

NATIONAL TECHNOLOGY MISSION ON TECHNICAL TEXTILES

Preamble

Ministry of Textiles organized the Tex-Summit 2007 on 31st August and 1st September at Vigyan Bhavan, New Delhi. The Summit was attended by the leading industrialist, entrepreneurs, economists, technocrats. Prime Minister Dr. Manmohan Singh in his Valedictory Address announced about launching of Technology Mission on Technical Textiles in the XI Five Year Plan. Prime Minister also made an announcement that a Core Committee consisting of Ministry of Textiles, Ministry of Commerce, Ministry of Finance and NMCC be constituted to look into the problems plaguing the textile industry and assured all support for the development of the industry.

Introduction

1.1 Textiles are indispensable part of human life. They are used mainly to cover the human body for protection against all the adversities. Technological innovations have also made it possible for textile industry to offer technical solutions to the multiple end-users in the different industries.













1.2 Technical textiles are defined as textile materials and products used primarily for their technical performance and functional properties rather than their aesthetic or decorative characteristics. Other terms used for defining technical textiles include industrial textiles, functional textiles, performance textiles, engineering textiles, invisible textiles and hi-tech textiles.

1.3 Technical textiles are used individually or as a component/part of another product to enhance its functional properties. The examples of technical textiles used individually to satisfy specific functions are fire retardant fabric for uniforms of firemen, coated fabric as awnings, airbags, carpets etc. The examples of technical textiles as a component or part of another product are tyre cord fabrics in tyres, interlining in shirt collars, webbings in seat belts etc. Technical textiles are also used as accessories in processes to manufacture other products like filter fabric in food industry or paper maker felt in paper mills.

1.4 Technical textiles is a knowledge based research oriented industry and has been slowly but steadily gaining ground due to one or more of the reasons such as: functional requirement, health & safety; cost effectiveness; durability; high strength; light weight; versatility; customization; user friendliness; eco friendliness; logistical convenience etc.

1.5 Technical textiles are not a single coherent industry and market segment is diverse and broad based. Its usage is in diverse industries from aero space to railways to construction etc. and is developing in other industries also due to technological advances. The range and diversity of raw materials, processes, products and applications that it encompasses is immense. Depending on the product characteristics, functional requirements and end-use applications the highly diversified range of technical textile products have been grouped into 12 sectors application wise:

End use application wise segments of technical textiles

	Agrotech Horticulture + landscape gardening, agriculture + forestry, animal keeping		Meditech Hygiene, medicine
	Buildtech Membrane, lightweight + massive construction, engineering + industrial building.		Mobiltech Cars, ships, aircraft, trains, space travel
	Clothtech Garments, shoes		Oekotech Environmental protection, recycling, waste disposal
	Geotech Road infrastructure, Railways, Irrigation and Hydraulic structures, Waste Landfills, Dams etc.		Packtech Packaging, protective-cover systems, sacks, big bags, container systems
	Homotech Furniture, upholstery + interior furnishing, rugs, floor coverings		Protech Person and property protection
	Indutech Filtration, cleaning, mechanical engineering, chemical industry		Sporttech Sport and leisure, active wear, outdoor, sport articles.

Major technical textile products

2.1 The range and diversity of raw materials, processes, production and applications of technical textiles is mind boggling. There are more than 200 products classified as technical textiles and its application areas are increasing day by day, on account of technological innovations taking place in fibres, materials and processes in different parts of the world. Some examples of day-to-day use of Technical Textile products are given below:

Some examples of day-to-day use of technical textile products

Sr. No.	Applications	Products
1	Kitchen	Wipes, Floor Mops, Tea Bags, Coffee Filters
2	Clothe	Collar / Cuff Interlinings, Shoulder Pads, Waddings in Jackets
3	Shoe	Lining, Insoles, Toe Stiffners, Synthetic Uppers
4	Car	Carpets, Roof-liners, Insulations, Air Filters
5	Civil Engineering	Geotextiles in Roads, Railway Tracks, Soil Erosion, Slope Stabilisation
6	Furnishing	Carpets, Vertical Blinds, Wall Coverings
7	Factory	Dust Collection Filter Bags, Liquid Filtration, Clean Air Filters of AC systems
8	Hospital	Masks, Gowns, Caps, Dressing, Bandage
9	Hygiene	Baby Diaper, Sanitary Napkin, Wet Tissues
10	Bed	Blanket, Quilts, Mattresses

International Scenario

3.1 The world market for technical textiles was estimated to be around 19.68 million tonnes with a value of US\$ 107 billion during 2005 which is expected to increase to 23.77 million tonnes with a value of US\$ 127 billion by 2010. **The drivers for future growth of this industry are expected to be Asian countries like China and India.**

3.2 In the global scenario, Mobiltech, Indutech and Sporttech are predominant segments which contribute about 56 percent of total global consumption of

technical textiles. The segment-wise global market size in 2005 and potential in 2010 is given below :

Segment-wise market size of technical textiles

Volume – ‘000 tonnes

Value – US\$ mn.

