# Indian Cotton Textile Sector Network Report

## Sector Overview and SWOT Analysis

Within the initiative

Sustainable Industrial Networks and Its applications on Micro Regional Environmental Planning (SINET)

**Partner Organizations**

NIR
Näringslivets Internationella Råd
International Council of Swedish Industry

NetPEM

VITO

CII

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**Asia Pro Eco Programme**

Is a five years programme launched by European Union in 2002, The main target is to adopt policies, technologies, and practices that promote cleaner, more resource efficient, sustainable solutions to environmental problems in Asia. The programme provides support through grants to policy reinforcement, operational and practical dialogue, diagnostic studies, technology partnership and demonstration projects, in the field of environment. The programme supports non profit organizations from EU and Asia.

**About SINET**

The aim of sustainable industrial network and its application on micro regional environmental planning is to interpret and adapt an understanding of the natural system and apply it to the design of the man-made system, in order to achieve a pattern of industrialization that is not only more efficient, but which is intrinsically adjusted to the tolerances and characteristics of the natural system. An industrial system of this type will have built-in insurance against environmental surprises, because their underlying causes will have been eliminated at the design stage. A micro-region is a distinct territorial unit with clearly marked boundaries below the regional level, but above the village level. Micro-regional environmental planning attempts to coordinate the planning activities of the various actors within a limited territorial unit.

The project will look at analyzing and documenting various success and failure stories of industry networks from Sweden/Europe and India/Asia, and to ascertain their impacts on environment and sustainability aspects of the respective micro regions. Emphasis will also be placed on creating awareness on the influence of industry network (key economic activity) on the micro region's environmental and sustainability aspects.

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## Overview of the Cotton Textile industry

### Indian Textile Industry Overview

India's textile sector is the second largest industry after agriculture. It provides employment to about 35 million people. The country's current share in the world textile trade is only 4%, according to the study done by the World Trade Organization. The Indian government says that it can reach to 8% share by 2010.

India is one of the leading producers of cotton, goatskin and cashmere wool. It ranks top in goatskin and third in cotton after China and United States. The fabric industry in India accounts for about 20% of total exports of the country and represent the largest net foreign exchange earner.

### Size of India's Textile Industry

- The textile industry in India covers a wide gamut of activities ranging from production of raw material like cotton, jute, silk and wool to providing high value-added products such as fabrics and garments to consumers.
- The industry uses a wide variety of fibres ranging from natural fibres like cotton, jute, silk and wool to man made fibres like polyester, viscose, acrylic and multiple blends of such fibres and filament yarn.
- The textile industry plays a significant role in Indian economy by providing direct employment to an estimated 35 million people, by contributing 4 per cent of GDP and accounting for 35 per cent of gross export earnings. The textile sector contributes 14 per cent of the value-addition in the manufacturing sector.
- Textile exports during the period of April-February 2003-2004 amounted to $11,698.5 million as against $11,142.2 million during the same period in the previous year, showing an increase of around 5 per cent.
- Estimates say that the textile sector might achieve about 15 to 18 per cent growth this year following dismantling of MFA.

### Cotton Industry

Cotton is a soft fibre that grows around the seeds of the cotton plant, a shrub native to the tropical and subtropical regions of both the Old World and the New World. The fibre is most often spun into thread and used to make a soft, breathable textile. Cotton Fabric is noted for its versatility and its natural comfort. Cotton cloth has been used since primitive ages dating back to about 3000 B.C. Today, the main uses of cotton are in the form of garments, home furnishings, and industrial cloths.

In the world production of cotton, China is the leading followed by United States, India, Pakistan, Brazil, Turkey and Greece. Today, production of cotton is one of the major factors in world prosperity and economic stability. Following table 1 – 4 shows the production, consumption, imports and exports of cotton from the world's major countries in million tones. In consumption of cotton is consistent in India. Whereas there is an increase in the export trend compared to the previous record.

**Table 1: production of cotton from world's major cotton countries**

**(In million tonnes)**

| Countries | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 |
|---|---|---|---|---|---|---|
| **PRODUCTION** | | | | | | |
| China | 5.31 | 4.92 | 4.85 | 6.31 | 5.70 | 5.98 |
| United States | 4.42 | 3.74 | 3.97 | 5.06 | 5.20 | 4.44 |
| India | 2.67 | 2.30 | 3.04 | 4.13 | 4.18 | 4.57 |
| Pakistan | 1.80 | 1.69 | 1.68 | 2.42 | 2.14 | 2.28 |
| Brazil | 0.76 | 0.84 | 1.31 | 1.28 | 1.02 | 1.19 |
| Turkey | 0.86 | 0.91 | 0.89 | 0.90 | 0.77 | 0.90 |
| Uzbekistan | 1.06 | 1.00 | 0.89 | 1.13 | 1.24 | 1.11 |
| Other | 4.58 | 3.78 | 4.08 | 4.93 | 4.61 | 4.66 |
| **World Total** | **21.50** | **19.21** | **20.74** | **26.19** | **24.88** | **25.16** |

