The Potential for Green Textile sourcing from Tirupur

– on the path to more sustainable global textile chains

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Camilla Cecilie Valeur, Danish Federation for Small and Medium-sized Enterprises

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Foreword

The Potential for Green Textile sourcing from Tirupur – on the path to more sustainable global textile chains is funded by the Nordic Council of Ministers' working group on Sustainable Consumption and Production. The project was designed by the Danish Federation of Small and Medium Sized Enterprises and Danish Fashion and Textile, with the Danish Federation of Small and Medium Sized Enterprises as project manager. The Danish Federation of Small and Medium Sized Enterprises has extensive experience within CSR and environmental projects in the textile industry both in Tirupur, other parts of India and in countries in Africa and Latin America. Danish Fashion and Textile has thorough knowledge of environmental certification requirements and CSR issues within the industry. The analysis was conducted by Camilla Cecilie Valeur, Danish Federation of Small and Medium Sized Enterprises, in collaboration with Pia Odgaard from Danish Fashion and Textile. Henning Høy Nygaard, Danish Federation of Small and Medium Sized Enterprises, was the project manager and responsible for quality control.

The project team would like to thank the Textile Committee in Tirupur for a positive and fruitful collaboration during the analysis in Tirupur. CAPSULE Indus Foundation has been a great help in facilitating visits to companies locally and participated in the analysis together with Hydra Confedera and have provided valuable input and ideas.

Last but not least, we wish to express our gratitude to the companies that participated in the reference group and workshops in Copenhagen and Tirupur. Their experience, knowledge and interest have been very valuable sources of information and also functioned as an important motivation factor in relation to the recommendations and ideas for a future implementation project.

Oslo, February 2013

Bente Naess

Chair of the NCM's Working Group on SCP
Norwegian Ministry of the Environment

Executive summary

The analysis focuses on the potential for applying Ecolabel standards and environmental management systems in Tirupur to positively influence environmental performance locally. There is focus on how local companies and public institutions can be supported to this end.

Some dramatic changes have taken place in Tirupur since 2010 when the Madras High Court ordered the closing down of all of the approximately 754 dyeing plants because of non-compliance with zero-liquid discharge (ZLD) norms. The ZLD norms refer to the effluent treatment process with 100% reuse of water resources (See Appendix B). At first, the situation was desperate for the Tirupur textile industry, as the technology to handle the ZLD norms was not available in the dyeing units, but today a new beginning seems to be on its way.

There is a growing interest among companies and public institutions in Tirupur to strengthen the green profile of the Tirupur Cluster by defining some joint standards related to not only the ZLD norms but also possibly to Ecolabel standards.

Suppliers in Tirupur have started to see the ZLD norms more much more positive for their business than from the outset. This is related to the fact that they have come to realise that they can save money by reusing water instead of purchasing new water. In addition, the more visionary companies have started to invest in alternative energy sources such as wind energy and other green initiatives.

This change would not have come about as drastically and rapidly if it had not been for the court order. The court order in turn was the result of a strong agricultural lobby that saw their crops destroyed due to soil and water pollution from textile industry residue that had been discharged into the river for years.

The analysis presents Tirupur as a unique case of a textile cluster where local environmental disaster caused by years of pollution from wet processes, has turned into a potential trigger for improving the environmental standards considerably.

The greatest obstacle in realising this vision comes from a lack in demand for environmental standards and Ecolabels from buyers and therefore local reluctance and hesitation to invest in the necessary compliances.

This lack of demand is not new, but what is new is that the supply side in Tirupur has already undertaken huge investments and adjustments to live up to the ZLD norms and has therefore proactively paved the way for higher environmental standards in the value chain.

The analysis concludes by recommending trade associations, related organisations and possibly international donors to support the development of a Green Textile Cluster in Tirupur.

A Green Textile Cluster in Tirupur would be able to support more sustainable practices in the textile industry from the design phase to the reuse of waste in closed loops and investment in sustainable energy sources. The companies in Tirupur that wish to be part of a Green Textile Cluster can also apply joint Ecolabel criteria, which makes it easier to brand the environmental standards on the market. The role of the Nordic buyers and institutions involved in the project will be to promote Ecolabelled textiles from Tirupur on the Nordic market.

Some important activities in an implementation project include capacity building of local organisations like the Tirupur Textile Committee and other relevant organisations to enable them to promote and support local companies in the Ecolabel certification process. Today, Tirupur companies need to apply for certification through Ecolabel offices in the EU, which makes the process time consuming and expensive. The implementation of ZLD norms ensures that Tirupur companies live up to the ETP criteria of Ecolabels like the EU Flower and the Nordic Swan.

The situation in Tirupur is clearly also an opportunity for Nordic SMEs to play an active role in influencing their suppliers to invest in Ecolabels and EMS.

What is needed in order to follow through on this investment is to support the Tirupur Cluster and turn it into a marketable asset, for example, through the creation of a Green Textile Cluster and the application of consumer labels like the EU Flower and/or the Swan.

The analysis concludes that the timing is perfect for Nordic buyers – public and private – to actively engage in supporting the cluster in Tirupur and sourcing more Ecolabelled textiles.

There is a renewed interest and focus on environmental issues related to textiles in the Nordic countries. Recent examples include H&M and the Danish company, Bestseller that have been in the media with demands to demonstrate a positive impact on:

- The external environment – especially the consequences of the use of chemicals in the dyeing process.
- Local textile workers' wages and working conditions (living wage issues).
- Chemicals in clothes that could adversely affect our health.

These issues have been raised by NGOs, consumer organisations and Ministers in the Nordic countries. That buyers have an interest is also reflected in the participation of the companies in the Nordic reference group and it has therefore been concluded that there is great potential for further improving environmental standards in Tirupur, through close collaboration with Nordic buyers.

1. Part I: Framework

1.1 Project background

Project rationale

In recent years, attention to business ethics and corporate social responsibility has been steadily increasing among consumers, businesses, trade organisations, public institutions, NGO's and other stakeholders. Buyers in developed countries are increasingly held responsible for unethical conditions among their suppliers in low wage countries and must accordingly focus on managing social and environmental issues within their supply chains.

In many cases, social issues and occupational health and safety have seemed to draw more attention than environmental issues. Hence, more attention is required to investigate how buyers in developed countries can positively influence environmental performance among their suppliers in developing / low wage countries.

