Review of Australia's Textile Clothing and Footwear Industry

Submission from the Technical Textiles and Nonwoven Association

Connected, innovative and competitive

May 2008

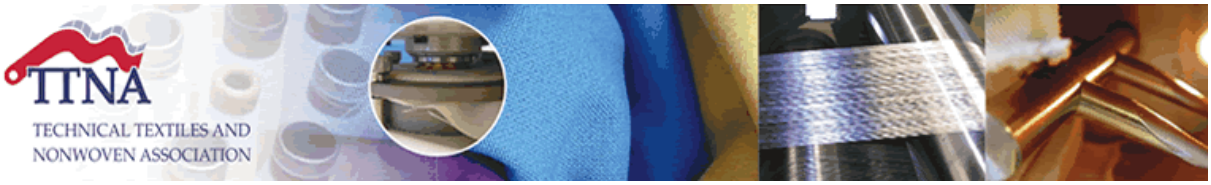


Table of Contents

Agency

Organisation: The Technical Textiles and Nonwoven Association

Address: Level 15, 10 Queens Road, MELBOURNE 3004

Contact: Kerryn Caulfield, Executive Manager.
Tel: 03 9866 6643
Email: kerryn@ttna.com.au

Declaration of Interests and Affiliations

The Technical Textiles and Nonwoven Association Inc. (TTNA) is an independent body, funded by fees paid through voluntary membership. It represents the Australian technical and nonwoven textile industry. This submission provides information that is reflective of the TTNA members' views and is intended to assist the review of the TCF Industry.

Further personal interests and affiliations for each member of the TTNA Board are provided in the following table.

Mr. Rod McKenna Chair – TTNA	Managing Director, TenCate Australia Pty Ltd 83 Batten Street, NTH ALBURY NSW 2640 • Chair of TTNA's Marketing Committee • Over 20 years experience in the technical textiles industry, including product development, sales and marketing, export development and business management.
Mr. Robert Bell, Vice Chair, TTNA	Technical Manager, Madison Filter Pty Ltd 36-40 Graham Road, HIGHETT VIC 3190 Initially a textile designer and technologist in the UK, leading to the position of Finishing Manager with a leading manufacturer in Geelong. • Currently an active member of the Clear Edge Global RandD Circle and runs the Centre of Excellence for Enabling Technologies for the group • Degree in Textile Design and Technology and Industrial • Management Chair of the TTNA Events Committee
Mr. Michael Coates, Treasurer TTNA	Managing Director and Director of Product Engineering, INC Corporation Pty Ltd 63 South Park Drive DANDENONG SOUTH VIC 3175 Bachelor of Engineering (Materials), Monash University. Founded INC Corporation, in 1977 • Member of Victorian Manufacturing Hall of Fame - Winner, SAE Australasia, Gold Engineering Excellence Award. - Certificate of Achievement for Innovation - AusIndustry - President - Otways Ranges Environmental Network • Past Member, AusIndustry, Best Financial Practices Committee

	• Member Australian Acoustical Society
Mr. Peter McDonald	Managing Director, Ramsay McDonald Pty Ltd 22 Concorde Drive, KEILOR PARK VIC 3043 • Board Member of TexSkill • Fellow Australian Institute of Company Directors
Dr. Niall Finn	Theme Leader Advanced Fibrous Materials, CSIRO Textile and Fibre Technology PO Box BELMONT VIC 3216 • BSc in Physics at the University of Stirling (UK) • PhD in Plasma Physics at the University of Essex (UK) • 12 years experience in textiles RandD with CSIRO • Responsible for CSIRO's Centre of Excellence for Technical Textiles • Chair of TTNA's Education Committee
Mr. Michael Gerakios	General Manager - Industrial Process Technologies Division, Albany International Locked Bag 6 Gosford NSW 2250 • General Manager, Global Liquid and Dry Filtration, Albany International • President of the Air Pollution Control Equipment Manufacturers' Association (APCEMA) • Bachelor of Chemical Engineering at University of New South Wales Pulp and Paper Management Certificate at University of Maine, USA
Dr. Peter Lamb	Research Fellow, Centre for Material and Fibre Innovation, GTP Building, Deakin University, Geelong Technology Precinct, Pigdons Road, WAURN PONDS VIC 3217 • B.Sc(Hons), M.Sc in Physics from Uni. of Melbourne • D.Phil in Elementary Particle Physics, Uni. of Oxford • 27 years in RandD with CSIRO • Member Australian Acoustical Society, Australian Institute of Physics • Deputy Director Tournament of Minds (Vic.) Inc.

Introduction

The TTNA is the industry organisation representing the Australian technical and nonwoven textile industry. Given little is documented about the Australian technical and nonwoven textile industry, Appendix A is designed to educate the reader.

Manufacturing drives productivity, research, development and innovation and workplace innovation and supports many other industries by providing both a major market for their goods and services and the products they need to operate. For the Australian technical and nonwoven textile industry, critical issues include a stable investment environment, market access, reinvestment in plant and equipment given the global nature of the industry, innovation, an appropriately skilled workforce and environmental challenges and opportunities. All of these will affect the competitiveness of the Australian technical and nonwoven industry in both the domestic and global markets.

The recommendations articulated in this submission provide a framework to encourage greater investment in productive capacity and innovation needed to enhance the future competitiveness of the industry in order to supply the needs of the Australian market and the greater global market.

In making this submission to the federal government's Review of the Textile, Clothing the Technical Textile and Nonwoven Association (TTNA) supports the initiative as one that has the potential to institute significant advancement for industry. Indeed, the Commonwealth government has the greatest capacity to shape the development of Australian manufacturing and to set the business environment in which Australian technical textile and nonwoven firms operate. However, whilst there is a powerful case for significant levels of government support in government agencies and the public sector, the major focus of the TTNA's submission is on the enhancement of the operating environment within which businesses work. We propose the continuation of the Strategic Investment Program (SIP) that imposes strategic planning and subsequent investment by companies and further funding to existing agencies rather than the creation and funding of additional levels of bureaucracy that may or may not sustain business.

Summary of Recommendations:

1. The changing nature of the industry
    1.1. The Strategic Investment Program (SIP)
        1.1.1. The introduction of a new Strategic Investment Program (SIP mark 3) with appropriate program funding to extend to 2015.
        1.1.2. The federal government reverses the SIP post 2005 program discrimination against the nonwoven industry in its exclusion from Type 2 grants. The program should be more merit based for those firms that will contribute most to the future sustainability and growth of the fibre and textiles industry.
        1.1.3. Additional funding should be allocated to SIP to avoid modulation in the last 2 years of the current scheme.
        1.1.4. No further unilateral tariff reductions.
        1.1.5. The Government continues to stimulate the uptake of RDI through

investment for the betterment of the technical and nonwoven textile industry.

2. Research Development and Innovation (RDI)
    - 2.1.1. Additional funding for the CSIRO – Textile and Fibre Technology in order to facilitate advanced RDI for the technical and nonwoven textile industry.
    - 2.1.2. A simple and transparent peer reviewed research quality framework that rewards success rather than a time-consuming bureaucratic measurement that rewards form filling and quantity independent of quality.
    - 2.1.3. The federal government selects the technical and nonwoven sector as a priority for investment in RDI, particularly for manufactured goods that are effective climate change solutions.
    - 2.1.4. The federal government honours its election promise to use government procurement to support innovative Australian firms and requests the Government recognize that this procurement make allowances for the cost impositions associated with operating in a high cost environment.
    - 2.1.5. The federal government honours its election promise to place researchers from universities or public research agencies into businesses where it is identified that such a placement would help to develop and implement a new idea with commercial potential.

2.2. Research and development tax concession
    - 2.2.1. The federal government adopts the Productivity Commission's recommendation that the tax offset arrangements for small companies be amended to remove the perverse incentives resulting from the current eligibility threshold for RDI expenditure.
    - 2.2.2. The federal government increases the RDI tax concession to 250% for RDI that concentrates on environmental solutions. Such a concession would place Australia in the competitive position in the global market place as the "talent factory" for climate change solutions.
    - 2.2.3. Additional funds be directed to Invest Australia in order to develop a program that encourages international companies in Australia to take IP overseas.

2.3. Serial innovation
    - 2.3.1. The ATO be requested to devise and implement a tax regime far friendlier to innovation and entrepreneurial activity than Australia's current tax regime.
    - 2.3.2. Whilst liability can be recognised, the actual paying of tax should be linked to liquidity events.

2.4. Jumper leads for RDI tax concession for climate change solutions
    - 2.4.1. The federal government connects the jumper leads to RDI for environmental climate change solutions by providing business with a 250% tax concession for RDI that leads to commercially sustainable products and services. (Repeat of 2.2.2)
    - 2.4.2. The federal government honour its election promise to commit $75 million to a new climate ready program to support the development and commercialisation of clean, green technologies in Australia.
    - 2.4.3. The federal government honours its promise to examine ways to streamline the application process for the whole Commercial Ready program.

2.5. Beyond Petroleum - the next raw material?
    2.5.1. A Cooperative Research Centre for sustainable products and plastics, including the reprocessing or de-polymerisation of materials should be established with the textile/carpet sector;
    2.5.2. The federal government invests in bringing to Australia international industry leaders in RDI who are researching and developing alternatives to petrochemical fibres.
2.6. Intellectual property rights
    2.6.1. That small grants could be made available for SME's to test their IP assumptions pre-patent application and then, if a this process can be shown to have met a set of specific criteria, grant support for SME's to defend their IP/patents (both in Australia and overseas).

3. Connecting markets and industries
3.1. An ability to trade
    3.1.1. The federal government ensures the Australian technical and nonwoven textile industry has adequate opportunities to showcase its talent and capabilities. Funding support should be augmented for participation in overseas trade forums/collaborative export efforts, and participation in international technical delegations.
    3.1.2. The Export Market Development Program be amended to provide reimbursement for employment costs of an export manager as opposed to an export consultant.
    3.1.3. The Commercial Ready program be increased for "Export Ready" products.