**Source:** USDA/FAS, *** September, 2006**

**Table 2: Consumption of Cotton from world's major cotton countries**

**(In million tonnes)**

| Countries | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 |
|---|---|---|---|---|---|---|
| **CONSUMPTION** | | | | | | |
| China | 5.71 | 6.51 | 6.96 | 8.38 | 10.12 | 11.10 |
| India | 2.89 | 2.89 | 2.93 | 3.22 | 3.44 | 3.64 |
| Pakistan | 1.85 | 2.04 | 2.09 | 2.34 | 2.55 | 3.664 |
| United States | 1.67 | 1.58 | 1.36 | 1.45 | 1.29 | 1.19 |
| Turkey | 1.33 | 1.37 | 1.30 | 1.54 | 1.50 | 1.45 |
| Brazil | 0.82 | 0.78 | 0.86 | 0.91 | 0.90 | 0.91 |
| Bangladesh | 0.26 | 0,33 | 0.37 | 0.40 | 0.45 | 0.47 |
| Other | 5.97 | 5.86 | 5.44 | 5.42 | 5.13 | 5.03 |
| **World Total** | **20.53** | **21.39** | **21.34** | **23.69** | **25.41** | **26.49** |

**Source:** USDA/FAS, *** September, 2006**

**Table 3: Imports of cotton from world's major cotton countries**

**(In million tonnes)**

| Countries | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 |
|---|---|---|---|---|---|---|
| **IMPORTS** | | | | | | |
| China | 0.098 | 0.68 | 1.92 | 1.39 | 4.19 | 4.35 |
| Turkey | 0.64 | 0.49 | 0.51 | 0.74 | 0.75 | 0.56 |
| Indonesia | 0.51 | 0.48 | 0.46 | 0.47 | 0.47 | 0.47 |
| Pakistan | 0.21 | 0.18 | 0.40 | 0.37 | 0.42 | 0.39 |
| Bangladesh | 0.26 | 0.34 | 0.37 | 0.40 | 0.44 | 0.46 |
| Thailand | 0.41 | 0.42 | 0.36 | 0.49 | 0.40 | 0.44 |
| Russia | 0.39 | 0.35 | 0.32 | 0.31 | 0.32 | 0.32 |
| Other | 3.87 | 3.57 | 3.04 | 3.06 | 2.58 | 2.51 |
| **World Total** | **6.41** | **6.55** | **7.41** | **7.25** | **9.61** | **9.54** |

**Source:** USDA/FAS, *** September, 2006**

**(http://www.indiaonestop.com/cotton/cotton.htm)**

**Table 4: Exports of cotton from world's major cotton countries**

**(In million tonnes)**

| Countries | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 |
|---|---|---|---|---|---|---|
| **EXPORTS** | | | | | | |
| United States | 2.39 | 2.59 | 2.99 | 3.14 | 3.82 | 3.52 |
| Uzbekistan | 0.76 | 0.74 | 0.67 | 0.86 | 1.04 | 0.98 |
| Australia | 0.68 | 0.57 | 0.47 | 0.43 | 0.65 | 0.58 |
| Greece | 0.21 | 0.25 | 0.26 | 0.25 | 0.29 | 0.33 |
| Brazil | 0.14 | 0.10 | 0.21 | 0.33 | 0.44 | 0.32 |
| Burkina | 0.14 | 0.15 | 0.20 | 0.21 | 0.29 | 0.30 |
| India | 0.013 | 0.012 | 0.15 | 0.14 | 0.70 | 0.92 |
| Other | 1.96 | 2.16 | 2.25 | 2.23 | 2.40 | 2.45 |
| **World Total** | **6.32** | **6.60** | **7.23** | **7.62** | **9.67** | **9.43** |

**Source:** USDA/FAS, *** September, 2006**

Cotton is one of the major cash crops grown in the country. In 1998-99, it was estimated that the area under cotton cultivation in India was 92.87 lakh hectares (Ministry of Textiles – Annual Report 04-05). However, the area under cotton has been decreasing over the last few years and provisionally it is estimated that it is approximately 89.69 lakh hectares in 2004-05. In terms of global production, India is the third largest producer of cotton behind China and the United States (USDA 2001a – Production, supply and distribution (PSD) database, online edition, available at www.ers.usda.gov).

The main cotton producing states are Maharashtra, Gujarat, Andhra Pradesh, Madhya Pradesh, Punjab, Haryana, Rajasthan, Karnataka and Tamil Nadu. Of these, Maharashtra alone accounts for 35 % of the total cotton production. In terms of the cotton output, over the last five decades there has been an increase from 30 lakh bales (170 KG each) in 1950-51 to 177.90 lakh bales (170 KG each) in 1996-97 (Ministry of Textiles – Annual Report 04-05). The contribution therefore to the spinning mills, estimated at 75 % (Ministry of Textiles – Annual Report 04-05) of the total fibre consumed, is substantial.