Another tendency is that small and medium-sized buyers face a relatively fiercer challenge regarding this issue than their larger competitors. This is mainly due to limited human and financial resources and relatively limited bargaining power with their suppliers due to smaller orders. Hence, special attention is required on how small and medium-sized buyers can collaborate to influence environmental impact in their supply chains.

The Nordic countries have a large textile and apparel industry, which is – despite the existence of large Nordic global corporations – characterised by a majority of small and medium-sized buyers. The Nordic small and medium-sized buyers share the same environmental supply chain challenges as described above. As many Nordic buyers source from Tirupur, it is an ideal environment for conducting a relevant and fruitful study focusing on Nordic SME's and clusters within the textile sector.

1.2 Presentation of project purpose and objectives

Based on the background for the project as described in the previous paragraph, the project objective is *to map and analyse status, obstacles and the potential for applying Ecolabel criteria and environmental management systems (EMS) in Tirupur (India), among suppliers to a selected group of Nordic textile and apparel companies.*

The analysis focuses on the potential for applying Ecolabel standards and environmental management systems in Tirupur to positively influence environmental performance locally. There is focus on how to support local companies and public institutions so that long-term sustainable solutions can be created.

The analysis takes a value chain perspective and through the involvement of the textile industry in Tirupur and the Nordic countries – including trade associations and certification offices – evaluates how the supply and demand side, private companies and public institutions can play an active role in improving the environmental standards in Tirupur. The process is organised in a way that can add value throughout the chain from suppliers and local communities to buyers and consumers.

The analysis is based on the project partners' experience in working with industry development in developing and low wage countries like India. The Danish Federation has managed a number of projects in India and countries like Kenya and Bangladesh to strengthen the local textile industry from a sustainable business point of view.

The analysis does not focus on specific Ecolabels, as the purpose of the report is not to analyse the pros and cons of the various certification schemes as this has been dealt with already and we believe that it should be decided by the market within the context of sustainable clothing.

1.3 Methodology

The analysis is based on interviews with a Nordic reference group and a Tirupur reference group (See Appendix A). The project team visited Tirupur twice during the project period. In some cases, the interviews took place in person while others were telephone interviews. We created an interview guide that we used for all interviews so that we would be able to compare the interviewees' answers to the same questions. Furthermore, the guide presented a number of questions concerning the same issue, but formulated in different ways in order to increase the

possibility of gaining a deeper perspective of the same issue from the same interviewee.

The group of suppliers who participated in the analysis consist of both existing and potential suppliers to the group of Nordic companies. This is because we were introduced to a number of Tirupur suppliers who were interested in the Nordic market and the potential demand for Ecolabelled textiles. At the same time, it was not always possible to acquire supplier information from the Nordic reference group and it was therefore difficult to know which specific suppliers to contact.

Besides interviews, a survey and a workshop were conducted in Tirupur in August 2012, in collaboration with our local partners the Tirupur Textile Committee, CAPSULE Indus Foundation and Hydra Confedera. A final workshop was held in Copenhagen in October 2012 where more than 60 supplying and buying companies, government institutions and NGOs participated.

Internet research and relevant reports on the subject have been included.

1.4 Ecolabels

There are a number of national and regional Ecolabels in Europe where the Nordic Swan label and the EU Flower label stand out as the most well-known labels. In order to focus the report on the local context in Tirupur and the obstacles and potential for applying Ecolabel criteria – rather than which Ecolabel – the project partners have chosen to use the EU Flower¹ as an example, often together with the Swan, but not focusing on the differences between them.

¹ The EU Flower label was launched by the EU in 1992 when the European Community decided to “develop a Europe-wide voluntary environmental scheme that consumers could trust”. There are now 1367 Flower certified textile products in the EU (Source: <http://ec.europa.eu/environment/ecolabel/facts-and-figures.html>).

The main reason for using the EU Flower as an example is that the reference group, including the Danish Fashion and Textile organisation and Ecolabel Denmark pointed out the EU Flower as the label with the largest demand and the one with most licences on a European scale. The vast majority of textiles imported into the Nordic countries are subsequently exported to the rest of Europe and non-European markets, where the EU Flower is more widespread.

Using the EU Flower as an example does not have any implications for the validity of the analysis related to the Swan label, for example.

- Neither of them are really known nor applied among suppliers in Tirupur.
- Both labels concentrate on the wet processes, which is exactly why they are interesting in a Tirupur context due to the fact that Tirupur has introduced Zero Liquid Discharge standards related to the wet processes.

Other labels that could be considered are GOTS and Oeko-Tex 1000. Since GOTS requires the use of organic fibres it would only satisfy the interest of suppliers and buyers in the niche market of organic textiles. As for Oeko-Tex 1000, new guidelines for the label have just been presented and include certification of not only the production location but

also the Danish company. According to Danish Fashion and Textile Oeko-Tex 1000 is not yet in demand.²

When it comes to environmental management systems, the report will focus on ISO 14000.³

With a forward-looking perspective and considering a future implementation project, it will make sense to promote both the EU Flower, the Swan and perhaps other labels like Oeko-Tex 1000 and make the reference group choose which Ecolabel(s) to focus on.

Another aspect that the analysis only touches upon in the report is the mechanisms/key success factors, which would strengthen the position of a consumer label on the market. Here the report compares the success of Oeko Tex 100 to the EU Flower. It is vital to be present locally and promote the label to the local industry in the producing countries and simultaneously to collaborate with the buying side and gain the necessary feedback and promote the label to sustain and increase demand. One main challenge for the growth of the EU Flower and the Swan is related to the fact that neither of them have local offices in producing countries and neither of them have been as proactive as the Oeko-Tex label in engaging in dialogue with the industry in the Northern countries (from the workshop in Copenhagen on 23 October 2012).

Finally, the entire discussion of whether there are too many labels that focus on the same issues/requirements and whether more consolidation is needed in the certification industry is beyond the reach of this report.

² To get an overview of the most relevant voluntary certifications and standards in the textile industry, please consult Appendix C prepared by DFT.

³ ISO 14000 is actually a SERIES of international standards on environmental management. It provides a framework for the development of both the system and the supporting audit program. ISO 14001 was first published in 1996 and specifies the actual requirements for an environmental management system. It applies to those environmental aspects, which the organization has control and over, which it can be, expected to have an influence.