Technical Textile Sectors	Year				CARG (%)	
	2005		2010			
	Volume	Value	Volume	Value	Volume	Value
Mobiltech	2828	26861	3338	29282	3.02	1.34
Indutech	2624	16687	3257	21528	3.98	4.85
Sporttech	1153	16052	1382	19062	3.40	3.21
Buildtech	2033	7296	2591	9325	4.63	4.73
Hometech	2499	7622	2853	8778	2.70	2.66
Clothtech	1413	7014	1656	8306	2.95	3.19
Meditech	1928	6670	2380	8238	4.43	4.33
Agrotech	1615	6568	1958	8079	3.55	3.84
Protech	279	5873	340	6857	3.63	2.82
Packtech	2990	5329	3606	6630	3.52	4.20
Geotech	319	927	413	1203	4.94	4.98
Total	19681	106899	23774	127288	3.59	3.20
of which Oekotech	287	1039	400	1389	6.45	5.67

Source : DRA.

3.3 The trend in the various sectors in the textile industry in many industrialized countries indicate that the use of conventional textiles has reached a static level and its manufacture has become highly competitive, often unviable and many companies are switching over to value-added technical textiles with capability to meet functional demands for precision applications. As use of technical textiles is dictated by need, its pricing normally offers good margins. There is a steady growth of both consumption and production of technical textiles throughout the world. A view of gaining ground that technical textile industry in the developed world is maturing in some significant ways and growth of technical textiles in developed economies is expected to be moderate. In contrast, China, India and other countries in Asia, America and Eastern Europe are expected to experience healthy growth in the near future. In the global context, sector-wise

contribution expected, future growth and ranking of the 12 sectors is given in **Table 1.1**

Fibre consumption in technical textiles

4.1 Technical textiles are predominantly man-made / inorganic fibre/yarn based because of inherent advantages of strength and versatility of such fibre/yarn and this trend is expected to continue in future also as per details given below:

Fibre consumption in technical textiles

Volume – ‘000 tonnes

Fibre Type	Year			CARG (%)
	2000	2005	2010	
Natural	3462	3839	4447	2.54
Man-made / Inorganic	13252	15843	19327	3.85
Total	16714	19682	23774	3.59

Source : DRA.

4.2 Fibre wise consumption indicates that polyolefin and polyester accounts for 50 percent of the consumption followed by glass and jute at 15 percent and 14 percent respectively. Cotton and viscose account for 7 percent and 6 percent respectively. The specialized fibres and yarns such as aramids and carbon fibres account for only 1 percent of total textile materials used in technical textile application.

Product wise consumption of technical textiles

5.1 Technical textiles are consumed in the form of unspun fibres, yarn and in the fabric form, however, major consumption is in the form of fabric at 67 percent, unspun fibres at 24 percent and remaining 9 percent in yarn type products. The examples of fibre, yarn and fabric type products of technical textiles are given below:

Examples of technical textile products

1.	<i>Fibres</i>	Reinforcement for composites, cushioning, fillings, electrical components, Insulation, Sports equipment, toys.
2.	<i>Yarn type products</i>	Sutures, Ropes, Fishing gears, shoe components, swings, etc.
3.	<i>Fabrics</i>	
(i)	<i>Woven fabrics</i>	Filtration, Flexible Bulk Containers, Conveyor belts, luggage, carpet and carpet backing, PVC coating substrates, Tarpaulin, Furniture components, Bed Ticking, Protective clothing, Electrical components, Geotextiles, sports and leisure wear, Wound care, Bandages, Insulation tapes, Narrow fabrics, Compression bandages.
(ii)	<i>Knitted fabrics</i>	Luggage, Fishing nets, Shoe components, Cleaning cloths, Filtration, Protective clothing, Sports and leisure wear, PVC coating substrates, knitted geogrids.
(iii)	<i>Non-wovens</i>	Coverstock-sanitary napkins & diapers, Pollution Control and other Air & liquid filtration, Garment Interlinings & Waddings, Geotextiles, Carpets-Home & Automotive, Shoe Components, Insulations, Cleaning Wipes, Personal & Medical disposables Furniture Industry, PVC coating substrates.