**State wise Cotton Cultivation in India**

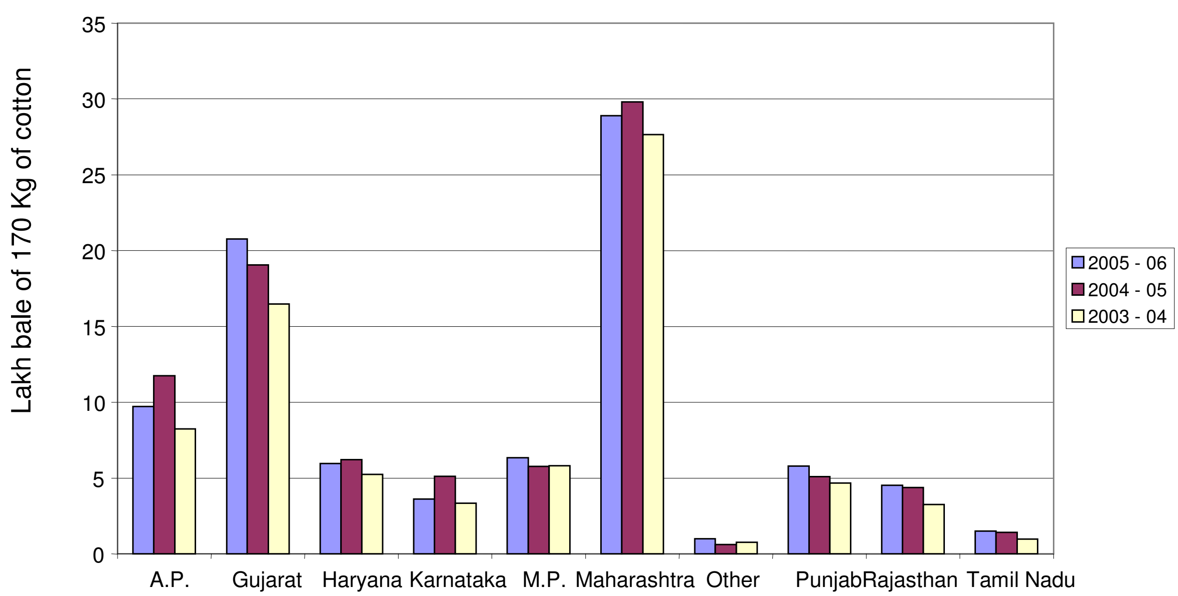
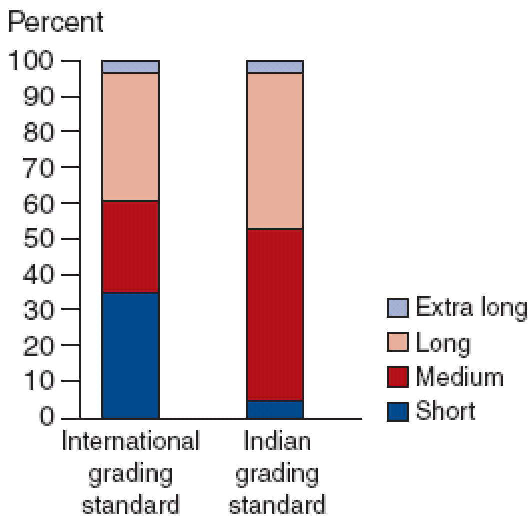



**Table 5: Cotton production and consumption scenario in India**

| Cotton Year | Area lakh hectares | Cotton Production | | Cotton Yield | Cotton Consumption Lakh bales of 170 kgs each Mill + Non Mill + small spinning |
|---|---|---|---|---|---|
| | | lakh bales of 170 kgs. | In 000 tonnes | | |
| 1999-00 | 87.31 | 156.00 | 2652.00 | 304 | 173.36 |
| 2000-01 | 85.76 | 140.00 | 2380.00 | 278 | 173.03 |
| 2001-02 | 87.30 | 158.00 | 2686.00 | 308 | 171.76 |
| 2002-03 | 76.67 | 136.00 | 2312.00 | 302 | 168.83 |
| 2003-04 | 76.30 | 179.00 | 3043.00 | 399 | 177.10 |
| 2004-05 | 89.20 | 243.00 | 4131.00 | 463 | 194.10 |
| *Source Cotton Advisory Board* | | | | | |

**Characteristics of Cotton Produced**

India is unique among major cotton-producing countries because a broad range of agro-climatic and soil conditions permit cultivation of all varieties and staple lengths of cotton. Indian and international standards use different staple length definitions for classifying cotton. By Indian standards, about one-half of Indian cotton is medium staple length, but, by international standards, only about one-quarter of Indian cotton is considered medium staple. The North zone tends to produce mostly short and medium staple varieties, the South zone mostly long and extra-long staples, and the Central zone a range of medium and long staple varieties.




Source: ERS calculations based on data from the Government of India, Ministry of Textiles, Office of the Textile Commissioner, and Cotlook, Ltd., 2005, *Cotton on the Net, Glossary of Terms*.

India has the capacity to produce the full range of staple lengths of cotton needed to meet the needs of its textile industry. And India's hand-picked cotton is considered superior to mechanically harvested cotton in terms of sheen of finished fabric, amenability to spinning, tensile strength, etc. India, however, has significant problems in meeting other quality needs. In particular, Indian cotton is generally contaminated with other fibers and foreign matter and often consists of admixtures of multiple varieties with different fiber characteristics. These problems reduce efficiency (yarn realization) in the spinning process and result in higher levels of yarn impurities and imperfections. A 2001 survey by the International Textile Manufacturer's Federation indicated that 5 of the world's 10 most contaminated traded cotton types came from India.