4. Environmental challenges and opportunities
4.1. Environmentally & Economically Sustainable Products
4.2. Environmentally & Economically Sustainable Manufacturing
4.3. Innovation to mitigate landfill
    4.3.1. The federal government ameliorates the costs of recycling, by introducing transport credits to offset the costs of transporting products for recycling, particularly from regional areas;
    4.3.2. The federal government honours its election promise to introduce a new $75 million grants program for Australian manufacturers to help improve production processes, reduce environmental footprint and cut carbon emissions;
    4.3.3. The federal government funds RDI for converting textile and apparel waste streams into energy that can be used and/or fed back into the power grid;
    4.3.4. Support should be provided for investigating the establishment of a national carpet recycling program;
    4.3.5. A Cooperative Research Centre for sustainable products and plastics, including the reprocessing or de-polymerisation of materials should be established with the textile/carpet sector (repeat of 2.5.1), this includes government funds RDI for converting textile and apparel waste streams into energy that can be used and/or fed back into the power grid;
    4.3.6. Stronger legislation on fibre content on garment labelling to assist easier collection and sorting;
    4.3.7. The federal government honours its election promise to provide grants of between $10,000 and $500,000 to assist small and medium sized companies re-tooling for climate change, and encourage bigger

grants for larger manufacturers on a case-by-case basis;

4.3.8. The federal government honours its promise to establish a $90 million green building fund to help Australian businesses implement cost-saving energy efficiency measures through the retrofitting and retro-commissioning of commercial buildings;

4.3.9. The federal government honours its promise to develop a $15 million clean energy export strategy and a $20 million clean energy innovation centre, and for the strategy to provide critical capacity in Austrade to promote Australian clean energy exports;

4.3.10. The federal government consider imposing a national refund system to encourage recycling of PET soft drink bottles, which would divert millions of tones of waste from landfill into productive feed stock;

4.3.11. The federal government to honour its promise to establish a "green car" initiative, as the automotive industry is a key driver of innovation for the technical and nonwoven textiles industry.

5. Building a skilled workforce
   - 5.1. Sourcing and recruitment of suitably qualified and skilled people
   - 5.2. International Fibre Centre (IFC)
     - 5.2.1. The dedicated funding stream available through the IFC be nationalisation for the benefit of industry Australia-wide.
   - 5.3. Workplace Training
     - 5.3.1. The federal government fund more places for Textile Engineers.
     - 5.3.2. The federal government honour its election promise to "halve HECS fees for new maths and science students in addition to halving annual repayments for up to five years for graduates who take up work in a relevant occupation, including teaching," and requests that this initiative be extended to Engineering students.
     - 5.3.3. The federal government extends the promised initiative to facilitate the placement of researchers into industry - particularly Post Graduate students (to help and develop a new idea for commercial potential) to pay 100% of the salary and on-costs for each 12 month placement.
6. Operating in regional areas
     - 6.1.1. The introduction of transport credits to mitigate the costs of manufacturing in regional areas.

1. The changing nature of the industry

Australia faces significant challenges in remaining competitive in today's global environment. The rapid advancements in low labour cost countries such as China and India has had a profound effect on the textile industry. Trade liberalisation, and thus increased competition, has seen comprehensive changes to markets worldwide as the process of globalisation has taken hold. Other factors include the global rationalisation of markets and supply chains, the need to internationalise operations, shortened product lifecycles, the rapid price rises in oil-based raw materials, and the increasingly constrained environmental framework, in addition to finding manufacturing solutions to environmental sustainability.

The TTNA acknowledges that the external circumstances affecting the Australian Textile Clothing and Footwear (TCF) industry are a global phenomenon. Indeed, the most influential factor in shaping Australian manufacturing has been the process of opening Australia to the influence of international market forces through the reduction of tariffs. The impact of lowering tariffs is a transitional force across products in all targeted tariff chapters and has resulted in considerable change to the industry, its products, their competitiveness and the way in which business is done.

Further progress by the industry, especially continued investment in innovation, skills development, the ability to satisfy environmental challenges and export growth, will help to support economic growth, resulting in a stronger and more vibrant technical and nonwoven textile industry to the benefit of domestic manufacturing and thus metropolitan and regional communities by sustained employment.

1.1. The Strategic Investment Program (SIP)

The Textile, Clothing and Footwear Post-2005 Strategic Investment Program Scheme (TCF Post-2005 (SIP) Scheme) aims to foster the development of a sustainable and internationally competitive TCF manufacturing and design industries in Australia by providing incentives which will promote investment and innovation. It is an entitlement program which provides incentives in the form of reimbursement grants paid annually in arrears, and which has played a significant role in encouraging innovation and investment in technology.

While strong consumer demand, the exchange rate and a robust domestic economy have been potent influences on the Australian manufacturing sector, similar to the ACIS for the automotive industry, SIP has delivered benefits to the Australian technical and nonwoven textiles industry and thus to the Australian economy.

Indeed, the Australian technical and nonwoven textiles industry has responded well to the SIP scheme. Government assistance has been valuable in encouraging and accelerating the necessary investment. It would appear that the scheme is working as the legislation intended. Investment in new plant and equipment and RDI expenditure has expanded considerably, and is set to continue to provide a stable investment environment. In essence, the industry is on the way to becoming smarter and more innovative than it once was.

It is apparent that the industry views the scheme as crucial to maintaining competitiveness and to sustain investment. The importance of the scheme is reflected in high rates of utilisation among technical and nonwoven textile companies. The industry argues that SIP is one of the industry's strengths in

competing for new business, and a catalyst for securing the go ahead for investment, research and development.

The textiles industry is relatively competitive and a significant proportion of the benefits from the new investment will flow through the value chain to customers in the form of employment, improved skills, improved products, and/or reduced prices. End users or intermediate consumers of technical and nonwoven textiles in Australia or overseas, the benefits that flow through the value chain will be realised in Australia.

There is no doubt that global demand for technical and nonwoven textiles will continue; however, future growth in the Australian manufacturing sector is dependent on a stable investment environment for the time required to adjust to changes in government policies.

The Australian technical and nonwoven textiles industry views investment, including RDI activity, as the principal driver of growth. Product rollover and the renewal of ideas are constant, as is the reinvestment in technology/capital. Indeed, SIP is critical to carrying the technical and nonwoven textile industry to the next level required to position the industry competitively past 2010. The industry is therefore united in its support for a continuation of SIP mark 3 beyond 2010.

The TTNA recommends:

1.1.1. The introduction of a new Strategic Investment Program (SIP mark 3) with appropriate program funding to extend to 2015.

1.1.2. The federal government reverses the SIP post 2005 program discrimination against the nonwoven industry in its exclusion from Type 2 grants. The program should be more merit based for those firms that will contribute most to the future sustainability and growth of the fibre and textiles industry.

1.1.3. Additional funding should be allocated to SIP to avoid modulation in the last 2 years of the current scheme.

1.1.4. No further unilateral tariff reductions

1.1.5. The Government continues to stimulate the uptake of RDI through investment for the betterment of the technical and nonwoven textile industry.

2. Research Development and Innovation (RDI)

International competitiveness is now governed by technology, innovation and human capital factors rather than by static comparative advantages and/or factor endowments of a nation. Knowledge and innovation are critical to generate wealth. Manufacturing businesses are more likely to undertake innovation than businesses in most other sectors. Future investment in developing new, specialised, technical products is therefore vital to enable the Australian technical and nonwoven textile industry to become a global leader in specialized niches, and to remain competitive with larger fibre and textile-producing nations.

There is no question that the future of the technical and nonwoven textile industry in Australia will depend heavily on new or improved technology and the application of that technology to generate new products and cost savings. The future also requires more specialised products and that will involve conducting research into mining, energy and climate change solutions and the needs of customers to create performance-based products that can positively contribute to the wellbeing of the country.

A healthy RDI service community is central to meeting RDI needs going forward, and requires a strong commitment from industry, government and the RDI community itself. However, for all to thrive this system must be nimble, highly responsive to industry needs, commercial in its approach to ownership and control of intellectual property (IP), timeframe and outcomes, and cost effective to use. By nature, RDI is an inexact process. There are always uncertainties about future demand for the developed products, and an almost certain long payback period associated with heavy investment in RDI. There is also limited incentive to invest in RDI when there is potential for new products to be copied within a short time-frame.

The TTNA therefore supports the federal government's promise to build a culture of innovation and to focus incentives for business RDI to promote global competitiveness, delivering the best outcomes for exports and economic growth. One way this will be achieved is through the federal government's election promise to revitalise public research agencies, including the CSIRO, and the replacement of short-term commercialisation culture with an emphasis on ensuring that public research contributes appropriately to national goals and long-term economic growth.

The TTNA recommends:

2.1.1. Additional funding for the CSIRO – Textile and Fibre Technology in order to facilitate advanced RDI for the technical and nonwoven textile industry.

2.1.2. A simple and transparent peer reviewed research quality framework that rewards success rather than a time-consuming bureaucratic measurement that rewards form filling and quantity independent of quality.

2.1.3. The federal government selects the technical and nonwoven sector as a priority for investment in RDI, particularly for manufactured goods that are effective climate change solutions.

2.1.4. The federal government honours its election promise to use government procurement to support innovative Australian firms and

requests the Government recognize that this procurement make allowances for the cost impositions associated with operating in a high cost environment.

2.1.5. The federal government honours its election promise to place researchers from universities or public research agencies into businesses where it is identified that such a placement would help to develop and implement a new idea with commercial potential.

2.2. Research and development tax concession

There is no dispute that there are widespread and important economic, social and environmental benefits generated by Australia's $6 billion public funding support of science and innovation. The Productivity Commission's analysis of the impact of publicly funded science and innovation demonstrated a favourable outcome. The TTNA has concerns about the adequacy of the current 125 per cent RDI tax concession, the complexity of the 175 per cent premium concession, and the thresholds applying to the tax offset for small business.

The RDI tax concession — including its incremental component — is the largest single mechanism for public funding support of business RDI. It has an advantage over grant programs in that it leaves businesses with the flexibility to undertake the kind of RDI suited to their own strategies and needs. The TTNA agrees with the Productivity Commission's view that the criteria for the basic 125 per cent tax concession is a major limitation and that *"Australia's current suite of business support programs could be improved to target more effectively the research activity with high social benefits."*

The TTNA therefore agrees with the Productivity Commission which determined that there were grounds for enhancing the existing 175 per cent incremental tax concession scheme by *"potentially even increasing the concession rate for the premium component, or introducing a tiered system with progressively higher subsidy rates that depend on the extent of the increase in a firm's RDI activity."*

The TTNA recommends:

2.2.1. The federal government adopts the Productivity Commission's recommendation that the tax offset arrangements for small companies be amended to remove the perverse incentives resulting from the current eligibility threshold for RDI expenditure.

2.2.2. The federal government increases the RDI tax concession to 250% for RDI that concentrates on environmental solutions. Such a concession would place Australia in the competitive position in the global market place as the "talent factory" for climate change solutions.

2.2.3. Additional funds be directed to Invest Australia in order to develop a program that encourages international companies in Australia to take IP overseas.