Status and Prospects of the Domestic Technical textile Industry

6.1 The Indian technical textile industry has presence in all the 12 segments but has been primarily active in the clothtech, packtech and sporttech segments. The production, however, has been limited to commodity products. There is no doubt that some of the textile units are also engaged in production of high-end products like parachute fabrics, balloon fabrics, ballistic helmets etc.

6.2 While conventional textiles, which is **export intensive** and about 35 percent of the production is exported, technical textiles is **import intensive** industry. Many of the products are imported (i.e., webbings for seat belts, adult diapers, high altitude protective clothing, nonwoven glass mat for battery separators etc.) entirely to meet the domestic demand. While some of the products (i.e., sanitary napkins, baby diapers, wipes, hoses, drive belts etc.) are imported in the range of 10 percent to 60 percent of the total market demand. This

apart, World Bank projects and defence needs are also met primarily through imports. One of the reasons for low consumption of technical textiles is the import-intensive nature of many products which makes them cost prohibitive, restricting their consumption.

Technical textile products which are imported in significant quantity

- Webbing for seat belts
- Adult diapers / Baby diapers / Wipes
- High altitude protective clothing
- Nonwoven glass mat for battery separators
- Medical implants & devices
- Geosynthetics

The indigenous production and 'value for money' pricing concept will explode the market for these technical textile products.

6.3 Though, this industry is import-intensive, some of the products are also exported, but most of these are commodity products like, tarpaulin, jute carpet backing, stuffed toys, surgical dressing, sutures, sports composites etc. But with increase in indigenous production, there is excellent potential of export of technical textiles particularly in the SAARC countries, where also this industry is not well developed and depends on import to meet their domestic demand.

Technical textile products which are exported

- Tarpaulin
- Jute carpet backing
- Stuffed toys
- Surgical dressing
- Sutures
- Sports goods
- Fishnets
- Nonwoven crop covers

6.4 There is a general perception that technical textiles are predominantly produced in the large-scale sector. But it is true to a limited extent only. Multi National Companies (MNCs), large-scale units, SSI units and cottage units, all are present in this industry. MNCs like Johnson & Johnson, Procter & Gamble, Kimberly Clark and 3M are the dominant players in the meditech segment. Apart from MNCs, some big players are also present in this industry, like, SRF, Century Enka, Nirlon, Entremont Polycoaters, Rajasthan Spg. & Wvg. Mills, Digjam Mills, Jayashree Textiles, Kusumgarh Corporates, Supreme Nonwovens Pvt. Ltd, Techfab India Ltd, Garware Wall Ropes, Pacific Non Woven. However, like conventional textiles, the specialized yarn and fabrics (woven as well as nonwoven) are produced in the

Technical textile products concentrated in SSI sector

- HDPE / PP bags
- Fishnets
- Shoe laces
- Sewing thread
- Canvas / Tarpaulin
- Narrow fabrics (Velcro)
- Fabrication of awnings & canopies
- Stuffed toys
- Zip fasteners
- Healthcare products
- Filter cloth

large and medium scale but the converters which are converting these fabrics into finished goods are in small scale sector and even in cottage sector. There are estimated to be over 3000 units engaged in converting activity. Some of the segments with significant presence of small scale and cottage sector units are HDPE / PP bags making units, fishnets, shoe laces, sewing thread, canvas and tarpaulin, narrow fabrics, fabrication of awning fabrics, stuffed toys, zip fasteners etc.

6.5 The main users of technical textiles are different kinds of industries, though general public also uses it to some extent particularly the disposable technical textile products. The product wise main users of technical textiles are given in the table below:

Main Users of Technical Textiles in India – Product Wise

Sr. No	Users of technical textiles	Product of technical textile
1.	Industrial Users	
i.	Automobile industry	Webbing of seat belts, airbags, nylon tyre cord fabric, seat covers (fixed and loose), car body covers, interior carpets, headliners, insulation felts, trims
ii.	Hospitals	Surgical dressings, (i.e, wound care products and bandages), health care textiles, (i.e., masks, caps, gowns), sutures, medical implants and devices, (i.e., heart valves, artificial skin, artificial kidney, artificial joints, vascular grafts etc.)
Iii	Sports industry	Components of the sports footwear, sports composites, artificial turf, balloon fabrics
iv.	Defence and public utilities like fire service, police, para-military forces, border security forces	Bullet proof jackets, high altitude protection clothing, high visibility clothing, specialty fire retardant clothing
v.	Manufacturing industries	Conveyor belts, drive belts, hoses, battery separators, decatising cloth, bolting cloth, filters, battery separators, ropes and cordages

vi.	Infrastructure industry	Geotextiles, geogrid, geomembrane, geonets
vii.	Packing industry	Jute sacks and hesians, HDPE / PP woven sacks, flexible intermediate bulk containers (FIBC)
viii.	Agriculture	Shade fabrics, mulchmat, crop covers, fish linings
ix.	Textile and garment industry	Sewing thread, interlining, zip fasteners, narrow fabrics, labels
x.	Construction and architecture industry	Hoardings / signages, scaffolding nets, awnings and canopies, tarpaulins
xi.	Home industry	Fibre fill, stuffed toys, blinds, jute carpet backing
2.	General Public	Wipes, floor mops, baby diaper, sanitary napkins, wet tissues, tea bags, coffee filters etc.