Problems with contamination and other quality attributes of Indian cotton have been a key factor behind the upward trend in cotton imports by India's export-oriented textile mills since the late 1990s. The risk associated with the unreliable quality of domestic cotton leads some textile producers to prefer imported cotton to meet export orders that demand consistent quality.

The significant problems with admixture of varieties and contamination stem from practices on farms and in market yards that are not amenable to quick solution. Improvements in quality require better onfarm seed management; improved technology of handling, transportation, and ginning; investments in market infrastructure; and a marketing system that provides price premiums that reflect the costs of supplying quality cotton. Accomplishing these changes will likely require implementation of grades and standards for domestic cotton and improvements in marketing that provide adequate incentives to producers, ginners, and traders to adopt quality-related practices.

**Structure of India's Cotton Textile Industry**

Unlike other major textile-producing countries, India's textile industry is comprised mostly of small-scale, nonintegrated spinning, weaving, finishing, and apparel-making enterprises. This unique industry structure is primarily a legacy of government policies that have promoted labor-intensive, small-scale operations and discriminated against larger scale firms:

• **Cotton farming and harvesting.** Cotton is grown in tropical as well as sub tropical area in India. Mostly the cotton grown in India is from dry lands and crops mostly depend on the irrigation systems available and not only on the rain water.

• **Ginning:** Ginning is the process where cotton fiber is separated from the cotton seed. The first step in the ginning process is when the cotton is vacuumed into tubes that carry it to a dryer to reduce moisture and improve the fiber quality. Then it runs through cleaning equipment to remove leaf trash, sticks and other foreign matter. Ginning is accomplished by one of two methods. Cotton varieties with shorter staple or fiber length are ginned with ***saw gins*.** This process involves the use of circular saws that grip the fibers and pull them through narrow slots. The seeds are too large to pass through these openings, resulting in the fibers being pulled away from the seed. Long fiber cottons must be ginned in a ***roller gin*** because saw gins can damage their delicate fibers.

• **Oil mill:** in the operation the oil is extracted from the cotton seeds that are coming form the ginning process. The cotton seeds coming from the ginning unit are then passed through the pressing unit and crude cotton oil is produced. The pressed cotton seed oil cake is supplied as the cattle feed. The crude is further modified as the bio-diesel which could be used as the one of the energy source. The refined cotton oil is also used as the edible oil but it is proved to be unfit for the human health.

• ***Spinning.*** Spinning is the process of converting cotton or manmade fiber into yarn to be used for weaving and knitting. Largely due to deregulation beginning in the mid-1980s, spinning is the most consolidated and technically efficient sector in India's textile industry. Average plant size remains small, however, and technology outdated, relative to other major producers. In 2002/03, India's spinning sector consisted of about 1,146 small-scale independent firms and 1,599 larger scale independent units.

• ***Weaving and Knitting.*** Weaving and knitting converts cotton, manmade, or blended yarns into woven or knitted fabrics. India's weaving and knitting sector remains highly fragmented, small-scale, and labor-intensive. This sector consists of about 3.9 million handlooms, 380,000 "powerloom" enterprises that operate about 1.7 million looms, and just 137,000 looms in the various composite mills. "Powerlooms" are small firms, with an average loom capacity of four to five owned by independent entrepreneurs or weavers. Modern shuttleless looms account for less than 1 percent of loom capacity.

• ***Fabric Finishing.*** Fabric finishing (also referred to as processing), which includes dyeing, printing, and other cloth preparation prior to the manufacture of clothing, is also dominated by a large number of independent, smallscale enterprises. Overall, about 2,300 processors are operating in India, including about 2,100 independent units and 200 units that are integrated with spinning, weaving, or knitting units.

• ***Clothing.*** Apparel is produced by about 77,000 small-scale units classified as domestic manufacturers, manufacturer exporters, and fabricators (subcontractors).

• ***Composite Mills.*** Relatively large-scale mills that integrate spinning, weaving and, sometimes, fabric finishing are common in other major textile-producing countries. In India, however, these types of mills now account for about only 3 percent of output in the textile sector. About 276 composite mills are now operating in India, most owned by the public sector and many deemed financially "sick."

## Economic issues

### Prices of Cotton

The Minimum Support Prices of Kapas (Seed cotton) for fair average quality announced for the cotton season 2005- 2006 (Oct – Sept), was fixed at last year's level (2004-05) i.e. Rs.1760/- per quintal for medium staple variety (F-414/J-34/H- 777). The support price for H-4 (Long staple variety) has been fixed at Rs.1980/ - per quintal, an increase of Rs.20/- per quintal over support price of 2004-05. The MSP fixed for F-414/H-777/J-34 variety of kapas will be applicable only to Rajasthan. The price of this variety, grown in Haryana and Punjab has been fixed keeping in view the respective quality differential, vis-à-vis Rajasthan, obtaining in these States.

