 The cost of an ill advised community

The introduction of "pay-as-you-throw" charges for the use of a local dump or transfer station a few years ago coupled with community laziness, increased the amount of unusable donations to the charities as households attempt to avoid these costs. One large charity alone spends (annually – nationwide) approximately \$5 million on cleaning up waste which is mainly dumped on it, in one form or another. Of that amount, it estimates that approx. \$2 million goes towards landfill expenses, which is obviously only part of the overall waste cost it faces. On top of this, drivers are paid to remove rubbish from around collections bins and when received, they have the additional cost of sorting and sending and paying for landfill fees. It is estimated that the real cost to the charitable recycling organisations (including wages) is close to \$20 million per annum. There is no doubt that

³ Hyder Consulting Pty Ltd ABN 76 104 485 289

the cost of an ill advised community is a cost to the charitable recycling organisations. Any efforts to lessen this objectionable impost would be an intelligent and worthy undertaking.

This issue is common to western countries. To address this, the Association of Charity Shops in the United Kingdom developed the "Choose2Reuse" campaign with funds from the UK Department for Environment, Food and Rural Affairs. "Choose2Reuse" is a strong, sustainable 'reuse' campaign that positively promotes consumer behaviour change. Through the campaign materials and messages, members of the public are informed as to how to donate more high quality reusable material to charity shops and community groups. They are also urged to volunteer in shops, to make the link between reuse and the environment, and to put greater value on second-hand purchases, and buy more, thus 'closing the loop'.

One of the initiatives features a 'Green Santa' who collects unwanted Christmas presents and other goods. Green Santa provides an eye-catching focus for the press and public to engage with the campaign, which aims to:

- Increase donations of good quality items to charity shops
- Raise awareness of items that are unsuitable for donation
- Promote buying from charity shops.

The members of NACRO advocate for Department of Environment, Water, Heritage and the Art to fund the adoption of the successful U.K. "Choose2Reuse" program to promote a change in consumer behaviour towards recycling and donation practices.

4.2.2 Stronger legislation on fibre content on garment labelling

NACRO advocates for the community to become more educated and aware about donating goods in a way that provides maximum profits for charity and minimum cost to the environment through stronger legislation on fibre content on garment labelling to assist easier collection and sorting.

The members of NACRO advocate for stronger legislation on fibre content on garment labelling to assist easier collection and sorting of donated goods.

4.2.3 Introduce recycling labelling on garments

Recovery of post-consumer textile waste is dependent on donations from the public. The increased use of recycled materials in products and the increased recovery of material for recycling can be achieved with an educated public. The North American based Secondary Materials and Recycled Textile Association (SMART) has introduced a label for use by garment manufacturers that clearly instructs the consumer on the recyclability of the garment.



The members of NACRO advocate for the introduction of a labelling program for use by garment manufacturers that clearly instructs the consumer on the recyclability of the garment

4.3 Imports

Today, recovering textile waste is a multi-billion dollar global industry that performs a vital social and environmental function and provides employment for millions of people all around the world. An internet search on “textile waste” will elicit more than 2,664 products or listings, including headings such as hosiery cuttings and clips, polyester tow, cotton shoddy, used clothing wiping rags, denim/jean clippings, 100% cotton yarn waste, silk fibre waste, etc.

4.4 National, state and council waste policies

Waste management is primarily the responsibility of state, territory and local governments which enact policy measures and instruments to achieve waste and resource recovery objectives. The materials and processes covered by waste management and resource recovery policy vary from jurisdiction to jurisdiction. This bewildering array of measures is outlined in Appendix B of the National Waste Policy Consultation Paper. For the larger charitable recycling organisations, the plethora of disparate regulations is a significant management issue.

The members of NACRO advocate for state governments to play a role in facilitating and coordinating local councils to develop a more harmonised policy environment to waste management.

4.4.1 The Charitable Goods Transport Subsidy Scheme

Charitable Goods Transport Subsidy Scheme was developed by the Federal Government during the Second World War to transport second-hand clothing to rural and remote locations. The scheme is still in existence today and used widely by the charitable recycling organisations to move clothing and associated items only:

- from charity to charity
- intra charity
- movement within a given state only with no movement for cross border undertakings

Administered by the states (mostly eastern), the guidelines are increasingly under scrutiny and threat as state governments attempt to reduce costs. Each state government has a different position on the issue. A number of state governments have been unable (or unwilling) to articulate a clear policy, making any decisions on transport difficult for the charities. Additionally Tasmanian is excluded making transport across Bass Strait prohibitive.