6.6 The Government has constituted an Expert Committee in the year 2002. This Committee has appointed Tata Economic Consultancy Services (TECS) to carry out the study of Technical Textile industry in the country. Based on the study of TECS, the ECTT has estimated the market size of the technical textile industry at about Rs.23,300 crore during 2005-06 which is expected to increase to Rs.29,600 crore by 2007-08 registering a growth of 11.51 percent per annum. The report of ECTT was submitted in July, 2004 and projections for future growth were made under certain assumptions with regard to growth process of the Indian economy and also drivers of the growth of the different segments. However, since then major developments have taken place in the Indian Economy and also segments which are driving the growth of technical textiles. In addition, Govt. initiatives like the coverage of technical textiles under Technology Upgradation Fund Scheme (TUFS) which provides financial assistance at competitive rates of interest to the industry and coverage of major machinery for production of technical textiles in the concessional customs duty list of 5 percent has catalyses the growth of this industry.

6.7 The accelerated growth of the Indian economy has also been impacting favourably on the growth of the technical textiles. The economy has grown at 6 percent on an average in the last few years and is poised to grow at 8-10 percent in

coming years. **India, the fourth largest economy** in terms of purchasing power parity (PPP) (after USA, China & Japan) is a **growing market of one billion+ people, of which 300 million are middle class consumers**. Significantly over 50 percent of the population is below 25 years – the vibrant segment for any market. The fast growing middle class of 300 million with higher discretionary income is expected to increase to 520 million in 5 years. The middle class is well educated and receptive to the many technical textile products particularly the disposable products which have huge market in western countries.

6.8 **The consumption of disposable segment of the technical textiles is directly related to the disposable income.** With increase in disposable income the consumption of disposable items like, wipes, sanitary napkins, baby diapers, adult diapers, healthcare products is expected to increase at an exponential rate.

6.9 The growth of the different segments of the technical textile industry in future will depend on the **growth drivers** of the respective segments. The Working Group for the 11th Five Year Plan has projected the market size of technical textiles by 2011-12 based on the growth drivers of the respective segment.

6.10 Considering the above parameters, over all growth of technical textiles is estimated at **14 percent per annum and at this growth rate, the market size for technical textiles will increase from Rs.23,300 crore in 2005-06 to Rs.78,060 crore by 2014-15.** The segment-wise details are given below:

Growth rates and estimated market size of technical textiles during 2007-12

(Rs. crore)

Sl. No.	T. T. Sector and its products	Without regulatory framework estimated market size during 2006-07 as per ECTT	Without regulatory framework		With regulatory framework for items covered under Protech, Geotech and Oekotech	
			Assumed growth rate	Estimated market size during 2011-12	Assumed growth rate	Estimated market size during 2011-12
1	Clothtech: Shoe laces, Interlinings, Zips, Narrow fabrics, Taffeta fabric.	7988.73	12	14078.87	12	14078.87
2	Packtech: Polyolefin woven sacks including FIBC, Soft luggage products, Food grade jute bags, Jute sacks / Hessian.	5785.93	20	14397.25	20	14397.25
3	Sporttech: Shoe Component, Sports Composites, Sleeping bags, Artificial Turf, Balloon & Parachute fabrics.	1906.36	12	3359.66	12	3359.66