The Cotton Corporation of India Ltd. (CCI) undertook massive MSP operations through out 2004-05 in all the cotton growing states, and procured kapas equivalent to lint cotton of 27.52 lakh bales. In 2004-05, due to favourable seasonal conditions, there was a sharp rise in productivity, which peaked to a record 463 Kg. Lint/hectare, as compared to 399 kg. / lint per hectare during 2003-04, the ultivated area increased to 89.20 lakh hectares in 2004-05, as compared to 76.30 lakh hectares in 2003-04, and the production touched 243 lakh bales in 2004-05, as compared to 179.00 lakh bales in 2003-04.

## Social Issues

### Gender impact

Rural women in several smallholder contexts provide substantial labour input to most aspects of cotton production cycle, frequently as unpaid 'family labour' or low-paid day-labourers and commonly performing some of the most arduous tasks – with over-representation in manual work such as picking. Women in many regions face significant difficulties in gaining access to input credit facilities, due principally to men's ownership of land and other assets, and hence struggle to achieve economic independence through cotton farming. Decision-making within farming families in many regions is gender-biased and women are often neglected in decision-making process. Because of the above, and the increased labour requirements of more ecologically sound farming cultivation methods, the development of such methods may risk an increase in the labour burden on rural women workers.

### Health and safety

Given the nature of cotton farming work, worker/farmer health and safety is a critical issue in cotton cultivation: the key risks are that workers – family or hired, depending on regional context – are exposed to harmful toxins, primarily because they are not provided with – or do not wear – adequate personnel protective equipment (PPE) while spraying chemical pesticides and herbicides. Children are particularly vulnerable to arduous work on cotton farms; however, there are few reports of children working with toxic materials. In the context of worker health and safety, special attention should be given to working conditions in ginneries – work characterised by seasonality, dust pollution, machine danger and long hours, albeit with differences between regions

### Child labour

In several regions, children – including young children – contribute labour to cotton growing; depending on the age of the child and the nature of the activity – particularly whether it affect the child's health and schooling – this may or may not be acceptable under international standards (ILO conventions provide for light work for over-12s and make exception for children's work on family smallholdings where produce is for local consumption). Children are primarily involved in cotton picking, and to a lesser degree in weeding and nutritional activities. Key issues are children's health and safety, and access to education (though the latter may depend on factors outside the control of parents, such as availability of local facilities). Child labour is difficult to assess and monitor as it is (almost by definition) informal

**Forced labour / labour coercion**

Forced labor constitutes a violation of a fundamental international human right – freedom of employment – and there are few cultural relativities in the debate surrounding its continued use. The underlying factors that contribute to forced labor and bonded labor include the use of labor intermediaries providing casual labor under conditions which compromise the workers' rights, recruitment agencies with service fees which can be repaid only by continued work, social exclusion, often connected to caste or tribe, asymmetric information, whereby illiterate workers are not aware of their rights, labor migration – particularly 'irregular' migrant workers, who are commonly unaware but also unable to assert their legal labor rights, as non-registered workers, inequitable loan or credit schemes managed by the employer; in-kind remuneration, which allows employers to exacerbate dependent relations and hide low wages

**Environmental Issues**

**Low Yields in Cotton**

The relatively rapid gains in productivity in the predominately rainfed Central zone since 1990 are due to technological advances that, if combined with a continuation of recent modest growth in the North and South zones, could lead to a substantial hike in national average yields and production.

While this productivity gap indicates that significant further onfarm yield improvements are possible, a range of technical, economic, and institutional factors prevent realization of the potential of the varieties cultivated

Following are the few factors which contributes towards the low yield

• ***Delayed Sowing.*** Late sowing of cotton reduces yields by providing less optimal sunlight conditions for crop development and, in some areas, by allowing less time for picking the mature crop before clearing the field for the following crop. Sowing delays are caused either by the late arrival of seasonal rainfall needed for sowing or by delays in harvesting the preceding crop. Yield losses associated with late sowing and shortened harvest times may be reduced by new shorter duration varieties and better management, but crop competition will likely continue to limit yields in some areas.

• ***Monsoon Dependence.*** Erratic monsoon rainfall affects 60-70 percent of cotton area, reducing yields through moisture stress and creating risk that reduces investment in seed, fertilizer, and pesticide inputs. Even with improved varieties and management, average yields in the mostly rainfed Central and South zones are likely to remain below those achieved in other countries with more reliable rainfall.

• ***Poor Seed Quality.*** Poor seed quality is a pervasive problem in cotton cultivation. Only about 35 percent of cotton area is sown with certified seed with assured varietal purity and germination. Commercially available seeds are often of poor quality, with sale of uncertified, substandard, and second generation (F2) hybrid seeds not uncommon. Although supplies of certified seed are generally available, financial constraints lead most farmers to use retained seeds or lower priced uncertified seeds from the market.

The proliferation of cotton varieties in markets and farmers' fields confounds efforts to improve seed quality, maintain varietal purity, and improve crop management practices. Roughly 100-130 cotton varieties developed in both the public and private sectors are now cultivated in India. A study by the Central Institute for Cotton Research (CICR) indicates that the average cotton farmer in the Central and South zones plants 3-4 varieties on farms averaging about 2 hectares, a practice that greatly complicates crop and seed management.