2.3. Serial innovation

To maintain strong growth in an ever more competitive and interconnected world we need to keep developing new ideas, better ways of working, new products and services and improved ways of marketing and delivering goods to the world.

Government programs and the regulatory environment should therefore be continuously adapted to encourage a responsive business environment of serial innovation and entrepreneurial flair.

There is a need to establish an improved taxation regime for the results of entrepreneurial efforts, which could be characterised as negative gearing for entrepreneurs. The TTNA supports this issue which was raised by the Cooperative Research Association in its submission to the innovation review. Examples cited in this submission were that:

- a "serial innovator" cannot currently claim tax concessions for costs associated with failed ventures;
- the ATO makes determined efforts to apply the "same ownership" or "same business" test when the essence of innovation is changing alliances of owners and changing business models;
- taxation is levied when there is no "liquidity event" to create funds for the required tax;
- transfer of IP from researcher to commercialiser(s) should not create a taxable event. Only later when returns are generated should this occur.

The TTNA therefore supports the CRC Association's recommendations:

2.3.1. The ATO be requested to devise and implement a tax regime far friendlier to innovation and entrepreneurial activity than Australia's current tax regime.

2.3.2. Whilst liability can be recognised, the actual paying of tax should be linked to liquidity events.

2.4. Jumper leads for RDI tax concession for climate change solutions

The long-term prosperity and well being of Australia depends on sustaining our environment and tackling critical challenges such as addressing water shortages, protecting threatened species and reducing carbon emissions.1

TTNA members concur with the federal government that climate change is the most serious environmental challenge facing the world today. In parallel with the challenge are opportunities for industries to develop climate change solutions. With adequate incentives for RDI, Australian businesses can take advantage of growing global markets for sustainable products and services and deliver improved quality of life.

The TTNA recommends

2.4.1. The federal government connects the jumper leads to RDI for environmental climate change solutions by providing business with a 250% tax concession for RDI that leads to commercially sustainable products and services. (Repeat of 1.2.3)

2.4.2. The federal government honour its election promise to commit $75 million to a new climate ready program to support the development and

[1] Chapter Nine - Combating Climate Change and Building a Sustainable – ALP website

commercialisation of clean, green technologies in Australia.

2.4.3. The federal government honours its promise to examine ways to streamline the application process for the whole Commercial Ready program.

2.5. Beyond Petroleum - the next raw material?

During the last century scientific endeavours brought to the world synthetic materials mostly derived from petrochemicals. This change from natural fibres was a technological revolution and, the economic advantages of synthetics are likely to be viewed by future generations as short term. Aside from the continuing rising costs associated with petrochemicals, synthetics rely on non-renewable resources and incur unsustainable environmental costs in their production.

Polyester accounts for a 74% share in total man-made fibre production and usage globally[2]. During 2006 production increased by 10.5% to 27.2 million tons, of which staple fibre was 11.3 thousand tonnes and filament yarn was 15.9 thousand tonnes. Manmade fibres dominate nonwoven production at present (99% of total). World usage of fibres in nonwoven production is said to be 63% polypropylene, 23% polyester, 8% viscose rayon, 2% acrylic, 1.5% polyamide and 3% other specialty fibres. Natural materials are not yet a viable alternative for most technical applications.

The Australian RDI community has significant experience in fibre technology and is therefore well placed to join the global pursuit for sustainable biodegradable raw materials.

The TTNA recommends:

2.5.1. A Cooperative Research Centre for sustainable products and plastics, including the reprocessing or de-polymerisation of materials should be established with the textile/carpet sector;

2.5.2. The federal government invests in bringing to Australia international industry leaders in RDI who are researching and developing alternatives to petrochemical fibres.

2.6. Intellectual property rights

Intellectual property (IP) rights — such as patents, trademarks and copyright- award legal ownership to the creators. As with any other legal property rights, IP rights exclude others from using the IP freely; they can be bought and sold, and can be licensed to others for a royalty. If access to the development of IP rights in Australia were to be made more economical this would be an increased incentive for business to invest in RDI and in subsequent potential growth.

Our industry's main concerns regarding the current IP development and protection process are: the impact on an organisation's ability to share and disseminate knowledge without invalidating a developing patent; the interaction with competition policy; the costs and time taken for SME's to effectively develop IP rights and lastly the current management of recognised IP in universities, publicly funded research agencies and CRCs.

[2] The World Polyester - Trends in Demand and Supply. YarnsandFibers.com, Oct 2007

Further concerns include the breadth of patent protection, the dispute resolution process, and the impact of IP related provisions in international agreements such as free trade agreements (FTAs), particularly with countries such as China who have a commercial reputation for openly disregarding valid patents.

The introduction of innovation patents in 2001 helped to reduce the cost and improve the access for SME's to a level of IP protection. However, industry is concerned that the tests for "innovation" as against "invention" have not been clearly defined leaving disagreeing parties with only the option of federal court action to make this determination. Thus if action is necessary, the cost of defending an innovation patent is not substantially different to that of establishing a standard patent.

The TTNA supports the AiGroup's initiative that the federal government should introduce a grants scheme to support SMEs in meeting the professional costs associated with the auditing and management of intellectual property including the costs of legal, commercial or intermediary services.

The TTNA believes that robust and economical enforcement systems are needed in order to preserve both the confidence in the patent system and to protect the value of patent rights.

The TTNA supports the roll out of the intensive case management pilot program currently being trialled in the federal court in Sydney as a means of narrowing the scope of IP disputes at the outset.

The TTNA favours opening access to simpler processes of the federal Magistrates Court for patent disputes, as was recently announced for trademark and design matters. This could particularly apply to disputes over innovation patents. The TTNA does not support changes that disallow patenting of legitimate inventions disclosed in a patent specification for which patent protection was not initially sought.

The TTNA recommends:

2.6.1. That small grants could be made available for SME's to test their IP assumptions pre-patent application and then, if a this process can be shown to have met a set of specific criteria, grant support for SME's to defend their IP/patents (both in Australia and overseas).

3. Connecting markets and industries

The Australian technical and nonwoven industry has proved that it can successfully enter a wide range of international markets by producing premium specialty products that can compete against the best in the world in an equitable environment. The international body Industrial Nonwovens & Disposables Association (INDA) which is based in North Carolina assessed the Australian industry as one that was *"well positioned with the important technologies"* (refer 7.4.1). Future growth depends on further development of industry networks and integrated supply chains to reduce costs and speed up delivery, technology promotion and knowledge transfer, shared information and ideas and development of a critical mass.

Given the relatively small Australian population, features of the local operating market include flexibility and a capacity to supply niche markets, characteristics which are a proven formula for success in developing export markets. This has imposed pressures on Australian industry to innovate and thus has become a defining characteristic of the Australian manufacturing psyche and which is also a key ingredient for exportable products. Automotive, filtration, medical, acoustic and geotextiles products are among the principal goods sold overseas and are typified by technical properties rather than low cost. Exports are viewed as a foil against imports eroding conventional markets and enabling volumes and overall growth to support equipment purchases which are designed to produce capacities suitable for larger markets. Additional volumes also assist a company's sourcing ability, thus reducing the overall cost of production.

The Australian technical and nonwoven textile industry is of the view that the future is tied to exports and access to overseas markets. However, it must be noted that the cost of developing export markets is considerable. Demonstrating capability to customers and developing the linkages necessary to sustain viable business takes considerable time and money.

3.1. An ability to trade

The Department of Foreign Affairs and Trade website (www.dfat.gov.au) states that *"the Australian Government supports the negotiation of comprehensive Free Trade Agreements (FTAs) that are consistent with the World Trade Organisation rules and guidelines and which complement and reinforce the multilateral trading system. Free trade agreements (FTAs) promote stronger trade and commercial ties between participating countries, and open up opportunities for Australian exporters and investors to expand their business into key markets."*

However, FTA's have not in all cases provided genuine market access opportunities for Australian carpet manufacturers and as a result these FTA's have actually contributed to a net rise in textile imports. This is true for the Australia-Thailand and Australia-USA Free Trade Agreements.

The TTNA believes that the USA's yarn forward rule of origin imposes unambiguous restrictions on the ability of Australian textile manufacturers to benefit from the Australia-USA Free Trade Agreement. As a matter of priority every effort should be made through bilateral negotiation to remove such non-tariff barriers. In principle the TTNA supports trade liberalisation; however, any bilateral or multilateral agreement must provide genuine market access opportunities.

The United States (US) dollar is the global currency for international trade. The significant appreciation in the value of the Australian dollar against other currencies,

and in particular the US dollar, has had a serious and detrimental impact on the TCF sector in recent years. The high Australian dollar is a significant impediment to the cost competitive position of Australian textiles in offshore markets.

The TTNA recommends:

3.1.1. The federal government ensures the Australian technical and nonwoven textile industry has adequate opportunities to showcase its talent and capabilities. Funding support should be augmented for participation in overseas trade forums/collaborative export efforts, and participation in international technical delegations.

3.1.2. The Export Market Development Program be amended to provide reimbursement for employment costs of an export manager as opposed to an export consultant.

3.1.3. The Commercial Ready program be increased for "Export Ready" products.

4. Environmental challenges and opportunities

The manufacturing sector is a key contributor to Australia's prosperity and is central to the future of our sustainable energy. The challenges for this sector are to maintain market competitiveness while meeting and surpassing today's increasingly constrained environmental framework in addition to finding manufacturing solutions to environmental sustainability. The enduring responsibility for the industry is therefore twofold; firstly, to practice environmentally sustainable manufacturing continuously and secondly, to manufacture for environmental sustainability. Members of the TTNA produce advanced materials that are providing and will continue to provide an ecologically sustainable future.

4.1. Environmentally and Economically Sustainable Products

Technical textiles and nonwovens are advanced materials engineered for many functions. They make an important contribution to the protection of our environment. Examples include:

- textile filtration media plays a key role in our daily lives through the purification of drinking water and industrial and domestic effluent. The Australian technical and nonwoven textile firms produce a wide range of

complex fabrics for use in air, gas and water filtration which reduce greenhouse gas emissions and prevent groundwater contamination by toxic chemicals, eg: gas collector systems in coal fired power stations and landfill, mining and industrial leachate filtration and collection systems.