NACRO assures the government that any reduction or abolition of the subsidy arrangements will reduce the charities’ ability to provide welfare activities in rural areas and will contribute to a significant increase in textile waste being moved to landfill.

The members of NACRO advocate for the Federal government to play a role to develop a sound policy on this subsidy and to convey this to the States for implementation.

4.5 Research, Development and Innovation to find solutions for landfill mitigation

The multi-billion dollar worldwide recycling industry performs a vital social and environmental function. Research development and innovation have historically been the enablers for the development of recycling technologies such as those for tyres, paper, aluminium and glass and ultimately saving many goods from landfill. There exists an opportunity for Australian textile RDI agencies to work with the charities to solve landfill dilemma's.

The examples Appendix 1 are the results of both investment and technologies that have been specifically developed to solve textile regeneration issues.

4.5.1 Regenerating textiles

Research, development and innovation have long been pillars of Australian industry and can be accredited with much of the manufacturing industry's advancement. This expertise can be galvanised to development merchantable products from regenerated fibre and textile post-consumer waste to avoid landfill. Regenerating issues such creating new or improved materials, products, devices, processes or services for second-hand goods will positively serve the Australian environment. However, there has been limited effort to stimulate the recovery of post-consumer waste (particularly clothing) through policy instruments. Indeed, the recent review of the Australian TCF industry commissioned by the federal government did not address the issue of textile waste or product stewardship for the clothing industry.

The members of NACRO advocate for the federal government to provide funds to CSIRO conduct RDI to development merchantable products from regenerated fibre and textile post-consumer waste.

4.5.2 Broken crockery issue

Members of NACRO have all reported that they receive significant volumes of crockery which has either been donated in a damaged state and/or broken in transit. At this point in time, there is little that can be done with broken and unusable crockery, it is simply sent to landfill.

The members of NACRO advocate for the federal government to provide funds to CSIRO conduct RDI to development merchantable products from regenerated broken crockery.

4.6 Skills

The profile of a workforce has an identifiable effect on the direction and health of an enterprise and on the industry as a whole. Certainly, a skilled workforce is a critical advantage.

4.6.1 Up-skilling sorting worker to competently divert waste

The competencies of the workforce within the industry vary. Whilst there are many valued and skilled workers, a number of Australian charities rely on volunteers and work-for-the-dole recipients for the sorting occupation.

This demographic are unlikely to be educated in fibre and textiles, and more likely to be semi-skilled or marginally employable workers. An education program designed to lift the competencies of the workforce, would result in greater product recovery and effective diversion from landfill.

The members of NACRO are seeking funds to develop a multi media industry induction program for workplace delivery for new entrants to the sorting occupation.

Appendix 1: Post-consumer waste recovery case study

From the Technical Textiles & Nonwoven Association paper on "Sources of Textile Waste in Australia"

The business of regenerating pre-consumer and post consumer waste in Australia is promising. It has the potential to found a new industry and green jobs while mitigating land fill and at the same time as providing green inputs to external industries such as the automotive industry.

The TCF sector is a significant manufacturing sector of the Australian economy. As outlined previously, during the processing of textile products, large amounts of pre-consumer fibrous waste can be generated in the form of off-cuts, selvages, shearings and rejected materials. Concerted waste resource recovery strategies practiced within TCF production facilities would corral significant volumes away from landfill that could be regenerated.

Fibres are recovered from pre and post consumer waste through the process of shredding. This process shortens conventional fibres and thus regenerating technology relies on short fibre technology. Common to the products made from short fibres outlined in the case studies is the use of nonwoven and composite technologies both of which are available in Australia. Nonwovens are a fabric formed of textile fibres that are held together by mechanical interlocking in a random web or mat, by fusing the case of thermoplastic fibres or by bonding with a cementing agent. Both synthetic and natural fibres are used in manufacturing technical and nonwoven textiles. The selection and combinations of fibres used determine the ultimate end product properties, cost and subsequent applications.

As this is in the sphere of manufacturers' research and development and product development programs, knowledge coupled with appropriate and targeted investment would encourage new business models for fibre regenerating technologies.

There is very little evidence of organised recovery of pre-consumer or industrial textile waste specifically for reprocessing, in Australia. However, with investment in appropriate technology, there are a number ways by which textile waste can be recovered.