• ***Plant Protection.*** Insect and disease infestations, including bollworms, white fly, jassids, and leaf curl virus, are significant problems in India's three cotton production zones. Although per hectare use of pesticides is higher for cotton than for any other crop, effective plant protection is constrained by poor farm management, pesticide subsidies that encourage indiscriminant use, and problems with pesticide quality. Improved onfarm pest management practices, including appropriate crop rotations, pest surveillance, pesticide applications, and adoption of Integrated Pest Management (IPM) practices have proved difficult to implement on small, resource-constrained farms.

• ***Crop Management.*** Large gaps between average onfarm yields and the potential of existing varieties also stem from poor management practices, including use of inappropriate varieties, seed rates, seed spacing, and fertilizer dosages. As in the case of plant protection, improvement of crop management practices is complicated by the need to extend recommended practices to large numbers of small, limited-resource farmers.

• ***Lack of Suitable Varieties.*** Cotton yields are affected by lack of varieties— or genotypes— suitable for some agronomic conditions. Indian scientists cite three priorities for plant breeding efforts: (1) higher yielding, short-duration, and pest-resistant cultivars for the irrigated North zone, (2) higher yielding varieties for the drought-prone Central zone, and (3) varieties suited for the soils on rice fallow common in the South zone.

**Water Management issues**

Water resources need to be protected from unsustainable use and pollution – between 1970 and 1995, 25% of the world's freshwater ecosystems were lost. Agriculture takes up about 69% of global freshwater withdrawal and rice, wheat and cotton together account for 58% of the worldwide irrigated area, making these three crops the major consumers of freshwater (WWF, 1999). Approximately 73% of cotton is produced in irrigated fields and only 27% under rain-fed conditions. Most irrigation systems in cotton production rely on the technique of flood irrigation – freshwater is drawn from its source and transported to the place of its consumption. Losses of freshwater can occur through evaporation, seepage and poor water management.

Water losses can be drastically cut through good water management practices which are integral to the farming approach taken in the Fairtrade cotton standard including input of organic matter, crop rotation, and appropriate irrigation methods (if needed). In areas of water shortage, appropriate measures should be taken to improve water storage and collection systems.

**Bt cotton issue**

Bt cotton is one of the variety of cotton which gives the lager yield and the less quantity of pesticides are needed because of its inbuilt pest resistance capacity. But the research was carried out and it was found that the cotton growers who are using the Bt cotton at their farm need to use more the amount of pesticides compared to the other normal cotton growers after third year of the Bt cotton and the yield of the cotton goes down compared to the normal cotton growers. So it has a major impact on the cotton growers and also the resistance of the insect increases with the frequent use of Bt cotton.

**Water Pollution**

Large quantity of water is used at various stages of the cotton textile from Cotton farming to cotton finishing. Water gets polluted due to excess use of pesticides in the cotton faming. During rainy season these excess pesticides gets mixed with the surface water as well as the ground water intern causing the bad effect on the human health as well as the aquatic life.

### Soil Pollution

Soil in the cotton growing region and near by region is getting polluted because of the excessive use of the chemical pesticides resulting into the low yield. This can be avoided by using the organic pesticides for growing the cotton.

### Pollution due to Lint

The pollution due to lint in the cotton ginning industry is very hazardous to health. Most of the worker working at this place suffers form the lungs diseases because of the pollution problems.

### Policy Related Issues

### Production Policy and Incentives

The principal mechanism to support domestic farm prices is the system of Minimum Support Prices (MSPs), in which the Government sets minimum prices for cotton and other major crops. Cotton MSPs are set for all major varieties and revised annually by the Government in accordance with the recommendations of the Commission on Agricultural Costs and Prices (CACP). CACP recommendations are based on assessments of changes in production costs and trends in domestic and world prices.

Cotton MSPs, which are defended by market purchases by the Cotton Corporation of India (CCI) when necessary, generally have little influence on producer prices of cotton because market prices are typically well above the MSPs. By contrast, MSPs have significantly influenced market prices for wheat and rice in the principal surplus areas, including most of the North zone (wheat and rice) and Andhra Pradesh in the South zone (rice). The MSPs set for wheat and rice can directly affect area allocated to cotton by affecting relative returns to growers. Returns to wheat and rice production can also affect cotton yield by influencing the portion of the growing season that farmers are willing to devote to cotton production and, hence, the duration of the varieties cultivated and the time available for picking before planting the next crop.

Recent trends in domestic market prices for cotton and competing crops show that cotton prices tend to be more volatile than those for wheat and rice (fig. 28). In addition, market prices of wheat and rice increased 7-9 percent annually between 1995 and 2001 because of unusually large increases in wheat and rice MSPs. By contrast, market prices for cotton increased only 2 percent during the same period. More recently, however, increases in wheat and rice MSPs have slowed and relative market prices of cotton have begun to strengthen.