4	Mobiltech: Seat belts, Nylon tyre cord fabric, Seat covers, carpets, Helmets, Headliners, Insulation felts.	1613.53	15	3245.39	15	3245.39
5	Buildtech: Hoardings / Signages, Scaffolding nets, Awnings and canopies, Tarpaulins.	1415.43	15	2846.94	15	2846.94
6	Homotech: Fiberfill, Jute Carpet backing cloth, Stuffed toys, Blinds.	1628.74	16	3420.91	16	3420.91
7	Indutech: Conveyor belts, Hoses, Ropes, Computer ribbons, Battery separators, Filtration products, Decatising cloth, Bolting cloth.	1253.35	12	2208.83	12	2208.83
8	Meditech: Sanitary napkins, Incontinence diapers, Baby diapers, Surgical dressings, Healthcare textiles, Sutures, Medical devices & implants.	1280.32	12	2256.36	20	3185.85
9	Protech: Fire retardant textiles, Ballistic protective clothing etc.	1027.11	17	2251.89	25.45	3191.32
10	Geotech: Geotextiles, geomembrane, Civil / Geotechnical engineering.	1688.91	15	3397.00	68.98	23269.28
11	Agrotech: Fishing nets & Fishline, Shade fabrics, Woven and non woven covers for crops, Mulch mat.	417.77	8	613.84	8	613.84
12	Oekotech: Environment Control: Municipal solid Waste, Industrial hazardous waste etc.	69.91	12	123.21	68.17	940.33
	Total	26076.09	14.94	52200.13	24.57	74758.46

6.11 Technical textile industry is segmented into commodity products (covering technologies which have been developed long time back and have been commodised) and high-end products (covering items of new technology). India has fundamental strengths in textile industry which can be utilized for gaining advantage atleast in **commodity market of technical textiles through cost competitive manufacturing structure**. In the **high-end niche areas** also Indian textile industry **can gain advantage through networking with research institutes and final consumers for development of new technologies**. With new developments taking place in fibre / yarn technology the scope of this industry is expanding at a very fast pace. New technologies like **nano technology, plasma coating, intelligent textiles, composites, soft shell technology, retro-reflective material** have important bearing on the growth of the technical textile industry.

6.12 The Government has realized the potential of this industry in the country and has already taken number of steps to promote its growth.

- ❖ **National Textile Policy:** enunciated that “considering the growing prospects for technical textiles world wide, priority will be accorded for their growth and development”.
- ❖ **Expert Committee on Technical Textiles (ECTT):** The Government constituted an Expert Committee on Technical Textiles comprising of experts from all the segments of the technical textile industry to –
 - Assess the market size and potential of technical textiles.
 - Identify and prepare project profiles for the potential items.
 - Formulate an action plan to promote the growth of technical textiles.

The Committee has submitted its report to the Government in July 2004. The Committee has identified 25 products as potential items for growth and prepared project profiles of 18 items. The project profiles cover project cost, profitability, payback period and demand etc. to enable the entrepreneurs to take investment decisions. The report of the ECTT has created wide spread interest among the entrepreneurs.

- ❖ **Fiscal duty:**
 - Since the machinery for production of technical textiles are not indigenously produced, the major machinery for manufacture of technical textiles have been covered under the concessional list of 5 percent basic customs duty.
 - Technical textiles is predominantly man-made fibre / yarn based and distortion in the excise duty structure with fibre stage duty at 16 percent and fabric at 8 percent, which prevailed till last year was affecting adversely the profitability of this industry in terms of unrebated cenvat at fabric stage. In the last Budget, excise duty on man- made fibre / yarn was reduced from 16 percent to 8 percent which has provided a level playing field to this industry.

❖ **De-reservation of sanitary napkins / baby diapers:**

- The sanitary napkins / baby diapers were earlier reserved for SSI sector which was hindering the setting up of large scale units in this segment. However, last year those items have been de-reserved.

❖ **Coverage of technical textiles under Technology Upgradation Fund Scheme (TUFS):**

- All the machinery for production of different items of technical textiles has been covered under TUFS. The second hand imported nonwoven machinery and converting machinery for nonwoven items with 10 years vintage and residual life of 10 years has been covered under TUFS.
- As on date 46 projects with projects cost of US\$ 216 mn. have already been sanctioned under TUFS.

❖ **Institutional mechanism:** Government has created institutional mechanism in terms of Inter-Ministerial Committee (IMC) and Steering Committee for Growth and Development of Technical Textiles (SCGDTT) to constantly review, monitor and take necessary action for promoting the technical textiles.

Weaknesses of technical textile industry

7.1 In spite of Govt. taking no. of initiatives, the technical textile industry still suffers from number of problems. Investors have no clear cut idea about the future prospects of technical textiles as there is no data available about the potential growth in the sector. There is no specifications and standardization of technical textiles. There is no quality benchmark for technology for technical textiles. Lack of awareness about the usefulness of the products, big margin in value addition. Non availability of raw materials etc. Lack of basic infrastructure. Lack of technology, skilled manpower, training and educational facilities. These are some of the issues which need to be addressed through Technology Mission on Technical Textiles.