(Source: <http://www.iso14000-iso14001-environmental-management.com/>).

2. Part II: Analysis

2.1 Introduction to the Nordic markets⁴

The Nordic countries have a large textile and apparel industry, which is characterised by a majority of small and medium-sized buyers mainly involved in design, logistics and sales. There are few large companies but they own large market shares. Success and survival is related to good quality, low prices and excellent logistics (Source: DFT).

When comparing Norway and Denmark, they are rather alike when it comes to Key Success Factors in order to stay competitive. The Norwegian market seems to be developing better, with a growth forecast of 4% growth in 2012, whereas Denmark and Sweden have a weaker forecast (Source: Virke).

India is among the top five import countries for the Scandinavian countries, whereas the number one import market is China. 94% of all Danish textile and clothing is exported and textiles and fashion combined is the fourth largest export business in Denmark. Most clothing is exported to nearby markets like Germany, Sweden, Norway, The Netherlands, Spain, Finland and Great Britain. The biggest growth markets at present are France, Italy and the Benelux countries. China, India, Russia and Brazil (BRIC) count for less than 1% of direct Danish fashion export (Source: DFT).

According to an analysis of the Danish textile industry undertaken by Deloitte in 2010, the industry has been marked by the financial crisis, which has resulted in reduced returns especially among small and large companies, whereas medium-sized companies apparently have suffered less. Furthermore, a greater number of companies have incurred loss compared to previous years. The decline in revenue has been caused by declining export on all major markets and on the domestic market. The report concludes that only the market for organic textile products shows noteworthy growth. Organic textiles are a niche market, but it is a trend

⁴ The report focuses on Denmark, Norway and Sweden as representatives for the Nordic countries.

that could continue and develop due to the serious environmental problems related to textile production (Source: Deloitte 2010).

The market share of Ecolabelled clothes in Norway is, according to Virke, less than 1% and mainly driven by children's wear.⁵

It seems that the industry is facing a time where two tendencies prevail: the financial crisis has enhanced the focus on price and cost cutting and at the same time, big companies see a potential growth area for sustainable textiles.

Recently, sustainability initiatives like the Nordic Initiative Clean & Ethical (NICE) Project⁶ have been initiated with the objective to support the Nordic textile industry in acting more sustainable and responsible. One of the current achievements of these initiatives is a proposal for a common code of conduct for the industry.⁷

In a future vision to support the Tirupur Cluster, it is naturally important to identify and involve relevant initiatives (in India as well as in the Nordic countries) that can be involved or with whom synergies can emerge.

2.2 Introduction Tirupur

Tirupur consists, like the Nordic countries, of a large number of smaller enterprises, whereas the amount of vertically integrated companies is relatively small (around 10%).

Tirupur is India's most important area for the knitted garment industry providing employment to more than 300,000 people, directly and indirectly. The industry earns a significant amount of foreign currency by contributing to more than 60% of the cotton knitted readymade garment exports from India. According to the Tirupur Exporters Association (TEA), an estimated 35% of the garments produced, are exported to USA and 46% to the EU and the remaining 10% to The Middle East, South America and Australia (Source: research through CAPSULE Indus Foundation 2012).

⁵ Sustainable clothes are defined here as organic, fair-trade, Ecolabelled clothing.

⁶ NICE is a project under the Nordic Fashion Association. The Nordic Fashion Association was initiated in 2008, after Danish Fashion Institute, Oslo Fashion Week, The Swedish Fashion Council, Helsinki Design Week and Iceland's Fashion Council met to collaborate with The Nordic Council of Ministers to launch Nordic Look during Riga Fashion week.

⁷ (www.nicefashion.org/en/resources/Codeofconduct.html).

There seems to be great potential for increasing exports from Tirupur to the Nordic countries. Less than 3% of the total European export quota go to Denmark, Norway, Sweden and Finland.

Before the dyeing factories were closed down, there were around 754 dyeing factories in the Tirupur Cluster. The diagram below illustrates the number of companies in each category (Source: CAPSULE Indus Foundation 2012).

According to a cluster report prepared for the Small Industries Development Bank of India (SIDBI) in 2009, Tirupur faces some challenges in improving cluster performance in relation to production efficiency. At the same time, the cluster benefits from having a strong entrepreneurial spirit that has been fundamental to the impressive growth rates in Tirupur.

2.3 Status, obstacles and potential for applying Ecolabel criteria and EMS in Tirupur

2.3.1 *Status*

The general picture in Tirupur is that the vertically integrated companies have many certifications and EMS systems in place, but are not the “typical” supplier to Nordic companies because they are often too big compared to the order sizes of Nordic buyers.⁸

The rest of the companies are typically linked in fragmented supply chains and around 25% of these have the various certifications and/or EMS systems in place (Source: Textile Committee Tirupur).

The most common certifications and EMS systems in the Tirupur Cluster are:

- ISO 9001-2008, 14001.
- GOTS & OE.
- Oeko-Tex 100.
- FLO (Fair Trade).
- Code of Conduct (Buyer Norms).
- Buyer’s Initiative “Track & Trace” etc.

Product labels are often conceived as a “buyer’s” requirement among suppliers. With regards to the EU Flower, less than 1% of the cluster uses this label and has never perceived Ecolabelling as a “premium” value to their product and process. Even the ISO Environmental Management Systems [ISO 14001] have been considered as a “not so favourable” system in the textile wet process.

With the recent stringent measures taken in connection with the ZLD norms controlled by the State Pollution Control Board,⁹ many well-organised wet processing companies have chosen to use EMS to ensure a better control and monitoring aspect in their internal processes. Addition-

⁸ Many Nordic buyers deal with smaller enterprises as a key issue for them is flexibility. The need for flexibility has increased as the series sizes are constantly decreasing in size with the frequent demand for new styles, which has shortened the life cycle of fashion. Whereas in the past there were 2–3 fashion cycles annually, now the rates are 5–6 cycles. (Source: Nordic reference group).

⁹ Tamil Nadu Pollution Control Board (TNPCB) is the State regulatory body and it sets the norms and regulations for the environmental standards within the various industries. Awareness about Ecolabel certification is limited within the TNPCB but certification would help the industries to meet the regulatory requirements of TNPCB. (based on a questionnaire completed by Tirupur supply companies).

ally, the Pollution Board has started to recommend that companies implement ISO 14001 because it makes their control activities much easier.