While the MSP system has generally had little direct impact on cotton production incentives, a number of other domestic regulatory measures have, historically, tended to suppress domestic cotton prices. Over the last 10 years, however, reforms have phased out these regulations and created an environment for stronger incentives to produce cotton:

• ***Reform of Maharashtra Monopoly Procurement Scheme.*** Until procurement was opened to private traders in 2003, all cotton in Maharashtra, India's second-largest producing state, had to be sold at fixed prices. While protecting farmers against low prices in some years, the policy also led to lower returns in years of high market prices and in delayed payments to farmers when the scheme ran large financial deficits. The 2003 reform, in addition to reducing financial costs, has clarified and strengthened price signals to farmers.

• ***Legalization of Futures Trading.*** A future trading in cotton was legalized in 1997 and in 2003 for most other farm commodities. Although illicit forward contracting in cotton was a common practice prior to legalization, expanded futures trading is likely to make price discovery more efficient and transparent while also providing a means to manage price risk. To date, futures trading in cotton remains small, but trading volumes may increase, as they have for several other commodities.

• ***Elimination of Export Quotas.*** Until their elimination in 2002, India used annual cotton export quotas to limit exports and ensure low and stable raw material prices for the domestic textile industry. The quotas tended to suppress domestic cotton prices by restricting exports, and uncertainty regarding annual quota levels was a source of price risk for growers and traders. Removal of the quotas will strengthen links between domestic and world prices, likely boosting grower returns and eliminating a source of price risk.

• ***Elimination of Ginning Regulations.*** Regulation of variety-specific ginning fees ended in 1997. The fee-setting mechanism raised costs by preventing competition among gins, encouraged contamination by ginners, and reduced incentives for investment in the industry.

• ***Elimination of Credit Controls.***
Until lifted in 1996, government regulations restricted use of credit by cotton traders, effectively limiting private storage of cotton lint and yarn and reducing market prices.

• ***Elimination of Cotton Control and Transport Orders.*** Until elimination in 1995, these controls gave the Government authority to direct domestic movement and storage of cotton, including confiscation of cotton under certain market conditions.

These regulations and their erratic use increased uncertainty and marketing costs, thus reducing and destabilizing grower returns.

## Industry Financials

### ROCE and Operating Margins

The Indian cotton textiles industry has registered sharp improvement in profits in the last three years. The key factors responsible for the improvement in performance have been decline in domestic cotton prices and increase in exports to quota countries following rise in quotas as also further deregulation of quotas (as per the ATC requirements).

**Margins and Return on Capital Employed (ROCE)**

| FY | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|
| Operating Margin | 8.86% | 12.22% | 10.20% | 10.00% |
| Net Margin | -3.68% | -0.29% | 0.60% | 3.08% |
| ROCE | 4.37% | 8.48% | 8.21% | 9.63% |

During 9MFY2006 (April-December 2005), significant decline in cotton costs coupled with growth in revenues especially in the export markets resulted in strong growth in operating and net profits for the Indian apparel industry. Decline in interest costs further helped the industry.

### Earnings Stability

The earnings of the cotton textiles industry are not stable because of the cyclical nature of the industry. It is expected that the new policy will give a boost to integrated players in the organised sector, who would then be able to modernise and improve the quality of the weaving sector. Further, these players also have an edge in exports and the favourable government policy coupled with changes in the international textile trade environment would result in sharp increase in performance of the efficient integrated players in the industry.

**SWOT Analysis of Cotton**

**Strength**

- The country is one of the largest producers of natural and man-made fibers.
- It produces almost 16% of the world production of raw cotton.
- Skilled labor is available in plenty.
- Manufacturing capacity present across the entire range and across entire value chain yarn, fabric, process house and garments

**Weakness**

- Knitted garments manufacturing has remained as an extremely fragmented industry. Global players would prefer to source their entire requirement from two or three vendors and the Indian garment units find it difficult to meet the capacity requirements.
- Industry still plagued with some historical regulations such as knitted garments still remaining as a SSI domain.
- Labour force giving low productivity as compared to other competing countries.
- Technology obsolescence despite measures such as TUFS.
- Low bargaining power in a customer-ruled market.

**Opportunity**

- Low per-capita domestic consumption of textile indicating significant potential growth.
- Domestic market extremely sensitive to fashion fads and this has resulted in the development of a responsive garment industry.
- India's global share is just 4% while China controls about 15%. In post-2005, China is expected to capture 43% of global textile trade.
- Companies need to concentrate on new product developments.
- Increased use of CAD to develop designing capabilities and for developing greater options.

**Threat**

- Competition in post-2005 is not just in exports, but is also likely within the country due to cheaper imports of goods of higher quality at lower costs.
- Standards such as SA-8000 or WARP have resulted in increased pressure on companies for improvement of their working practices.
- Alternative competitive advantages would continue to be a barrier.
- Due to plenty of labor available human rights may got exploited

**Research Institutions and associations**

- **Cotton Institute of Cotton Research, Nagpur** (http://cicr.nic.in/)

With a view to develop a Centre of excellence for carrying out long term research on fundamental problems limiting cotton production and also to provide basic support to location specific applied research work being carried out in a network of cotton research centres in the country through the AICCIP system, the Indian Council of Agricultural Research has established the Central Institute for Cotton Research at Nagpur in April, 1976.