- geotextiles are engineered permeable fabrics which play an invaluable role in erosion control along our coastline; reduce groundwater and storm-water contamination by filtering soil sediment; and promote revegetation by stabilising the soil to allow a root system to develop.
- smart textiles (Call them smart, intelligent or interactive). Such textiles react to outside stimuli and perform tasks e.g. they conduct electricity to open or close switches, emit heat, change colour, as well as other special features. Applications in the future could be as simple as reacting to an environment in order to reduce electricity consumption.
- reduced water evaporation through the use of pool covers and anti-evaporation/shade cover systems on potable water storages and irrigation channels. Evaporation is a major cause of reduced water resources but that can be reduced to less than 97% through the use of advanced materials supplied by the technical textiles industry.
- the reduction of fuel consumption and greenhouse gas emissions is a primary focus of the automotive industry. Advanced materials produced by the TTNA industry play a key role in gas emission control systems and a reduction in the weight of materials used in a vehicle, with the added benefits of lower noise pollution and the opportunity for improved recycling of a vehicle's components at the end of its life.
- latest generation nets that negate the use of chemical contaminants in the aquaculture industry (anti-fouling treatments) which pollute our oceans. This improves fish health and increases yield in this growth industry.
- And the list goes on…

4.2. Environmentally and Economically Sustainable Manufacturing

Sustainable manufacturing in Australia depends on creating an internationally competitive manufacturing industry and attracting the next generation of manufacturing technologies to Australia. Solutions that technical textiles and nonwovens provide in reducing global warming and environmental pollution will be eagerly accepted by the broader global market. Given Australia's reliance on fossil fuels, scarce water reserves and high levels of consumerism, environmental best practice will become a way of the future at a faster pace than in many developing economies that currently attract international investment in manufacturing. Necessity will create opportunity and innovation.

The Australian technical textiles and nonwovens industry has embraced many strategies which reduce water and power use, prevent chemicals polluting the surrounding ecosystem and reduce waste. Decisions are being made early in the product development phase that eliminate, reduce downstream environmental impacts. The goal is for these products to be manufactured in such a way that the product and the manufacturing process has the following attributes:

- all materials and process inputs and outputs are safe for humans and the natural environment in all phases of the products life.
- all energy, material and process inputs come from renewable or recycled sources

- all materials are capable of returning safely to either natural systems or industrial systems
- all stages in the product life cycle actively support the reuse or recycling of these materials at the highest possible level of quality
- all products contribute to our quality of life, health and well-being.

Thus a key driver for the TTNA to achieve these goals and to have a neutral or positive environmental footprint is to invest in innovative technology.

There is no question that the future of the technical textiles and nonwovens industry in Australia will depend heavily on new technology and the application of that technology to solve environmental problems. Increasingly the wider Australian industry will seek solutions to reduce their environmental impact from the technical and nonwovens textile industry. Salient issues for TTNA members include the following:

- **funding Research, Development and Innovation** - To continually develop materials that meet the demanding requirements of the future, the Australian technical textiles and nonwovens industry depends on continued research, innovation and product development, new state-of-the-art equipment and a skilled workforce to develop advanced materials for a sustainable environment. The federal government has a key role to play in achieving these goals and the TTNA will focus its energy on developing strategies that align government policy with industry needs.
- **developing solutions for the rest of the world–exporting our IP** - Australian industry is well placed to make a significant difference to the development of a sustainable future for this country and the rest of the world. Much of the intellectual property developed for domestic environmental solutions can make a difference in other countries. For this IP to remain in Australia and to support local manufacturing, long-term thinking and strategies are needed. The broader textiles community has been dependent upon fossil fuels for the production of raw materials, yarns and fibres. Why wait for the oil to run out? The TTNA is focused on developing the next generation of raw materials to be used by our industry.
- **investment in skills development** - In recognising that new entrants to the industry should graduate with environmental management skills, the TTNA is encouraging training providers to incorporate environmental management competencies into the existing Australian Qualifications Framework (AQF) and short course programs. The TTNA encourages investment in developing web-based learning resources that support accredited qualifications in addition to resources for industry-based learning.
- **lifecycle assessment** - To understand further the environmental impact of textiles, a product's complete life cycle is examined including growing and/or processing the fibre, manufacturing the yarn and subsequent fabric, dyeing and finishing (if used), cutting and making the final product and maintaining the product during use and disposal or recycling. The TTNA intends to conduct an industry-wide life-cycle assessment (LCA) which is an analysis of environmental impacts associated with the industry.

4.3. Innovation to mitigate landfill

The organised recovery of waste textiles can be traced back as far as the old clothiers, many of whom were farmers involved in all stages of textile production. Indeed, the practice of recovering waste is probably as old as the art of spinning and weaving. Shoddy and mungo were invented when old clothes were ground back into a fibrous state that could be re-spun into yarn. The shoddy industry, which was centred around towns in West Yorkshire in the UK and Prato in Italy, concentrated on the recovery of wool from rags. The importance of the industry can be gauged by the fact that even in 1860 the town of Batley was producing over 7000 tonnes of shoddy. At the time there were 80 firms employing a total of 550 people sorting the rags. These were then sold to shoddy manufacturers of which there were about 130 in West Riding. Since these early days most countries have operated industries waste textiles industries, Prato in Italy being a prime example.

Whilst it is difficult to quantify, a representative of the National Association of Charitable Recycling Organisations estimates that over 50 million kilos of textile waste is collected by Australian clothing recyclers (which are likely to be private operators or charities) through charity bins and donations. Much of this can be reclaimed and recirculated through charity shops or reprocessed into functional textiles. However, 12.5 million kilos are unsuitable for reclamation and is sent to landfill.

Recycled polyester (PET) polymer which originates from kerb-side recycling of PET soft drink bottles can be used in making textiles. There are a number of examples in the marketplace including polar fleece and bidim®, a geotextile. With low recycling rates within Australia, production quantities are increasingly difficult to source from local suppliers. Australia's leading geosynthetic company sources the majority of its recycled PET polymer (i.e. soft drink bottles) feed stock from South Africa and Asia. It is accepted within the recycling industry that the best recycling program is that adopted in South Australia, where the deposit scheme encourages recycling. Further, with no incentive to pursue recycling, there will be little or no investment in the equipment to recycle.

Within the Australian industry, significant examples of the commercial use of waste can be found. The federal government should introduce new and strengthen existing policies in order to encourage greater use of recycled inputs.

The TTNA recommends:

4.3.1. The federal government ameliorates the costs of recycling, by introducing transport credits to offset the costs of transporting products for recycling, particularly from regional areas;

4.3.2. The federal government honours its election promise to introduce a new $75 million grants program for Australian manufacturers to help improve production processes, reduce environmental footprint and cut carbon emissions;

4.3.3. Support should be provided for investigating the establishment of a national carpet recycling program;

4.3.4. A Cooperative Research Centre for sustainable products and plastics,

including the reprocessing or de-polymerisation of materials should be established with the textile/carpet sector (repeat of 2.5.1), this includes government funds RDI for converting textile and apparel waste streams into energy that can be used and/or fed back into the power grid;

4.3.5. Stronger legislation on fibre content on garment labelling to assist easier collection and sorting;

4.3.6. The federal government honours its election promise to provide grants of between $10,000 and $500,000 to assist small and medium sized companies re-tooling for climate change, and encourage bigger grants for larger manufacturers on a case-by-case basis;

4.3.7. The federal government honours its promise to establish a $90 million green building fund to help Australian businesses implement cost-saving energy efficiency measures through the retrofitting and retro-commissioning of commercial buildings;

4.3.8. The federal government honours its promise to develop a $15 million clean energy export strategy and a $20 million clean energy innovation centre, and for the strategy to provide critical capacity in Austrade to promote Australian clean energy exports;

4.3.9. The federal government consider imposing a national refund system to encourage recycling of PET soft drink bottles, which would divert millions of tones of waste from landfill into productive feed stock;

4.3.10. The federal government to honour its promise to establish a "green car" initiative, as the automotive industry is a key driver of innovation for the technical and nonwoven textiles industry.

5. Building a skilled workforce

A higher skill set is required to meet the challenge of producing higher value-added products more efficiently, and at a higher quality. The objective of industry is to increase the value-added potential of the workforce in order to help reduce manufacturing costs, thereby fortifying a competitive advantage. - MSA - Data and Information Project: Technical and Nonwoven Textiles, May 2006

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.

The process of developing and bringing to market technical and nonwoven textile products for the application areas, noted in Appendix A, involves a range of both marketing and manufacturing-related knowledge inputs at each development stage. The industry draws from a wide range of skills including trade, engineering, design, industrial chemistry, project management, finance, marketing and general management skills. A highly trained workforce is viewed by the industry as an indispensable ingredient to achieve world class products and performance levels.

There is a skills shortage in a range of areas due to the pace at which both the domestic and global technical and nonwoven industries are progressing and as a result of an ageing workforce and inadequacies in the traditional education system. In order to be ahead in international competition, the industry needs personnel with above average skills who are in a position to perform at world class levels. Efforts in this area are imperative in order to strengthen the force of innovation.

For the future the industry requires for the future a rising number of skilled workers who are able to cover broad areas of employment with the support of flexible training. Rigid vocational training no longer does justice to capital equipment and end applications. A responsive educational and training system is crucial to all manufacturing industry sectors as is ongoing dialogue between industry and training providers

Traditionally, textile specific training has focussed on apparel textiles and falls short of technical industries' needs. Indeed, the only textile course in NSW was conducted at the University of New South Wales and that was abandoned in 2000. The industry reported a growing shortage of skilled research scientists, textile engineers, laboratory staff and technologists. Making funds available for post-graduate scholarships will no doubt help to produce a generation of research leaders who are at the cutting edge of technical textile and fibre research, as well as research scientists with practical experience of the application of their discipline in the textile industry. These systematic shortcomings extend to education and training in nonwoven technology. Until recently, there were no courses or even modules on offer for this vital industry sector.

5.1. Sourcing and recruitment of suitably qualified/skilled people

In comparison to other industries, the technical textile industry is fairly small and the technical skill set required for the industry is therefore scarce. This scarcity has been exacerbated by the overall demand for general technical skills within Australia, with the result that technical textile businesses are unable to source skilled personnel in the local market. Whilst the emphases on training will hopefully correct this situation over the longer term, there is a need to address the skills shortage in the short term. One way to do this and build the local base of technical skills is by sourcing trained people overseas. However an expensive process and often involves overseas travel to interview candidates, the financing

of visa application, the costs of bringing employees and their family to Australia and some allowance for settling in.

Consideration should therefore be given to assisting the sourcing and recruitment of suitably qualified and skilled people (with skills in manufacturing, applications, research or sales) overseas and bringing them to Australia.