The cluster initiated a couple of awareness programs on this subject a few years ago but the impact of those programs were close to none. The details are as follows:

- UNEP – Texan Lab Program – To assess the Ecolabel impact on the Indian Apparel Market. Year 2008–2009.
- An Awareness program conducted by CUTS Centre for International Trade, Economics & Environment (CUTS CITEE) in Tirupur Year 2010.
- Implementation of Ecolabels at a wet process facility in Tirupur was tried out by the NGO – Solidaridad Year 2009.

Relevant lessons can be learned from the lack of impact caused by these initiatives, in particular that voluntary change towards more sustainable practices in an industry do not occur until companies perceive that opportunity costs favour such changes. The court order and the closing of the dyeing factories in 2010 imply that new initiatives are needed and that future projects will most probably receive more support from the cluster in Tirupur.¹⁰

Closing of the dyeing factories 2010

The background to the closing of the factories in 2010 is that Tirupur had been facing huge environmental degradation caused by pollution, especially because of the primitive dyeing processing methods. One of the most significant challenges for the Tirupur textile industry is water. Tirupur is located in a dry, water-scarce region and the rapid expansion of the textile industry has taken place in a haphazard manner, without the associated development of a supporting infrastructure or institutional capacity. As a result, this growth has led to the depletion of groundwater reserves and a serious deterioration in the environmental quality of both surface and groundwater.

Due to public pressure, the Madras High Court intervened and the dyeing units were closed down several times since 1997, but had never been very effective until only recently (in 2010), thanks to increased pressure from a strong agricultural lobby group. Farmers have seen their yield and income threatened by serious groundwater and soil pollution.

¹⁰ The principal source of reference in this paragraph is the CAPSULE Indus Foundation (CIF) based on a jointly prepared survey among Tirupur exporters and industry research.

According to a related article on this matter “most of the bleaching and dyeing units in Tirupur were located in clusters along the banks of the River Noyyal and River Nallar, into which they discharged effluents until the court ruling which closed the dyeing factories down. The two rivers are natural drainage courses that only carry water in the monsoon period. During the remainder of the year, they only carry industrial effluents that stagnate in the riverbeds and percolate into the groundwater. As a result, the groundwater quality around the cluster of bleaching and dyeing units is polluted to such a level that it is unfit for domestic, industrial and agricultural activities. Estimated wastewater generation from the nine industrial clusters in Tirupur is around 102 million litres per day. The bleaching and dyeing process is the main cause of pollutants which include caustic soda, hydrochloric acid, sodium hydro sulphate, hypochlorite and peroxides.” (Source: article provided by CAP-SULE Indus Foundation 2012).

The closing of the dyeing units has certainly harmed the industry in terms of factories that have had to close as well as around 200,000 workers who lost their jobs. Exporters have had to outsource the dyeing process as far as 3,000 km away (Delhi/Ludhiana). Delivery schedules were uncontrollable from the middle of 2010 until the middle of 2011 and garment prices shot up by 15 to 20% due to the higher processing charges. Exports out of Tirupur declined in volume for the first time in years due to buyers looking for other sourcing hubs to replace Tirupur, and many factories were on the verge of closure and suffered huge financial loss.

The court ruling has also led to two important steps within the industry: innovation in terms of the adaption of ZLD technology that was pooled from various sources in the world since no similar set-up is found in other countries. Simultaneously, an important step forward on the dyeing industry’s learning curve related to resource optimisation.

After the court order the Tirupur Dyeing association proposed that the way forward was to buy millions of litres of pure water from the Municipality to dilute their industrial discharge before releasing into the river, but this proposal was not accepted and as a consequence, alternative solutions were sought.

A Regional Resource Flow Analysis (RRFA) was undertaken in Tirupur by the Faculty of Environmental Studies, University of Madras.

The study revealed that the industry was collectively spending an annual amount of over 7 million US dollars on water and immediately showed that water could be recycled profitably. Based on this study, a private entrepreneur developed a water recycling system, which can be

installed in each dyeing unit.¹¹ By the end of 2011, the factories started finding solutions to tackle the dyeing issue by establishing a permanent solution plan with outsourcing and/or setting up their own water treatment plants.

The Tamil Nadu Pollution Control Board has only allowed 19 or 20 companies with individual ETPs and 5–8 collective ETPs to operate five days a week on a trial basis. The setting up of water treatment plants is supported with soft loans from the government.¹²

The very large investments needed in ETP technology and higher operating costs, represent on the one hand, an entry barrier to the industry and therefore implies that the industry will run on limited in-house capacity for a very long time to come. Simultaneously, the ZLD norms have given the industry an opportunity to differentiate on the market and to obtain cost-reduction based on sustainable production and energy resources.

2.3.2 Obstacles and potential

Control and bargaining power in the value chain

Many Nordic buyers source from non-integrated chains where there is a lack of Ecolabelled dyeing units. For many of the smaller exporters in Tirupur it is a huge challenge to manage their web of sub-suppliers and this makes it more complicated to apply Ecolabel criteria in fragmented supply chains.

Due to smaller orders it can also be difficult for Nordic buyers to ask a supplier to invest in a specific certification. It seems that most Nordic buyers have difficulty in getting their various demands fulfilled when involved with very big and vertically integrated supply companies. Whereas when they are involved with smaller suppliers they face the problem of suppliers saying that they cannot control their sub-suppliers. (Source: interviews with Nordic reference group).

¹¹ A further outcome was that the study highlighted the fact that the calorific value of the solid waste (garbage) was high as it contained large quantities of textile and paper waste. This could be used effectively to partially replace the 500,000 tons of scarce firewood being used in the town (there is grave concern about the rapid deforestation in India). The possibility of setting up a central steam source (needed by some of the industries) is also under serious consideration as a measure to reduce firewood consumption.

¹² Companies can have individual effluent treatment plants (ETP), which is normally the case in large vertically integrated corporations or be a member of a common treatment plant where several companies share the costs and usage of a larger water treatment plant.

The new situation in Tirupur, to a certain extent, represents an opportunity for Nordic SME's to source green textiles from local suppliers thanks to ZLD dyeing processes. In the current situation with all the investments made, the companies that are up and running may be more positive towards engaging in dialogue concerning Ecolabelling.