WHY DO WE NEED THE TECHNOLOGY MISSION APPROACH

- Building up of comprehensive database on all segments of technical textiles,
- Making available the raw materials including specialty fibres / yarns and high tenacity yarn at a competitive price
- Specifications and standardization of products at global level.
- Research and development support for product development.
- Creating awareness and generating demand in the domestic market
- Providing testing facilities with international accreditation.
- Increasing Productivity to provide global competitive edge.
- Capacity building and upgradation of technology.
- Harnessing export potential
- Providing Regulatory framework
- Co-ordination among the research institutes, manufacturers and consumers.

MISSION OBJECTIVE:

Identification of major constraints for improving production and consumption of technical textiles.

STRATEGY

- To develop data base
- Develop short term ;and long term plans
- Focus on key segments viz. Agrotech, Meditech, Buildtech and Geotech
- Diversification of products
- Value addition of products

- Create domestic market
- Make the products competitive in the international market
- Enhance export
- Increase competitiveness in all sectors like raw material, machineries etc
- Create HRD facilities, training institutes for meeting the shortage of manpower required in the technical textile sector
- Provide institutional and financial support for developing capital infrastructure through financial institutions/banks at lower rate of interest.
- Simplification of procedures

STRUCTURE AND OBJECTIVES OF TECHNOLOGY MISSION ON TECHNICAL TEXTILES

The Technological Mission on Technical Textiles will have four Mini Missions. The objectives and intervention required of each mini Mission is given below. The Ministries/Departments who will operate these Mini Missions is also given.

Mini-Mission-I

Objectives:

Capacity building of raw material, machinery, infrastructure and manufacturing units of technical textiles.

Interventions:

1. *Fund support for setting up units for manufacture of technical textiles including its raw material.*
2. *Setting up of venture capital fund for the technical textile units.*

3. *Fund support for acquiring the international certification like CE, FDA etc. to the extent of 50 percent with financial cap.*
4. *Fund support for acquiring quality assurance norms to the extent of 50 percent with financial cap.*

Implementing agency

Textile Commissioner, Ministry of Textiles

Fund requirement

Rs. 200 Crore during the Five Year period.

Mini-Mission-II

Objectives:

Standardisation, product development and common testing facilities with international accreditation.

Interventions:

1. *Setting up of 12 center of excellence to provide infrastructure support at one place for the convenience of manufacturers of technical textiles. The essential facilities to be created in the center of excellence are as follows:*
 - *Facilities for testing and evaluation of products of identified segments of technical textiles.*
 - *Developed as a national and international accreditation center.*
 - *Development of Resource Center with I.T. infrastructure.*
 - *Facilities for indigenous development of prototypes.*
- 1.1. *Facilities for testing and evaluation of products of segments of technical textiles.* : The common testing facilities are to be set up as per International

Standards like, ASTM, BS, BIN, ISO, EN etc. for different products of segment for which they shall be developed as COE. The proposed testing facilities shall cater to the requirement of testing the final product and also the fibre, yarn, fabrics and other elements that go into final product.

1.2. *Developed as a national and international accreditation center:* The testing laboratories of Centres of Excellence shall get the national accreditation by NABL and shall also get their testing labs accredited by international institutes so that their test results are accepted in the international market.

1.3. *Development of Resource Centre with I.T. infrastructure:* The information resource centre of Centres of Excellence shall be equipped with technical literature, reference material, books, specifications, directives and a sample bank containing samples of various products and information about manufacturing production, standards, testing procedures etc. for the products of the segment for which they shall be developed as COE. An exclusive website for that particular segment of the technical textiles shall be developed and maintained by all COEs. These sites shall provide link to each other as well as other sites including international sites with information on technical textiles.

1.4. *Facilities for indigenous development of prototypes:* To provide back-up support to the identified segments of the technical textiles the products in the emerging area shall be developed on a pilot scale and the technology shall be transferred to the industry after standardization and optimization of the production process. The pilot and laboratory skill facilities shall be created at COE for the product of the particular segment of the technical textile industry dealt with by such centres depending on the pattern of demand and consumption.

2. ***Setting up of standards at par with global level.***

3. ***Fund support for R & D in identified areas for product development to TRAs / IITs.***

4. ***Fund support for R & D in development of specialty fibres / yarns and for developing products on cotton and jute in which India has competitive edge.***

Implementing agency

Textile Commissioner, Ministry of Textiles

Fund requirement

Rs. 300 Crore during the Five Year period.