5.2. International Fibre Centre (IFC)

The TTNA has been able to provide training in areas that weren't provided by the VET system by accessing support from the International Fibre Centre (IFC). Funded by the Victorian Government, the objective of the IFC is primarily to support and facilitate access to education and training programs relating to textile processing and manufacturing from fibre to fabric, for use by the Australian fibre and textile industry and Australian tertiary educational institutions, and to design, introduce and manage funding programs in relation to such education and training.

Support from the IFC has enabled the TTNA to deliver a number of relevant short courses on specific themes such as:

- EDANA Nonwovens Training Course, in collaboration with the International Fibre Centre (IFC) and RMIT University (2003)
- Nonwoven and Technical Textile Innovation and Technology Program (2003)
- The Textile Finishes, Coatings and Laminating Course (2004 and 2006) in collaboration with the CSIRO Textile and Fibre Technology, International Fibre Centre (IFC) and RMIT University
- The Mechanics of Adhesion, in collaboration with the CSIRO Textile and Fibre Technology, International Fibre Centre (IFC) and RMIT University
- The Industrial Nonwovens and Disposables (INDA) Nonwoven Product Development Workshop Bursary Program for Training at the North Carolina State University Nonwovens Cooperative Research Centre (NCRC) (2004 and 2005).
- Fibre, Yarns, Textile and Apparel Tests Course (2005)
- Carding: Theory and Practice in the Work Place (2007)
- Controlling the Fibre Orientation in Nonwoven Technology (2008)
- The Nonwovens Basics Workshop (2006 and 2008)
- The Nonwovens Product Development Workshops (2006 and 2008)

The TTNA recommends:

5.2.1. The dedicated funding stream available through the IFC be nationalisation for the benefit of industry Australia-wide.

5.3. Workplace Training

As mentioned previously, all textile firms need "technical or textile trade skills" that are specific to the machinery each firm employs for production. The different production streams are dictated by the type of machinery in which the firm has chosen to invest and, therefore training should be undertaken in the workplace on the operating machinery.

A survey undertaken in 2005 indicated that 70% of respondents viewed that appropriate training was in-house or short-course/workshop. Partnerships between industry and training organisations are easily facilitated by a responsive and flexible educational and training system that invests in ongoing dialogue with

industry. Greater flexibility should also be provided in the application of public funding to allow training providers to become more actively engaged in enterprise and industry level workforce development strategies as a means of raising skills levels.

The TTNA therefore concurs with the federal government's view that *"an innovative, creative economy requires a wide range of highly skilled tradespeople, scientists, engineers and professionals".* And that investment in education at all levels is essential if Australia is to build the workforce of the future, maintain its competitiveness and secure its long-term economic prosperity.

The TTNA recommends:

5.3.1. The federal government fund more places for Textile Engineers.

5.3.2. The federal government honour its election promise to "halve HECS fees for new maths and science students in addition to halving annual repayments for up to five years for graduates who take up work in a relevant occupation, including teaching," and requests that this initiative be extended to Engineering students.

5.3.3. The federal government extends the promised initiative to facilitate the placement of researchers into industry - particularly Post Graduate students (to help and develop a new idea for commercial potential) to pay 100% of the salary and on-costs for each 12 month placement.

6. Operating in regional areas

The Australian technical and nonwoven textiles industries are located mainly in Victoria and NSW, although they employ a considerable amount of people in regional areas. By way of example:

- Albany International is based in Gosford, NSW
- Geofabrics Australasia is based in Albury, NSW
- Aunde Norwellan is based in Stawell, VIC
- Elco solution is based in South Port, QLD
- Kimberly-Clark Australia is based in Albury, NSW and Millecent, SA

Any growth of the technical and nonwoven industry could be a significant catalyst for, and contributor to, the betterment of regional economies. However it must be acknowledged that operating in a regional area has some unique characteristics and needs, in addition to those of the metropolitan operating environment.

Manufacturing activity in regional areas is particularly vulnerable to changes in the operating environment in view of transport costs and service inputs. For example the cost of transporting a 40 foot container from Albury to Melbourne port is A$1,100. Whereas, the cost of transporting a 40 foot container from the Gold Coast to Auckland is A$2,300 (inclusive of road transport, documents and port charges and sea freight). Additionally, it is cheaper to move goods from Asia to Perth, than it is to transport them from the Gold Coast to Perth. Indeed, these increases coupled with the rises in utility costs are negating the benefits of operating in a regional location.

The industry also has powerful linkages with the services sector as specialist expertise such as IT and electrical engineering is increasingly out-sourced. It draws upon a wide range of information management and logistic services for support which are both critical to the industry's' operating environment and the well-being in regional areas.

The shortage of skills and the inability of firms to attract sufficient numbers of top quality young people into the manufacturing industry also act as major barriers to growth, particularly in regional areas. Reported skills shortages include engineers, quality control and laboratory assistants.

The TTNA recommends:

6.1.1. The introduction of transport credits to mitigate the costs of manufacturing in regional areas.

7. Appendix A

7.1. The Technical Textiles and Nonwoven Association

The Technical Textiles and Nonwoven Association (TTNA) is an industry association representing the interests of the technical textile and nonwoven industry and supply chain partners. It is registered under the Associations Incorporation Act 1981 - Section 30 (4) Consumer Affairs Victoria. In response to the TCF Action Agenda conducted by the federal government, the TTNA was incorporated in 2000 to provide a forum for the advancement of the industry, as a conduit through which the interests of the industry are represented to government bodies and information disseminated on national and global industry issues.

The purposes of the Association are to provide a forum for the advancement of the Industry and to represent and foster the development of the Industry and in particular:

- to provide a forum for discussion of issues facing the Industry;
- to encourage an internationally competitive and innovative Industry;
- to form collaborative links with other industry and business organisations, including education and research and development organisations;
- to foster the growth of an appropriately skilled and sustainable workforce in the Industry through training;
- to develop and support networks of communication within the Industry;
- to compile statistical information on revenue, exports, research and development of the Industry;
- to promote the Industry;
- to encourage research and development and innovation in the Industry;
- to represent the interests of the Industry to government bodies.

Since 2000 the TTNA has been a conduit for knowledge and technology transfer is exchanged from domestic and international third party institutions to the private sector.

The global textiles industry produces a wide range of products and supplies every major manufacturing industry in the world. The Australian textiles industry has a similar profile with a similar range of manufacturers and end users of products. The technical textiles and nonwovens industry is regarded as the fastest changing sector of the global and Australian textiles industry – it is thriving and expanding using high level technology and high value adding manufacturing procedures.

A non-exhaustive list of the technical textiles and nonwovens include geotextiles, filtration, textiles for aerospace, marine, safety and transport industries, medical textiles, wipes and more (refer section 7.3). The industry also shares a number of technologies and has overlapping interests with other material based industries such as textile reinforced composites, glass, plastics, films, membranes, materials and paper.

The Australian technical textile and nonwoven industry employs around 6,800 people with the manufacturing states of New South Wales and Victoria dominating employment.

A recent study on the industry found that there is market demand from downstream industries that will allow Victorian fibres and textile producers to

continue to grow. The potential application of fibres and textiles to a range of new industries has widened. This is due to increasing innovation and technological advancements in materials engineering. Products that are expected to generate demand include technical textiles and environmentally friendly products.

Since inception, the TTNA has served industry through numerous initiatives, some of which are listed as follows:

7.1.1. Education and Training - development and delivery to industry

- The Nonwovens Product Development Workshops (2008 & 2006)
- The Nonwovens Basics Workshop (2008 & 2006)
- Controlling the Fibre Orientation in Nonwoven Technology (2008)
- Carding: Theory and Practice in the Work Place (2007)
- Fibre, Yarns, Textile and Apparel Tests Course (2005)
- The Industrial Nonwovens & Disposables (INDA) Nonwoven Product Development Workshop Bursary Program for Training at the North Carolina State University Nonwovens Cooperative Research Centre (NCRC) (2004 & 2005)
- The Mechanics of Adhesion in collaboration with the CSIRO Textile and Fibre Technology, International Fibre Centre (IFC) and RMIT University
- The Textile Finishes, Coatings & Laminating Course in collaboration with the CSIRO TFT, IFC and RMIT University (2004 & 2006)
- Nonwoven and Technical Textile Innovation and Technology Program (2003)
- EDANA Nonwovens Training Course, in collaboration with the IFC and RMIT University (2003)

7.1.2. Curriculum Development

- Member of the Manufacturing Skills Australia Industry Advisory Committee (MSA-IAC)
- During 2004/5, Manufacturing Skills Australia worked with the technical textiles and nonwoven industry to produce a qualifications framework to be included in the TCF Training Package LMT00 Version 2. This framework includes units of competency from current Training Package qualifications and new units written specifically for technical textiles & nonwovens.

7.1.3. Offshore collaboration

- The International Technical Collaboration Project, including the following international agencies:
  - ITV Denkendorf (Germany)
  - RWTH Aachen, Textile Institute (Germany)
  - Technitex Partnership, Herriott Watt University (Scotland)
  - North Carolina State University Nonwovens CRC (USA)
  - Textile Techniques De France (France)
  - Centexbel (Brussels)
  - European Disposables & Nonwovens Association (Europe)
  - The Industrial Fabrics Association International (USA)
  - International Nonwovens & Disposables Association (USA)
  - The Nonwovens Cooperative Research Centre (USA)
  - The Faraday Centre for Technical Textiles (UK)
  - Gesamttextil

        - Textile Techniques De France (France)
        - The Filtration Society
    - Memorandum of Understanding signed between the TTNA and the Industrial Nonwovens & Disposables (INDA) in North America. (2004)
    - TTNA hosted the Australian Technical & Nonwoven Textile Showcase at Techtextil in Frankfurt, Germany (2005)

7.1.4. Industry Reviews

- The Australian Technical Textiles & Nonwovens Industry Profile, (November 2006)
- The Technical Textiles & Nonwoven Manufacturing Industry Technology Road Map (September 2006)
- The Productivity Commission Review (2003)

7.1.5. Collaborative Relationships

- The TTNA has commissioned CSIRO to develop and deliver a number of training programs for workshop and workplace delivery
- Memorandum of Understanding signed between the TTNA and the RMIT (ongoing)
- Manufacturing Skills Australia
- Memorandum of Cooperation signed between the TTNA and the Australian Canvas and Synthetic Products Association (ACASPA) (2008)
- The National Association of Charitable Recycling Organisations (NACRO)
- Composites Australia Inc.