The demand for Ecolabelling

Local companies will probably not go for Ecolabel certification without their customers demanding it and currently the greatest obstacle is a lack of demand for Ecolabelled textiles. In Tirupur, the suppliers' message was clear: they don't experience customer demand for environmental certifications and customers are generally only interested in paying low prices. Furthermore, "a manufacturer feels that once they meet their end of the bargain by adopting green measures, the rest should fall within the domain of others in the value chain. Asking to be verified under different labels for the same set of standards that they have met, leaves them feeling helpless and disgruntled." (Quote: Hydra Confedera).

Buyers can demand certain standards and certifications but often because they use this information to value a potential supplier. ISO systems and certifications can give the buyer an indication that the supplier is professional with pleasing quality standards and control internal company processes well. The demand for ISO systems and certifications therefore seem to be more often linked to a valuation of the supplier rather than dealing with the social responsibility interest of buyers.

The generation of managers who now have to adapt to the ZLD norms have, to a great extent, had to adopt the paradigm of integrating sustainability into the business strategy. Nordic buyers say that they have experienced an increased interest among suppliers who proactively inform buyers that they can now carry out production based on Ecolabel standards.

Considering the Nordic side, it makes sense to take advantage of this opportunity for both private and public buyers because the market increasingly expects it and legislation increasingly points in that direction.

Thus, there is potential for increasing the collaboration between Nordic buyers that would like to source green textiles and suppliers with high environmental standards. This could be facilitated if there were a number of dyeing factories using Ecolabels and if, for instance, the Dyeing Association in Tirupur could facilitate the promotion of these factories and facilitate contact with interested exporters. It is therefore recommended to support the smaller dyeing factories in acquiring Ecolabel and EMS systems like ISO 14000. Financial support could come from both public and private stakeholders like the Nordic Ecolabel organisa-

tions, the Tirupur Textile Committee and groups of SME suppliers like the members of Hydra Confedera – an association of smaller companies in the textile production chain.

The application of an Ecolabel like the EU Flower shouldn't imply higher production costs that can justify higher prices in the value chain¹³ (Source: Ecolabel DK). There may be some added cost related to adjusting production processes to the standards of the label, but Tirupur dyeing factories that have implemented ZLD norms would not face high investment costs related to new ETP technology. In addition, the benefit should be new business opportunities to penetrate new segments and markets. When it comes to obtaining higher prices, the only exemption that we have heard about during the interviews is organic textiles that manage to get a higher price of 10–15%.

Knowledge among consumers and product availability

On the consumer level in general, we find that there is a severe lack of knowledge concerning textile certifications. Compared to niche markets of sustainable food, it seems fair to categorise the market for sustainable textiles as a very immature market. A good example is the confusion caused by the Oeko-Tex label in Denmark. The label was formerly named Øko-Tex, which made Danish consumers believe that it was organic (organic = økologisk in Danish).

Consumers and often also sales personnel find it hard to distinguish between the various labels and even more importantly, they are not exposed to many choices within Ecolabelled textiles. The exception is children's wear, where the market share of certified and organic textiles is higher. Consumers are understandably more concerned by threats that are close to themselves or their loved ones in general. Health labels that guarantee a cleaner final product are therefore valued more than labels that deal with distant complex problems like working conditions, fair prices for producers, the manufacturer's environmental problems etc. The EU Flower thus needs to be promoted to consumers and even more importantly to buyers in the B2B market. They are extremely important gate-keepers in making Ecolabelled textiles available to con-

¹³ The cost of labels and certifications need to cost less than the perceived value of acquiring them. Concerning the EU Eco label, the application fee for Indian licensees is €600 (since India is categorised as a developing country). The greatest cost is related to the travel and stay of the Ecolabel consultant where companies must pay all costs + €115 per hour, including travelling time (Source: Eco Label DK). One of Hydra Condefera's objectives is to coordinate certification requests among a group of companies that can share the travel expenses of the ecolabel consultant.

sumers. Considering that there might not need to be a price gap between Ecolabelled textiles and conventional textiles could make it even easier for the industry to increase market shares of Ecolabelled textiles just by making them available.

Since more attention is given to environmental issues among consumers and regulators which are slowly changing consumption patterns and product requirements, it could prove to be a good competitive and differential advantage, mostly because the biggest environmental impact of the textile industry are the wet processes and emissions. Related to the EU Flower, there are forty requirements where only one regards wastewater treatment. By living up to the ZLD norms, companies live up to the wastewater requirements of the Flower and there should be no need to invest in additional ETP technology. The rest of the requirements regard chemicals and companies could certainly change Chemical supplies cheaply and easily if needed. Many Tirupur companies use fixed chemical suppliers that can provide documentation on request, which is important when acquiring the Flower certification (Source: Ecolabel Denmark).

It is a recommendation that a group of Nordic companies join forces to brand Ecolabelled textile products in the growing niche market for sustainable textiles. Such an initiative could be based on a public-private partnership with the Nordic Ecolabel organisations in order to brand and promote the label on B2B and B2C markets.

The market position of the EU Flower within the textile sector

In Denmark, the industry – represented by a textile product panel – decided, at the beginning of the century, to focus on the EU Flower and support that label as *the* Ecolabel because the Scandinavian market was too small considering that the Swan label is not known in other EU countries.

Concerning the ambitions for the promotion of the EU Ecolabel, the results have not corresponded to the initial enthusiasm. Currently, in Denmark which is the top country when it comes to the recognition of the EU label, 35% of consumers have seen and recognise the EU label and 17% know what it stands for.

There is a certification trend within health certifications where Oeko-Tex 100 is a market leader. There are currently around 100 companies that are Oeko-Tex certified in Denmark, whereas only 22 are certified with the EU Ecolabel and 15 with the Swan (Source: Ecolabel Denmark), worldwide the Oeko-Tex label has between 10,000–11,000 licences which is far more than the EU Ecolabel (Source: Oeko-Tex office in Denmark). Based on the analysis, it seems that the main obstacles for the Ecolabel to augment the number of licences on the market are:

- It deals with environmental issues that can be difficult for consumers to understand, appreciate/value.
- The label has been poorly promoted.
- The certification process can be perceived as time consuming due to the requirements related to documentation on the part of the supplier. There are no local organisations/offices in Tirupur (or other developing countries) that can promote the EU Flower and assist companies in the certification process.