Mini-Mission-III

Objectives:

Domestic and export market development of technical textiles

Interventions:

1. Setting up of export promotion council for technical textiles.

2. Regulatory framework

2.1 Some of the technical textiles products require mandatory prescription for their use. The ECTT has also recommended mandatory prescriptions for certain items. The items suggested for regulatory framework are as follows:

2.2 The use of geosynthetics for construction of road where subsoil California Bearing Ratio (CBR) is less than 3, and pavement overlay, may be made mandatory. ECTT has also suggested for the same. Even for subsoil with CBR greater than 3 and less than 8, geosynthetics can be used to enhance the performance of the road and to reduce maintenance costs. Therefore, this should also be encouraged. In India the poor road conditions and high maintenance cost require use of geotextiles. Analysis of global best practices for the usage of geotextiles reveals that on account of the intrinsic benefits, their application in the road and other infrastructure projects has been extensive in developed countries like USA, Europe, Japan, etc. It is noted that regulations in the developed countries do not mandate the usage of geotextiles but it is mostly based on the

benefits derived like, increase in road life to 3 - 4 times of the existing roads, minimising road maintenance and improving riding quality without potholes and reflective cracking.

2.3 During the recent past, there has been a focused approach in India for infrastructural development across the country, particularly in the area of roads, rail roads, etc. The infrastructure can be developed as per international standards by using geosynthetics for separation, filtration and drainage, reinforcement and erosion control to improve the performance and life of the infrastructure. The usage of geotextiles is low in India due to traditional geo-technical and civil engineering practices and resistance to adopt geotextiles over conventional methods.

2.4 In many situations roads have to be constructed on varying soil subgrade formations. Generally, if the CBR of a natural subgrade is less than or equal to 3, then subgrade is classified as poor or soft nature.

2.5 It is also reported that usage of geosynthetic wherein subsoil CBR is less than 3 is more cost effective on account of saving due to reduction in aggregate layer thickness; increase in life of road by a factor of 2 and; significant reduction in maintenance cost.

2.6 Realizing the significance and potential of geosynthetics, IIT Bombay carried out a field trial on a 2 km. stretch of land in Pune district, in April 2004. The performance of the road for the past 24 months is reported to be satisfactory.

2.7 It is therefore recommended that use of geosynthetics for construction of roads where sub soil CBR is less than 3 and for pavement overlay may be made mandatory. Ministry of Textiles may take it up with Ministry of Roads & Highways.

2.8 Awareness should also be created for other sectors like railways, irrigation departments, ports, municipal corporations, pollution control boards, etc., about the use of geosynthetic products.

Use of Fire retardant textiles in public places.

2.9 Public places like theatres, public halls, temporary shamiyanas, hotels and trains should use textiles which are fire retardant, providing protection and avoiding losses of human life as experienced by the country in the past. It is therefore recommended that the use of FR textiles should be made mandatory in all public places where the public has access. The Ministry of Textiles may take it up with Ministry of Home Affairs and Ministry of Railways for making use of fire retardant fabrics mandatory at public places.

2.10 In most developed countries it is mandatory to wear flame and heat resistant uniform by fire fighting personnel and workmen who are working near furnaces or similar risky places. In India also the flame and heat resistant uniform should be made mandatory for fire fighting personnel and workmen who are working near risky places. The Ministry of Textiles may take it up with Ministry of Home Affairs and Ministry of Commerce and Industry for making use of uniform made from flame and heat resistant fabrics.

Use of airbag in automotives

2.11 The use of seat belts and airbags can limit serious chest injuries in frontal collision by 65 percent, and serious head injuries by 75 percent. Realising the importance of the safety of persons traveling in commercial vehicles, a law for the installation and use of seat belts was introduced. However, no such provision exists for airbags. It is, therefore, recommended that use of airbags should be made mandatory in new vehicles.

2.12 Use of Meditech goods in hospitals and other health institutions for public safety.

2.13 Use of Agrotech goods in expansion & further consolidation of crop/horticulture productivity.

2.14 **Inter-Ministerial Coordinating Committee on Technical Textiles:** It is proposed to constitute an Inter-Ministerial Coordinating Committee on Technical Textiles consisting of following members:

- Secretary (Textiles) - Chairman
- Adviser, Planning Commission
- Secretary (Department of Agriculture and Co-operation)
- Secretary (Department of Agricultural Research and Education)
- Secretary (Department of Animal Husbandry and Dairying)
- Secretary (Expenditure)
- Secretary (Health)
- Secretary (Department of Heavy Industry)
- Secretary (Chemicals & Petro Chemicals)
- Secretary (Shipping)
- Secretary (Road Transport & Highways)
- Secretary (Science and Technology)
- Secretary (Defence)
- Secretary (Youth Affairs & Sports)
- Secretary (Environment & Forests)
- Chairman, Railway Board
- AS&FA, MOT
- JS, Ministry of Home Affairs
- JS, MOT
- Textile Commissioner
- DG, CPWD
- DG, ICAR
- DG, BRO
- Director (NMCC) – Member Secretary

3. Creation of awareness by center of excellence and Office of Textile Commissioner

3.1 The potential of technical textiles in India is still untapped. To unleash investment in this industry creating awareness on the potential of the technical textiles and also details of the scheme is necessary.