7.1.6. Annual Conference themes

- Technical and Nonwoven Textiles for Sustainable Environmental Solutions (2008)
- The Three Rs – Recreation, Resources & Retirement (2007)
- Fibre Vision – Future Trends in Fibre Development and End Use Applications (2005)
- Advanced Materials for the Environment and the Production of Energy (2004)
- Advanced Materials for the a Secure World (2003)
- Advanced Materials for a Solution Driven Industry (2002)
- Innovations Opportunities in Fibres & Textiles (2001)

7.2. Definitions of the Technical & Nonwoven Textile Industry Sector

Technical and nonwoven textiles and fibres are widely regarded as the most thriving and fast changing sector of the global textile industry. Innovation in new materials, processes and applications is expanding non-traditional end uses for both new and existing textile products. In contrast to popular perception of the broader TCF industries, technical textiles and fibres is a high-technology and high value-adding activity.

In short, technical and nonwoven textiles are about function rather than fashion.

Industrial textiles, the traditional term for the industry sector have been around since weaving began. Up until the sixties most cars supported water bottles and

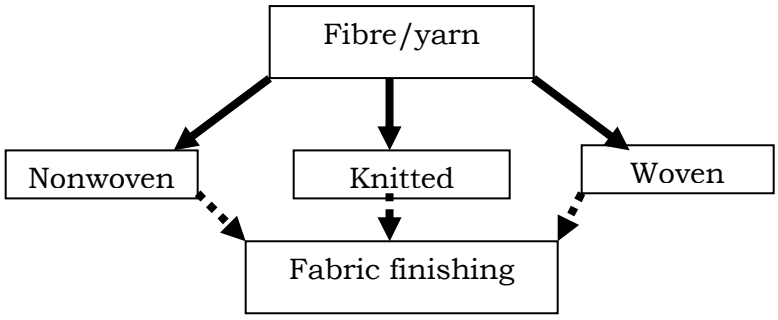
the coal cars of trains were covered by tarpaulins. Both products were made from canvas fabric woven from flax. Australian troops were sent to world wars in the same fabric permeated with oil and made into waterproof coats.

The line between a traditional textile and a technical/industrial textile may seem unclear to an outsider as many products could arguably fall into either division often depending on their end use or functional qualities. Of course, the broad range of products described as industrial or technical textiles adds to the complexity of defining exactly what an industrial or technical textile is, and thus individual firms identify themselves by their products' end use applications.

One of the distinguishing features of the evolving technical textiles industry is the emergence of traditional textiles and fibre producers into technical textiles. Hence, technical textiles provide an important avenue for structural adjustment within the textiles and broader TCF industries.

The process by which technical textiles are manufactured identifies the products further. For instance (as demonstrated in the figure below) a technical textile could be nonwoven or the result of more traditional textile making technologies such as knitted or woven.

7.2.1. Technical and nonwoven textile fabric formation



More traditional fabrics, such as knits, can also be considered a technical textile if, for instance, they have some advanced characteristic or quality (i.e. UV resistance or reduced flammability) due to added chemicals or synthetic fibres used in the making of the fabric for a specific end use or application. By way of example, the raschelle knitting technique which was traditionally used for making shawls, scarves and babies' blankets is now used for making shade-cloth and fabric used to reinforce embankments.

Nonwoven technology is one of the conventional sectors of the "traditional" textile industry and was best known for making felt used in craft products such as stuffed toys, hats and shoe linings, to name a few. Indeed, felted fabrics were around for centuries before weaving of knitting technology were invented. This form of manufacturing has surpassed its humble beginnings and is classified by the American Textile Manufacturers Institute (ATMI) as:

"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.

Furthermore, in order to create particular and/or additional performance and functional properties, secondary processes such as laminating, bonding, coating, surface treatments or the imprecations of chemicals are often used.

7.3. Applications and User Industries

Whilst they play a much more important role than is commonly acknowledged, technical and nonwoven textiles often go unnoticed as they are produced for functional properties rather than aesthetic or decorative characteristics. They are frequently used in a range of downstream applications in other manufacturing and service industries and, thus, not highly visible at the retail level.

A non-exhaustive list of end-uses includes aerospace, industrial, marine, military, safety and transport textiles and geotextiles. It also shares a number of technologies and has overlapping interests with other materials industries such as glass, plastics, films, membranes, metals, composites and paper.

UK-based textile industry consulting firm, David Rigby Associates (DRA), broke new ground in 1997 when it released a major report on the world market for technical textiles and industrial nonwovens. It was the first time that someone had substantially sought to define the industry and collate data to measure its value and significance. A synopsis of the major applications for technical textiles is listed below in alphabetical order rather than that of importance:

- Agriculture (Agrotech): agricultural textiles used in horticultural, forestry and fishing applications, such as nets, screens, ropes and cordage;

- Building and construction (Buildtech): a wide range of construction and architectural textiles, such as sound proofing, damp courses, heat resistance and insulation, pipe linings, reinforcements and facades as well as composite structural materials;

- Clothing (Clothtech): technical and functional textile components of garments and footwear, such as interlinings, insulating fill and waddings, and waterproofing;

- Environment (Envirotech): environmental and safety textiles, such as filtration and insulation products for such uses as mopping up oil spills, etc;

- Geological (Geotech): a range of geotextiles and geomembranes used for such things as erosion control through reinforcement and stabilisation, materials separation, filtration and drainage in civil engineering applications;

- Household (Hometech): technical components and functional textiles used in furnishing and floorcoverings, such as carpet and curtain backings, and fibre fill products such as pillows, duvets and cushions;

- Industrial (Indutech): industrial textiles used for such things as filtration, cleaning and in a wide range of products including hoses and belts for drives and conveyors;

- Medical and hygiene (Medtech): including textiles used for bandaging and dressings, hygiene products such as wipes, diapers and pads;

- Transport (Mobiltech): textiles used in road, rail and seas transport, such as tyre cord, hoses, belts, linings and seat fabrics in automobiles;

- Packaging (Packtech): a wide range of textiles used in sacking, packaging, wrapping and tying;

- Protection (Protech): including protective clothing including stab and bullet proof clothing

- Sports (Sporttech): including a wide range of composite materials used in boats, clubs, rackets, bicycle frames, as well as sail cloth, balloon fabrics, and artificial turf and playing surfaces.

There are many cross overs in the sectors named above. Additionally, the market for technical and nonwoven textiles and fibres is growing as the industry continues to innovate and develop products for old applications and new end uses. For example, filtration products are used in the manufacture of food products including milk products processing (i.e. yoghurt, cheese and skinny milk); they are also used in manufacturing steel and aluminium. Whilst they often replace a traditional product (which is the case for nonwoven disposable medical gowns) they increasingly forge new ground for products such as (shade sails for school grounds). Indeed, in the food processing industry, as new processed food products are developed to satisfy the time-poor customer, so too are the filtration techniques and thus the filtration media.

The above descriptions illustrate the diversity of the industry sector. However it must be noted that Australia does not make products in all the sectors listed. Products within these sectors may be low value and thus made in low labour cost markets, or they may be high-tech, high value products that make a significant contribution to the industry and a given supply chain.

7.4. International statistics

The market for technical textiles and fibres is growing as the industry continues to innovate and develop products for old applications and new end uses.

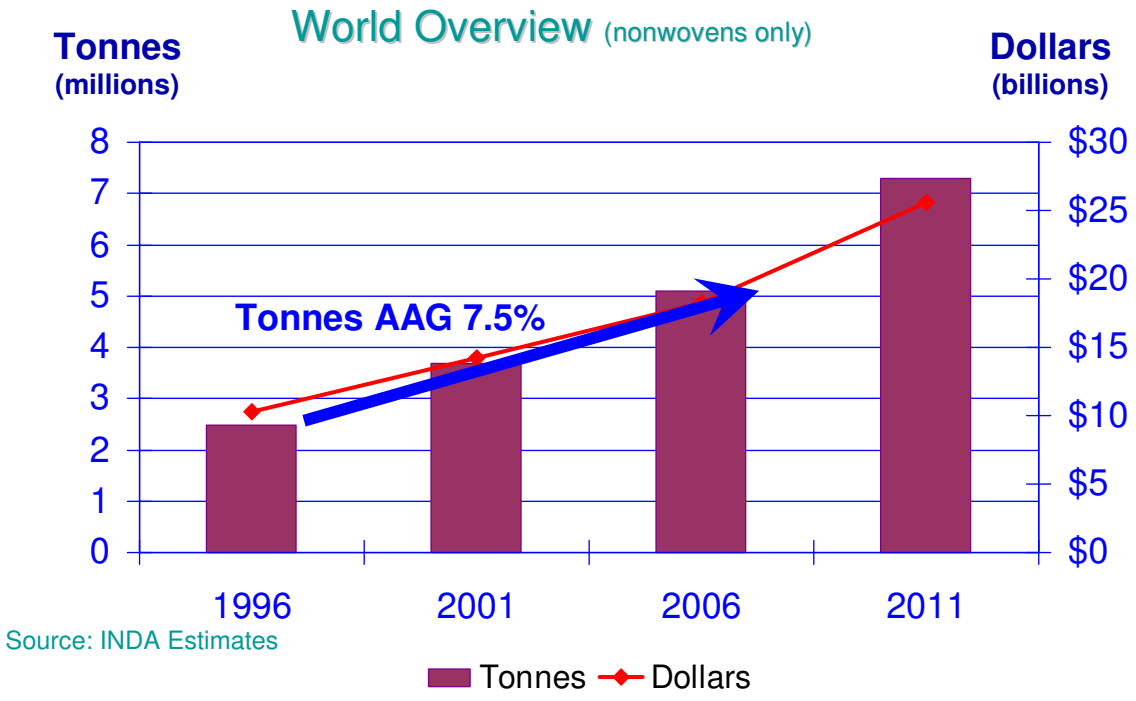
Growth in the technical textiles sector in developed countries, including Australia, is being driven by:

- environmental concerns and increasingly stringent environmental regulations;
- the need for increased energy efficiency and utilisation of waste leading to a wider search for materials for use in manufacturing and construction;
- high performance/whole of life cost factors encouraging the use of innovative materials;
- increasing wealth and focus on healthcare and personal protection
- an increased focus on leisure and sports activities
- an increased awareness of occupational health and safety issues.3

[3] ABED 1999, *Scenario Planning for the Technical Textiles Sector of the TCF&L Industries*, Australian Business Foundation, Sydney, p1.

The manufacturing technology for the modern nonwoven industry is high tech and supplied by relatively few machinery companies. Most of the modern nonwoven plants are turnkey projects installed in all global regions and, thus, production of nonwoven products is easily tracked. Figures on woven and knitted technical textiles are more illusive as they are often integrated in well established production facilities and, thus, production and turnover statistics, particularly those from old family owned companies are difficult to measure.