Companies in Tirupur need to engage with, for example, the Danish Ecolabel office and this makes the process both expensive and troublesome. The main problem seems to be in connection with documentation systems that are often not the same in the country of production as in Denmark so it can be hard for the supplier and the certifying agency in Denmark to “speak the same language”. The process could be faster, easier and cheaper if local institutions in Tirupur could handle the certification process and if the Ecolabel organisation could consider a similar model as the Oeko-Tex foundation – and several other labels – and establish local offices in the principal countries of production.

The Tamil Nadu Pollution board is currently promoting the ISO 14000 to companies and encouraging them to invest in this system. The Textile Committee and other stakeholders are licensed to handle the certification process and control.

The potential for EU and Nordic Ecolabel organisations lies therefore in learning from the success story of Oeko-Tex 100 and start investing in promoting the label to suppliers, buyers and consumers in the textile value chain.

Strengths and weaknesses of the Tirupur Cluster

According to a cluster report prepared for the Small Industries Development Bank of India (SIDBI) in 2009, Tirupur faces some challenges in improving cluster performance in relation to production efficiency. Furthermore, the closing of the dyeing factories has severely crippled the Tirupur Cluster by reducing the dyeing capacity of the area. This means that sewing factories and exporters have had to use dyeing factories in other parts of India like New Delhi, which in turn increases production costs and reduces quality control.

For the companies that are up and operating based on the ZLD norms, investing in ISO and Ecolabel certification can improve capacity usage and resource optimisation.

Furthermore, Tirupur is a traditional production and export cluster and has not developed strong marketing/branding capacity or a specific differ-

entiation strategy. A push strategy where Tirupur suppliers establish a pilot group based on joint standards to promote the cluster as a Green Textile Cluster, can indeed represent an impressive differentiation strategy.

Over the past ten years, the cluster has focused on enhancing skills in value adding features related to embroidery and printing. With the implementation of the ZLD norms there is great potential to continue and develop the differentiation strategy focusing on better and sustainable processes.

According to the report prepared for SIDBI, one of the core competences of the Tirupur Cluster is a vibrant entrepreneurial spirit that has led to impressive business development over the years without waiting for government support. The Exporters' Association (TEA) has played an important role in this development by taking action to develop initiatives like a container depot, infrastructure solutions and the National Institute of Fashion Technology (NIFT-TEA) Knitwear Fashion Institute to strengthen the industry on a cluster level.

A Green Textile Movement has simultaneously been initiated by NIFT-TEA. The Green Textile Movement refers to GTM technology involving only natural factors and without external forces used for evaporation, which implies that it does not contaminate nor use firewood.

Now is the time for the cluster to use its entrepreneurial spirit to realise and benefit from the first-mover potential requiring that companies are ready to invest in cultivating a new market for sustainable textiles. In Tirupur, the TEA and The Textile Committee could play an important role together with stakeholders like Hydra Confedera and Capsule Indus Foundation in facilitating the creation of a Green Textile Cluster. The cluster should be based on the formulation and implementation of joint standards to ensure that only companies living up these standards can use the cluster as a platform for promotion and to benefit from advantages of joint efforts.

3. Part III: Conclusions & recommendations

3.1 Future perspectives for Tirupur

The closing down of the dyeing units in Tirupur has created huge capacity problems have made it necessary for sewing factories and exporters to use other dyeing factories in cities like Bangalore, Mumbai, Delhi, Ahamadabad and Ludhiana. Now it has become a permanent fixture in their production plan for all larger orders.

The trend to outsource the “dirty” work to locations with less stringent regulations is no different from earlier outsourcing of production from the Nordic countries to various developing countries. Tirupur can nonetheless become a best case for India with Nordic support and with the potential that other production locations in and outside India can follow.

Different scenarios can be discussed:

- Companies continue to outsource dyeing to other cities. The sustainability of this strategy in the long term can be threatened by the fact that Pollution Boards in other states in India are now recommending companies to follow the same ZLD standards as in Tirupur. It will probably take some time before these standards become compulsory in other states, but the fact that the burden of pollution increases – especially when regarding water pollution – causes an increasing interest on a state and national political level to take such steps.
- The establishing of a Green Textile Cluster based on selected Ecolabel and ISO 14000 standards to serve and push demand in niche markets for sustainable textiles. Another element of the Green Textile Cluster could be to increase and promote investments and the use of sustainable energy sources. Spinning mills in Tirupur have invested substantially in green energy. The wind energy generated is close to 800 mw and the entire Tirupur area uses only around 150 MW. So technically speaking, the yarn could be rated for the green energy under Type 3 ISO label. The

cluster can also involve designs that are already focused on environmental savings related to CO2 emissions and waste management in closed production loops.

Both scenarios can and probably will take place simultaneously.

An important aspect of a future project in Tirupur is to work with companies that are ready to deal with the risks and advantages of a first-mover approach. Hydra Confedera, a private association of SMEs, could act as a starting point for a Green Textile Initiative.

Hydra Confedera is currently developing a model to promote the Tirupur Textile Cluster, including the recovery of used fibres and turning them into Closed Loop (CL) yarns for re-impregnation & alternate applications.

Another relevant idea from Hydra Confedera is to invest in joint Eco-labels and EMS systems for their members in order to ensure that they share the same standards and therefore can undertake production sharing and can be branded together.

In this context, the joint application of the European and Nordic Eco-label is a relevant opportunity and the link to Nordic companies can be important to promote this idea.

3.2 Conclusions

During the analysis, it has become clear that:

- Developments in Tirupur with regards to the adoption of ZLD norms represent a strong case of an ecological disaster that has become THE trigger to act locally to improve environmental standards within textile production.
- Implementation of ZLD norms represent a unique opportunity for suppliers and buyers to build on; for suppliers to develop and market themselves as environmentally friendly textile manufacturers, which can result in a Green Cluster differentiation strategy. And, for buyers to source textiles based on ZLD norms and in this way support the development of higher environmental standards in their supply chains, which is increasingly expected from their customers.
- In order to increase the number of companies in Tirupur that apply Ecolabel criteria, it is critical that the Ecolabel organisations are present locally so that they can promote the labels and facilitate the certification process.