The erstwhile Regional Station of IARI at Coimbatore (Tamil Nadu) became a part of CICR simultaneously to cater to the needs of southern cotton zone. In the year 1985, the IARI Regional Station at Sirsa (Haryana) was transferred to CICR as a regional centre for the northern irrigated cotton zone.

- **Central Institute for Research on Cotton Technology (CIRCOT), Mumbai** (http://www.circot.res.in/)

The Central Institute for Research on Cotton Technology (**CIRCOT**), Mumbai, established in the year **1924**, at **Mumbai**, **Maharashtra**, is a unit under the Division of Agricultural Engineering of the **Indian Council of Agricultural Research** (Department of Agricultural Research and Education, Ministry of Agriculture, Government of India) engaged in research and development activities in cotton technology.

- **Confederation of Indian Textile Industry** (http://www.citiindia.com/)

Confederation of Indian Textile Industry (CITI) has been incorporated as a Company under Section 25 of the Companies Act 1956 in May 2005, by broad basing the erstwhile Indian Cotton Mills' Federation (ICMF). ICMF had been established in March 1958 and later incorporated as a company in February 1967. Originally, ICMF represented the organized textile units in spinning and composite sectors comprising mills producing cotton yarn, blended and man-made spun yarn, fabrics and home furnishings. The need for an umbrella organization representing the entire textile chain had been felt by various segments of the industry for quite some time, in order to properly project the potential, problems and requirements of the industry in a holistic and comprehensive way, nationally and internationally.

- **The Cotton Cooperation India Ltd.** (http://www.cotcorp.com)

A Single largest Government of India Undertaking for cotton marketing in the country. Annual Turnover exceeds Rs.1000 Crores. Assisting cotton growers in ensuring remunerative prices for their produce from the day one of arrivals till the end of the season and field support through developmental activities and extension schemes spread over 200 procurement centres under 17 Branch Offices situated in various cotton growing areas. In pursuit of qualitative improvements in Indian cotton, has launched an Incentive Scheme for up-gradation of G&P Factories to process cotton with least contamination. It is associated closely in the ambitious "**Technology Mission on Cotton**" for all round development in cotton production, productivity, quality and upgradation of market infrastructure.

- **Cotton Textile Export Promotion Council of India (TEXPROCIL)** (http://www.texprocil.com)

**The international face of Indian Cotton Textiles:** Since its inception in 1954 as an autonomous, non-profit export promotion body, TEXPROCIL has become the international face of Indian Cotton Textiles successfully facilitating exports. For the foreign buyer, it has opened the entire range of Indian cotton yarns, fabrics and made-ups and has become the one-stop source for it. While for the discerning Indian seller it has brought within reach the opportunities afforded by the global market. The ever increasing quantum of exports and diversity of markets tapped bear testimony to the success of TEXPROCIL.

- **Technology Mission on Cotton**

Slowed growth in cotton production during the late 1990s, together with the opportunity created by the termination of the MFA, raised the priority for addressing factors that constrain cotton production and quality in India. In 2001, the Government established the high-level Technology Mission on Cotton (TMC) to direct, coordinate, and fund initiatives to raise the productivity and quality of Indian cotton and strengthen returns to growers. TMC activities focus on four program areas, including (1) research and technology generation, (2) transfer of technology to farmers, (3) improvement of marketing infrastructure, and (4) modernization of gins. Although it is too early to evaluate TMC impacts on research and extension, progress in improving market facilities and, particularly, cotton gins is evident in cotton-producing areas.

**Links**

http://www.indiaonestop.com/cotton/cotton.htm

http://www.ers.usda.gov

http://www.citiindia.com/industry_overview/india_industry_overview.html

http://cicr.nic.in/

**Asia Pro Eco Programme**

Is a five years programme launched by European Union in 2002, The main target is to adopt policies, technologies, and practices that promote cleaner, more resource efficient, sustainable solutions to environmental problems in Asia. The programme provides support through grants to policy reinforcement, operational and practical dialogue, diagnostic studies, technology partnership and demonstration projects, in the field of environment. The programme supports non profit organizations from EU and Asia.

**About SINET**

The aim of sustainable industrial network and its application on micro regional environmental planning is to interpret and adapt an understanding of the natural system and apply it to the design of the man-made system, in order to achieve a pattern of industrialization that is not only more efficient, but which is intrinsically adjusted to the tolerances and characteristics of the natural system. An industrial system of this type will have built-in insurance against environmental surprises, because their underlying causes will have been eliminated at the design stage. A micro-region is a distinct territorial unit with clearly marked boundaries below the regional level, but above the village level. Micro-regional environmental planning attempts to coordinate the planning activities of the various actors within a limited territorial unit.

The project will look at analyzing and documenting various success and failure stories of industry networks from Sweden/Europe and India/Asia, and to ascertain their impacts on environment and sustainability aspects of the respective micro regions. Emphasis will also be placed on creating awareness on the influence of industry network (key economic activity) on the micro region’s environmental and sustainability aspects.

NetPEM

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