Regenerating Textiles

All textile waste streams (those detailed previously) are often unrealised sources of valuable raw materials that can be repurposed or regenerated into saleable and usable products by intelligent collection, sorting, reengineering and reprocessing. In essence, the liability of "waste" is turned into an asset often based on intellectual property (IP) which has been specifically developed. Processing machinery is also likely to be engineered to produce a specific product ...and thus the investment in developing regenerating capabilities is often large-scale. Products made by regenerating textile waste include acoustic textiles used for soundproof blocks, insulation, roofing felt, bank stabilisation, and as pollution control filters. Examples are best illustrated in the following case studies:



Australian Case Study: The Smith Family's Commercial Enterprise (TSF) located in the Sydney suburb of Villawood is a manufacturing facility that was established in 1987, as a means of utilising textile industry waste and the tonnes of surplus clothing that weren't suitable for either sale through TSF's retail outlets or for export.

The first of three specialised lines went into operation to produce nonwoven fabrics from regenerated fibres. Carpet underlay, furniture removal felt, weed suppression and water retention felts are just some of the examples of products produced by the

manufacturing line. Through the creative and innovative commercial utilisation of what would otherwise be waste product destined for landfill, TSF is able to convert hundreds of tonnes of waste clothing and material into manufactured non woven textile felts and fabrics.

In 1992, a significant investment was made and the second manufacturing line became operational enabling the Commercial Enterprise to significantly expand its capabilities and manufacture a more extensive range of felt and fabric products. In 2004, as the result of a strategic business review and the support of the Federal Government's Strategic Investment Program (SIP), TSF invested in the growth potential of its nonwoven textile operation and committed to an additional manufacturing line that would increase the output capacity by 6,000 tonnes annually to over 10,000 tonnes annually from the Villawood operational centre.

"It's our goal to use technology and innovation to efficiently and responsibly transform materials and resources many regarded as waste, into marketable products that benefit the Australian economy and environment. The long term societal benefit is also important because it means the Commercial Enterprise can contribute funds to enable TSF's Social Enterprise to support more Australian disadvantaged children and help them reach their potential through education," concluded Cathy Bray, CEO TSF.

The potential to increase the use of textile waste is however restricted, as the organisation has limited shredding capacity.

North American Case Study: Circle™ is a company with a 25 year history of developing the science of re-generation, particularly that of textile waste. It's catch phrase is to allow it's manufacturing partners to "turn circle™". The company directors philosophy is based on a strategy of research, develop, innovation and IP as it promotes to "owning over 12 "game changing" re-generation patents in key commodities".

One patent area trademarked "Altfab™" encompasses the collection and re-processing cotton textile waste from the cutting floor of a garment manufacturing facility into consumerwipes. Another trademarked "Flip™" utilizes denim waste, (once again from a garment manufacturing facility) to produce packaging made into carry bags and wrapping paper. Other patents include technology to turn leather scraps into book covers and auto seating and utilizing wood waste to manufacture moldable tiles, trim and panels.

Supporting these technologies is the Sustainable Solutions Network™ which is the brain child of Ms Joy Nunn who developed many of the regenerating technologies. The network is a formal association of companies dedicated to supply the pre-consumer waste that would otherwise find itself in land-fill.

Strateline Industries, which is the 250,000-square-foot nonwoven manufacturing facility supporting the initiative, was an collective investment of \$63 million in the production of continuous roll-good nonwoven substrates from recycled post-industrial materials — primarily cotton, producing the first-ever sustainably repurposed cotton nonwoven materials



Foolsap suspension files made from 100% recycled fibre and complete with tabs and inserts

Japanese Case Study: Patagonia has partnered with Japanese textile firm Teijin to implement a polyester product recycling program which started in Aug 2005. Under the program, Patagonia will recover from customers used Capilene undergarment products. Teijin will recycle them as polyester materials at a "fiber-to-fiber" recycling facility in Teijin Fibers' Matsuyama plant. In 2005, Patagonia began using a new PCR filament yarn containing 30%-

50% post-consumer feedstock made from discarded soda bottles, polyester uniforms, tents, and garments. *The remainder of the yarn comes from post-industrial feedstock -- yarn and polymer factory waste products.*

"We're constantly trying to innovate our supply chain," says Jill Vlahos, Patagonia's director of environmental analysis. "Everything we make pollutes, but we're trying to improve every step of the way. We're excited to create our own supply rather than pulling from raw virgin resources." Vlahos is careful to note that while the recycling program does not save money, it adds no extra costs to the manufacturing process. "We're trying to inspire other businesses to move in an environmental direction, and the only way we can do that is to run a profitable business," says Vlahos. "The added expense of recycling and logistical costs is offset by the fact that we don't have to purchase or create raw polyester material."⁴

The examples outlined in the previous section are the results of both investment and technologies that have been specifically developed to solve textile regeneration issues. Research, development and innovation have long been pillars of the Australian fibre, textile and clothing industry and can be accredited with much of the industry's advancement.

⁴ www.greenbiz.com