- The situation in Tirupur can create a special opportunity for SME's to influence their production chain based on a cluster/network approach: SMEs in Tirupur can benefit from sharing investments in technology like the water treatment plants and windmills, as well as jointly investing in Ecolabels to reduce certification costs. These initiatives are already taking place. Looking to the future, a Green Textile Cluster initiative based on high and innovative environmental approaches like the closed loop model can provide an opportunity for the Tirupur SMEs to differentiate themselves on the market and actively push global demand for greener textiles. Nordic buyers can also benefit from jointly promoting Ecolabelled textile on their markets.
- In order to promote Ecolabelled textiles to end consumers it is important to work with the entire textile value chain in both Tirupur and the Nordic countries, and to involve suppliers, private and public buyers as well as donors, trade associations and certification offices like the Nordic Ecolabel offices.

3.3 Suggested actions

There has been a lot of talk in the Nordic countries about the textile and fashion industry's interest in, and readiness to do something about reducing the negative environmental impact caused by textile production. Developments in Tirupur concerning ZLD are concrete and can be described as an important step towards developing a more sustainable textile value chain. There is a great case for increasing the number of Tirupur companies using Ecolabels and ISO14000 and at the same time increases the market share of Ecolabelled textiles in the Nordic countries.

Based on the analysis, it is clear that Tirupur represents a unique starting point for altering standards in textile production chains. Tirupur can become a best practice case that can be adopted by other production locations in India and internationally. Whether Tirupur develops into a best practice case and demonstrates the benefits of high environmental standards is very much linked to the buying side and the determination of buyers to increase the market share of Ecolabelled textiles on the Nordic/EU markets.

The project team really hopes that the Nordic Council of Ministers in collaboration with other potential donors like the Danish Environmental Agency and the EU will consider supporting a second phase of the project where focus will be on the implementation of the recommended actions.

DFSME and the Danish Fashion and Textile organisation will prepare a concept note for an implementation project with a view to build up a more sustainable textile value chain. The concept note will take its point of departure from and elaborate on the recommendations outlined below.

Based on a value chain approach, the objectives of the implementation project could be to

- Support the implementation of a Green Textile Cluster in Tirupur that could serve as a best practice case for other production locations in and outside of India.
- Increase the export of Danish clean tech to the Green Textile Cluster
- Positively influence the import of EU Ecolabelled textiles to the Danish/Nordic countries.
- Augment consumer awareness, recognition and consumption of Ecolabelled textiles in the Danish/Nordic countries.

Suggested activities in order to achieve these objectives:

1. Definition of a Green Textile Cluster and analysis of economic, social and environmental benefits in the textile value chain

Define the norms and standards for a Green Textile Cluster in collaboration with local stakeholders: public and private institutions and business associations such as the Tirupur Textile Committee, TEA, NIFT-TEA, CAPSULE Indus Foundation and Hydra Confedera. This process would benefit from the active participation of representatives from the Nordic countries like the Danish/Nordic Ecolabel offices, Danish Fashion and Textile and the Danish Federation of SME's. The group needs to appoint a management team that can promote the cluster locally, assist the companies that wish to be part of the cluster as well as ensure that companies are actually living up to the standards. It should be considered whether a business initiative like Hydra Confedera that already assists a group of local companies in sharing environmental standards in Tirupur, could work as a point of departure for a Green Textile Cluster. This activity would be supported by an analysis of the economic, social and environmental benefits of the Green Textile Cluster for potential members of the cluster as well as for the potential buyers.

2. Nordic/Danish office of expertise for local capacity building

The participation of the Nordic representatives could be incorporated through the establishment of a Nordic/Danish office of expertise to support the cluster development through capacity building of the local stakeholders – building local capacity in relation to the development, manage-

ment and promotion of the Green Textile Cluster. This involves knowledge sharing about European and Nordic Ecolabels and the certification process to enable local stakeholders to promote and assist companies during the certification process. This could potentially increase the number of certified companies since the absence of local capacity to promote these Ecolabels is an important obstacle for increasing the number of local companies that apply for the certification. At the cluster, level capacity building will focus on enabling cluster managers to ensure that companies live up to the established criteria and to link the cluster to international networks. The office could also provide Tirupur with updated knowledge on market trends from the European demand side as well as identify stories from Tirupur that could be used for the promotion of Ecolabelled textiles among Danish/Nordic buyers and consumers.

Another objective of the Nordic/Danish office could be the promotion of Nordic/Danish clean tech to support the cluster in achieving greater savings on water and energy and efficiency gains through the implementation of Nordic/Danish best-in-class technology.

3. Creating a pilot group of local companies to participate in the cluster

The objective of this activity is to identify a group of local Tirupur companies that are interested in being part of the Green Textile Cluster. The pilot group could potentially be found among the members of Hydra Confedera as well as other local companies that already have proven interest in high standards for environmental performance. The Green Textile management team therefore needs to promote the cluster locally and find interested companies that are ready to, and capable of investing in an environmental upgrading of their businesses. During DFSME's two visits to Tirupur the idea of a Green Textile Cluster was perceived as very positive among the local companies interviewed. Some may not be able to participate due to the initial investment costs in order to participate in the cluster, but the aim is that the management team can present a very convincing business model (based on the analysis made in activity 1) for the potential members as well as market opportunities.

4. Creating a pilot group of Danish/Nordic companies and organisations

This activity will lead to the creation of a pilot group of Nordic companies and public buyers interested in promoting Ecolabelled textiles. It is essential to strengthen the demand side and the increased interest in environmental standards in public procurement makes it relevant to focus on public buyers as well. Furthermore, it is important to involve

both smaller buyers among the Danish/Nordic SME's as well as larger buyers like the retail chains.

The group could be coordinated by a trade association like Danish Fashion and Textile.

This activity could involve initiatives to strengthen collaboration and communication between the Nordic buyers and the Tirupur Green Textile Cluster. The engagement of the buyers is essential to motivate the supply side. Based on the existing supply chains of interested buyers, the project could also identify other locations of production in India or Bangladesh for example and identify the potential for being able to influence environmental performance in these locations, based on the same cluster/network approach.

An important objective of the group is also to facilitate a continuous dialogue and collaboration between the textile industry and the Ecolabel organisation to promote the label to the industry as well as to ensure direct feedback from the market to improve the label and the certification process.