3.2 Office of the Textile Commissioner shall organize programmes in a structured format and in a big way in different parts of the country. In such programmes information on potential of technical textiles, identified products with potential for growth in India, Project profiles of such projects, usage of technical textiles in different areas in a cost effective manner and various initiative taken by the Government etc., shall be presented.

4. Survey to build up the database of technical textile units

4.1 In order to make policy decisions, it is of utmost importance to have a comprehensive database of technical textiles units in the country.

4.2 A survey of technical textile industry was got done by Expert Committee on technical textiles through Tata Economic Consultancy Services (TECS) during 2003-04 and TECS has projected the market size upto 2007-08.

4.3 Since 2003-04, no survey to capture the latest data has been done and the same data is being used to make the projections. However, the technical textile scenario in the country has undergone change during the last 2-3 years and the changed scenario calls for base line survey of technical textile industry.

4.4 A base line survey of technical textiles units would be carried out to get the information on the number of units, type of units, type of products produced, investment, turnover, type of machinery, technology level, export and import, potential items for growth and investment.

5. Market development Support for export

5.1 Fund support for participation in the technical textile fairs.

5.2 Fund Support for quality certification from the accredited certification global agencies to the extent of 50 per cent with a financial cap.

5.3 Domestic Technical Textiles Fairs.

5.4 Promotion Incentive for increasing/substitution of traditional goods with that of technical textiles.

6. *Financial Support for formation of Technical Textiles Development & Export Promotion Council*

Implementing agency

Textile Commissioner, Ministry of Textiles

Fund requirement

Rs. 100 Crore during the Five Year period.

Mini-Mission-IV

Objectives:

Human resource development for technical textiles.

Interventions:

1. *Providing fund support for setting up training institutes on PPP basis for training the trainers as well as personnel from the industry.*
2. *Providing fund support for training of personnel from private sector / TRAs to the extent of 50 percent of the cost in reputed technical textile institutes to build up the knowledge base in the country.*

Implementing agency

Textile Commissioner, Ministry of Textiles

Fund requirement

Rs. 80 Crore during the Five Year period.

Requirement of Funds

Ministry of Textiles will require Rs. 680 crore for implementing the technology mission.

**WHAT WOULD BE THE DELIVERABLE / RESULTS
(QUANTITATIVELY AND QUALITATIVELY)**

MISSION DIRECTOR: TEXTILE COMMISSIONER

MANAGEMENT

National level Technology Mission on Technical Textiles to be managed by an Empowered Committee consisting of the following:

- Cabinet Secretary - Chairman
- Secretary (Textiles)
- Adviser, Planning Commission
- Secretary (Agriculture)
- Secretary (Expenditure)
- Secretary (Health)
- Secretary (Petro chemicals & Petro Chemicals)
- Secretary (Surface and Road Transport)
- Secretary (Science and Technology)
- Secretary (Defence)
- Indian Institute of Technology, Delhi
- All TRAs/Textile Committee/PEDXCIL
- AS&FA, MOT
- JS, MOT
- Textile Commissioner (Member Secretary & Mission Director)

Mini Mission	Implementing Agency	Objective	Fund requirement
Mini Mission - I	TXC	<i>Capacity building of raw material, machinery, infrastructure and manufacturing units of technical textiles.</i>	Rs. 200 Crore
Mini Mission - II	TXC	<i>Standardisation, product development and common testing facilities with international accreditation.</i>	Rs. 300 Crore
Mini Mission - III	TXC	<i>Domestic and export market development of technical textiles</i>	Rs. 100 Crore
Mini Mission - IV	TXC	<i>Human resource development for technical textiles.</i>	Rs. 80 Crore

MONITORING & EVALUATION

- Monitoring of the mission by the Empowered Committee will be on a quarterly basis.
- Milestones and targets will be mutually agreed upon.
- The feedback obtained will be used to
 - (i) modify targets, if necessary.
 - (ii) effect course correction where necessary
 - (iii) improve quality to meet changing market requirements

EVALUATION

- Concurrent evaluation of Mini Mission
- An independent evaluation after two years
- An impact study after three years
- Final evaluation

OUTCOME

The output at the end of the mission will be measured / assessed in quantitative terms.

The outcome of the mission will be evaluated in terms of the overall impact on the technical textile economy as a whole, its impact on environment and exports in particular.