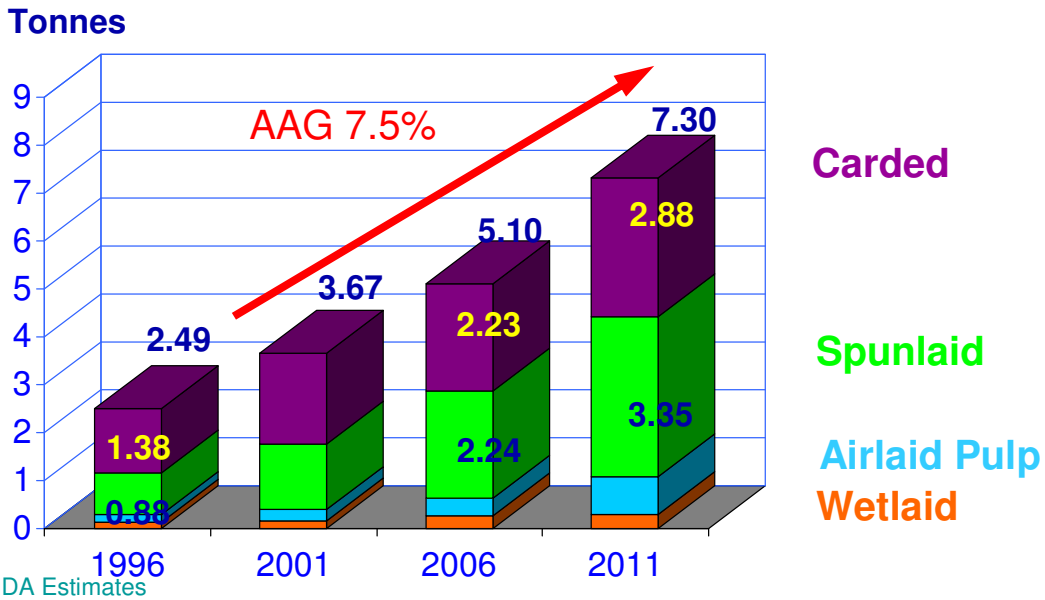
To this end, the following snapshot of world growth in nonwoven markets is an illustration of the aggregated sector of the technical textiles and nonwovens industry published by the Industrial Nonwovens & Disposables Association (INDA) which is based in North Carolina (USA).



Source: INDA Estimates

Nonwoven Web Forming Technologies & Trends

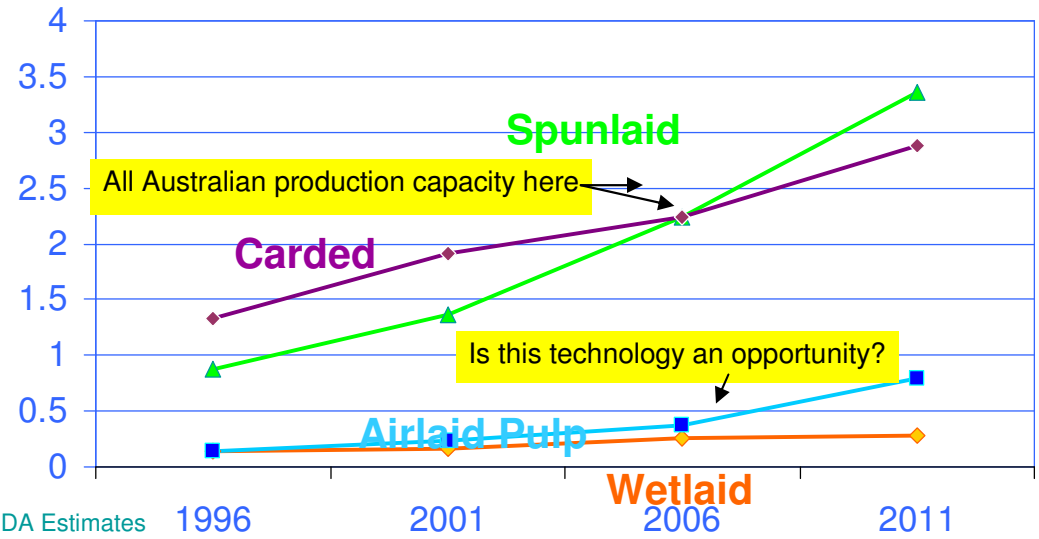
(millions of tonnes)



Source: INDA Estimates

Nonwoven Web Forming Technologies & Trends

(millions of tonnes)



Source: INDA Estimates

2005 Nonwoven Production - (000, tonnes)

Regions

Euro' Union	1,410
Asia-Pacific*	1,390
N. America	1,250
L. America**	340
Mid. East	205
R. of World	125

* Australia included in this region

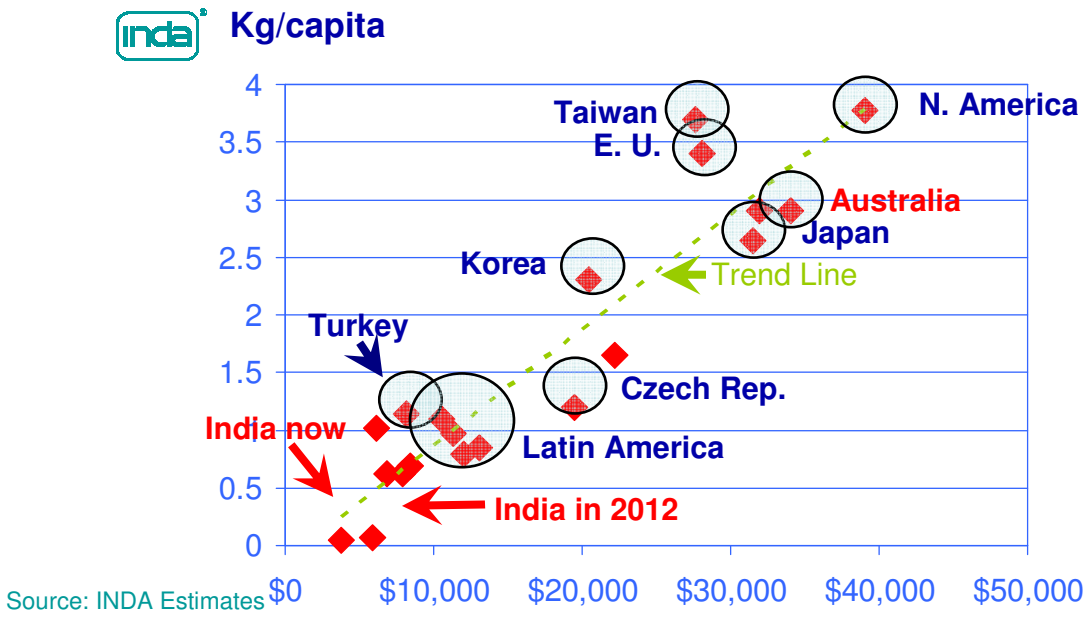
** Top 6: Argentina, Brazil, Chile, Colombia, Mexico, Venezuela

Selected Countries

Australia	58
Brazil	130
India (2007)	47
Japan	305
Korea	206
Mexico	130
S. Africa	25
Saudi Arabia	<25
Taiwan	140
Turkey	80

Source: INDA Estimates

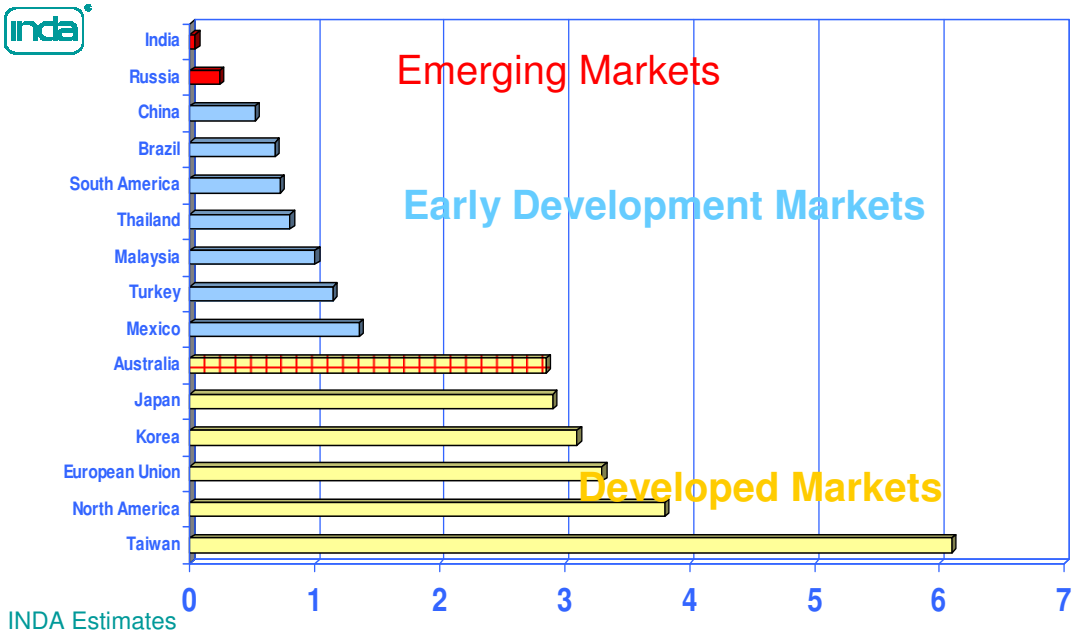
Nonwoven Consumption Rises as GDP per Capita Increases *



Source: INDA Estimates

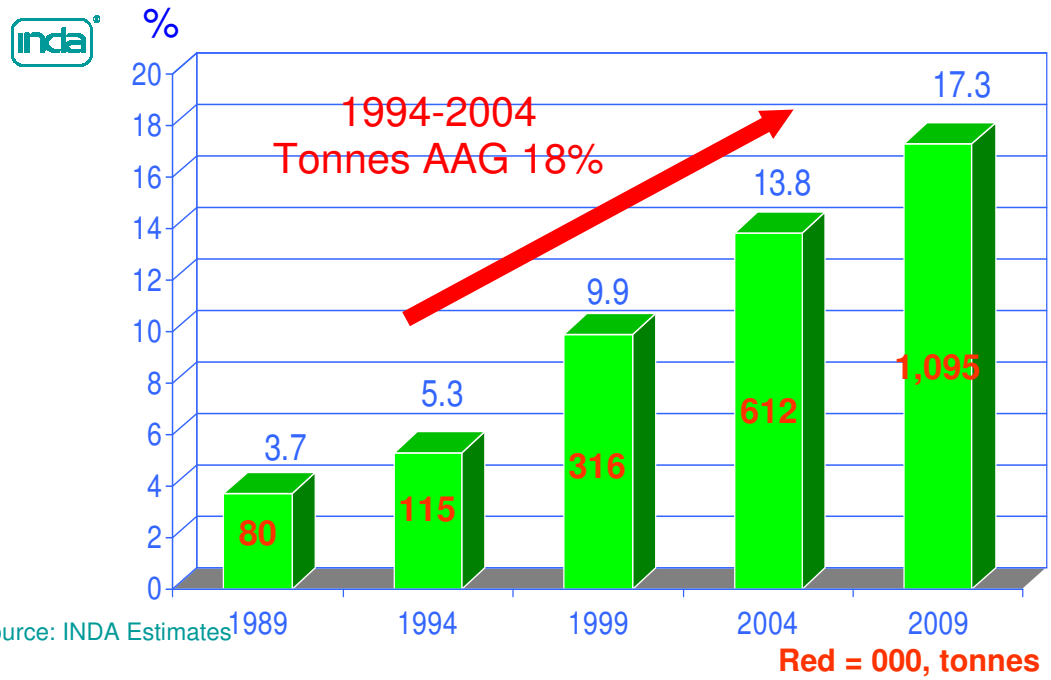
* PPP in US$ equivalents

Nonwoven Production per Capita - (kilograms)



Source: INDA Estimates

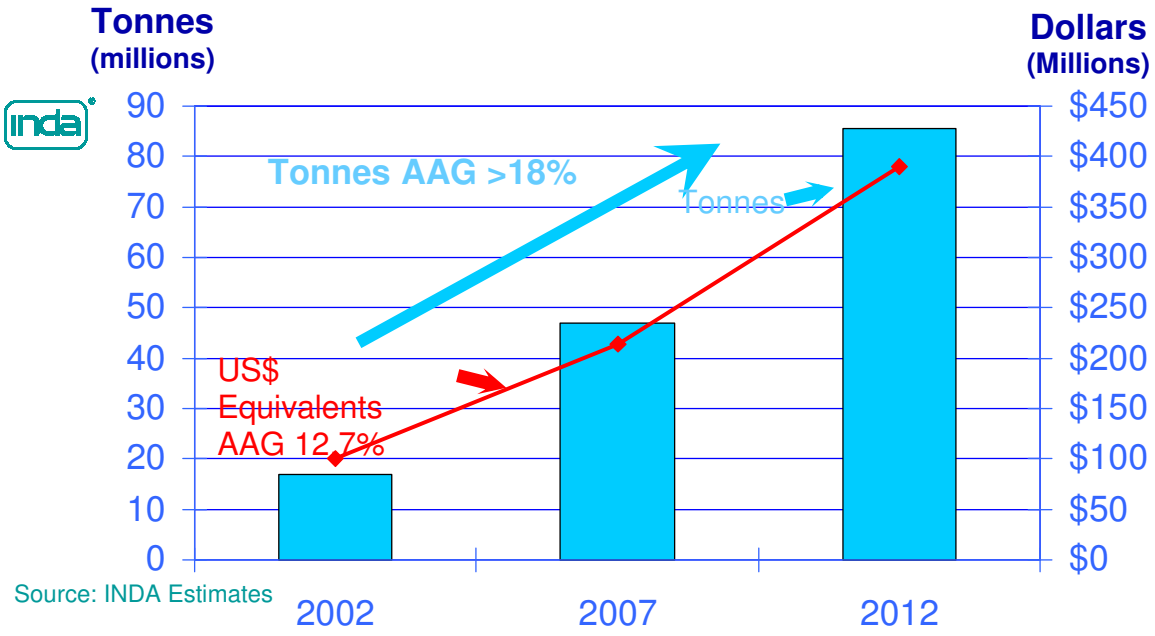
China's Rapid Growth - (percent of world total nonwoven production)



Source: INDA Estimates

Red = 000, tonnes

India Overview - an industry in the early development stage



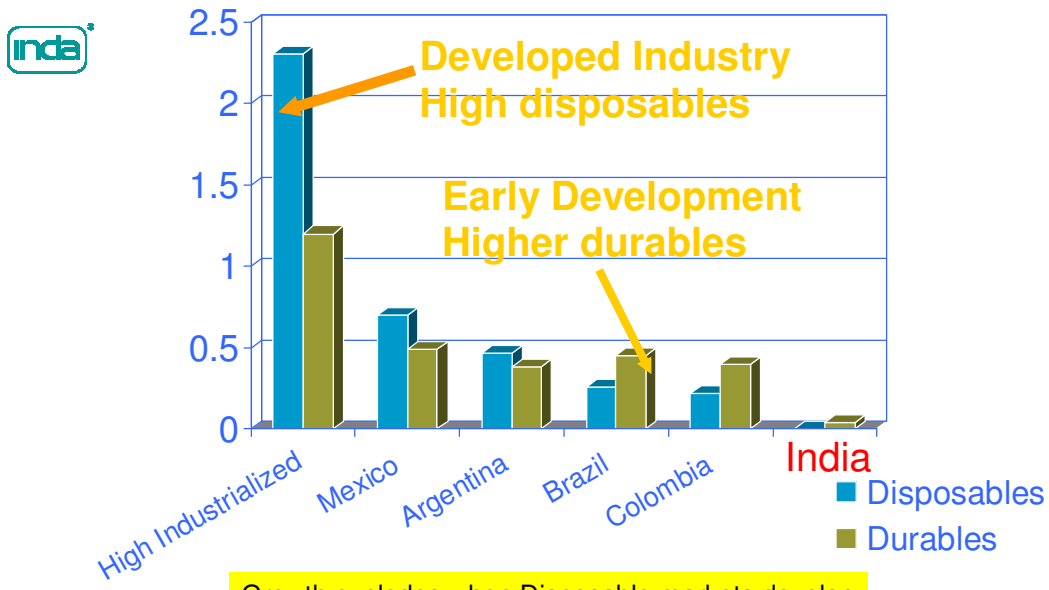
Source: INDA Estimates

2007 India Major Durable Markets - ($184 million in 2007)

	AAG (2007-2012)
Interlining	8%
Automotive	10%
Home Furnishing / Bedding	11%
Agriculture / Landscape Fabrics	8%
Geotextiles	24%
Coated / Laminated Substrate	11%
Roofing Substrate	8%
Carpeting	10%

Source: INDA Estimates

Market Progression as Industries Develop (kg per capita consumption)

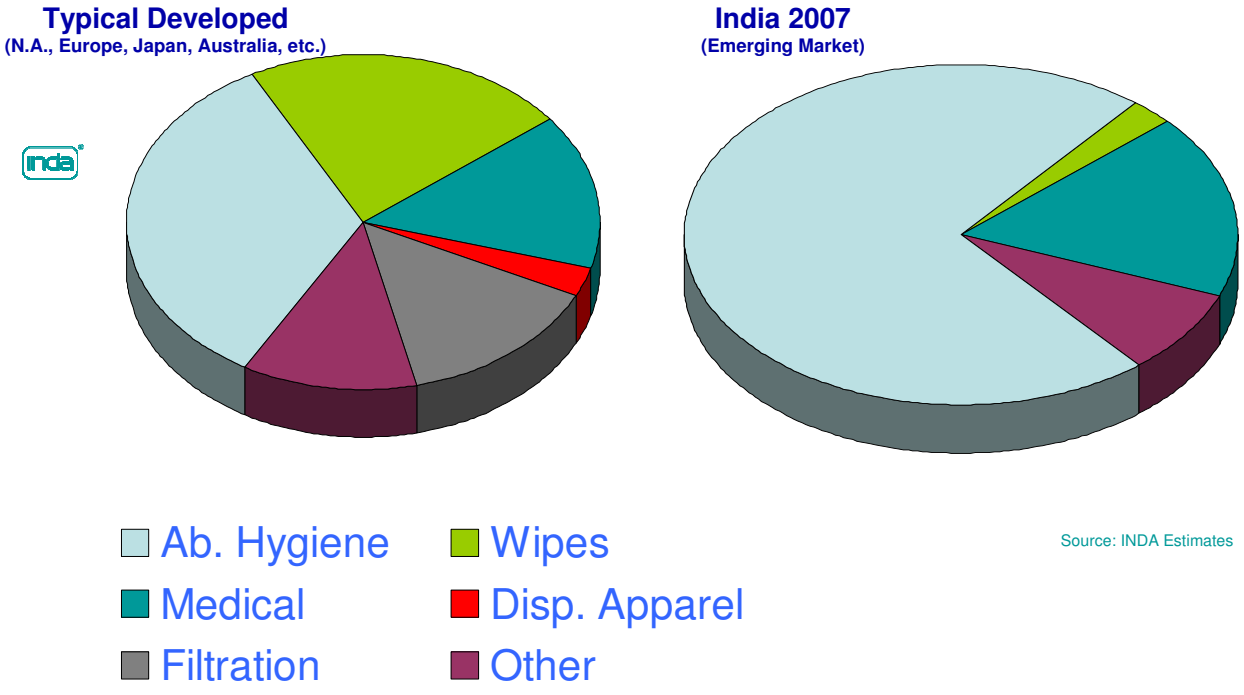


Growth explodes when Disposable markets develop

Source: INDA Estimates

Comparison of Disposable Markets at Early Stage of Development

(percent of total disposables production)



Source: INDA Estimates

7.4.1. Key Points made by INDA - 2007

- Nonwoven industry annual growth worldwide is 7.5%
- Nonwoven is the lowest cost textile
  - High speed production
  - Labour is a small part of total cost
- Many markets drive this industry: consumer/ industrial; disposables / durables; lightweight (<20 gsm) / heavy weight (200, 500 to >1000 gsm)
- Australia has high per capita usage and room to expand
- Some industry consolidation worldwide
  - More regional strong players
  - Fewer large, global producers
  - Includes nonwoven producers and converters
- India market is small but growing rapidly and good potential for export or investment in that country
- China experienced rapid growth of 18% per year

- Australia nonwoven industry is well positioned with the important technologies.
- Several of nonwoven technologies in Australia are state-of –the-art
- Airlaid pulp technology could be opportunity
- Rapid technical change is the usual for this industry
  - Higher speeds
  - Lighter weights
  - Improved product consistency
  - Less waste
- New fibre technologies (bicomponents and nano) are driving change with potential for new end uses.
  - Nonwoven apparel – the Holy Grail
  - Improved filtration