5. Promotion of Ecolabelled textiles to consumers

The aim is to strengthen the promotion of Ecolabelled textiles on the Nordic/European market, based on joint marketing efforts among buyers in the Nordic pilot group, Ecolabel organisations and consumer organisations.

The group can agree on a joint marketing strategy that each organisation would implement and adapt to their own needs.

The challenge is certainly to engage consumers, but there is a clear sensitivity among consumers when it comes to issues regarding water and energy. Collaboration with Tirupur suppliers could support the marketing efforts through selected stories as well as using the relevant results from the analysis of the economic, social and environmental benefits of the Green Textile Cluster conducted in activity 1). The campaign could focus on Ecolabelled textiles and use Tirupur as a case to tell good stories about.

The campaign may also involve seminars, business delegations and other promotional events that would benefit from close collaboration with the Tirupur Cluster.

6. Dissemination of Green Textile Cluster standards

During implementation, facilitate dissemination of lessons learned, results and benefits obtained in Tirupur to other locations of production in India, including suppliers linking up to Tirupur. This activity can also be scaled up to other textile producing clusters like Bangladesh.

The project team could facilitate the linking up of the Tirupur Cluster with other production clusters – not only to share the knowledge of the Tirupur Cluster, but also to support continuous communication and collaboration on the supply side.

4. List of references

Interviews

Interviews with companies and organisations in Tirupur (see Tirupur reference group in the project).

Interviews with companies and organisations in the Nordic countries (see Nordic reference group in the project).

Research

Internet research and specific research provided by CAPSULE Indus Foundation.

Workshop in Tirupur, 21 August 2012

Potential for a Green Textile Cluster in Tirupur. With the participation of relevant organisations and more than 60 Tirupur companies.

Reports and presentations

Deloitte (2010) "Analyse af Tekstil branchen". Markedsnyt, March.

Dansk Mode og Textil (2012) "Sustainability in the Danish market". Presentation at the workshop i Tirupur, India, August 2012.

Dansk Mode og Textil(2012) "Udviklingen I den danske beklædningsbranche 2007–2011". General presentation.

Dansk Mode og Textil (2012). "Danish Fashion Industry". General presentation.

APEX Cluter Development services for Small Industries Development Bank of India (2009) "Tirupur knitwear and apparel cluster".

Virke (2012) "Klesimporten 2011".

5. Sammenfatning (Danish Summary)

Potentialet for at source "grøn" tekstil fra Tirupur – på vej til mere bæredygtige globale værdikæder for tekstilindustrien

Analysen er blevet til på opfordring af Håndværksrådet og Dansk Mode og Textil, med Håndværksrådet som projektleder.

Analysen undersøger status, barrierer og muligheder i forhold til implementering af miljømærker og ISO 14001 blandt tekstilvirksomheder i Tirupur, Indien, der afsætter en væsentlig del af produktionen til Skandinaviske tekstil og beklædningsvirksomheder.

Analysen bruger EU-Blomsten som eksempel, fordi de involverede projektpartnere vurderer, at EU Blomsten har det største vækstpotentiale. Dette skyldes hovedsageligt, at det som europæisk miljømærke oplever en geografisk bredere interesse end eksempelvis det nordiske miljømærke Svanen. Langt størstedelen af den tekstil der importeres til de nordiske lande eksporteres efterfølgende til resten af Europa samt markeder uden for Europa, hvor EU Blomsten er mere udbredt. I et fremadrettet perspektiv giver det god mening at støtte op om udbredelsen af det fælleseuropæiske mærke, som det antages hurtigere kan opnå større international kendskabsgrad vis-a-vis et fællesnordisk mærke.

Metode

Analysen er baseret på interview med en nordisk referencegruppe bestående af virksomheder, der sourcer fra Tirupur samt en gruppe af eksporterende virksomheder fra Tirupur med interesse for det nordiske marked. I alt 16 virksomheder. Udover de gennemførte interview, er der afholdt en workshop i Tirupur i august 2012 og en afsluttende workshop i København i oktober 2012 med deltagelse af mere end 60 virksomheder, offentlige institutioner og NGO'er.

Endvidere er viden fra relevante studier og rapporter inkluderet.

Baggrund

I de senere år har der været stor opmærksomhed omkring virksomhedsetik og CSR blandt forbrugere, virksomheder, NGO'er samt offentlige institutioner og myndigheder.

Virksomheder holdes i højere grad ansvarlige for uetiske arbejdsforhold hos deres leverandører i lavlønslønde. Det er derfor en væsentlig og relevant udfordring for nordiske virksomheder at håndtere og kontrollere sociale og miljømæssige spørgsmål i deres leverandørkæder.

Der har været et særligt fokus på sociale og arbejdsmæssige forhold, hvorimod miljø har fået mindre opmærksomhed. *Der er således behov for at undersøge, hvordan virksomheder i nord positivt kan bidrage til miljømæssig bæredygtighed blandt deres leverandører i udviklingslande. I dette studie er der primært fokus på miljøpåvirkningen fra tekstilproduktion.*

Samtidig oplever små og mellemstore virksomheder ofte en større udfordring i forhold til at kontrollere og håndtere sociale og miljømæssige aspekter i deres leverandørkæder. Dette skyldes både færre ressourcer hos de mindre virksomheder til at gå ind i disse spørgsmål og samtidig også en svagere forhandlingsposition vis-a-vis deres leverandører på grund af relativt mindre ordrer. *Det er derfor relevant at undersøge hvorledes SMV'er kan samarbejde i forhold til positivt at påvirke deres leverandører i miljømæssige spørgsmål.*

Tekstilbranchen i de nordiske lande er kendetegnet ved en meget stor andel af SMV'er hvoraf mange sourcer fra Tirupur. De nordiske virksomheder er i allerhøjeste grad udsat for forventninger til deres håndtering af miljømæssige spørgsmål i deres leverandørkæder, da fokus på miljø er meget stærkt blandt forbrugere og myndigheder i Norden. Dette skaber et godt grundlag for udarbejdelse af et relevant studie med fokus på miljø i tekstilproduktionskæder, der involverer nordiske SMV'er, der sourcer fra Tirupur.

Rapportens hovedkonklusioner

- Analysen af tekstilindustrien i Tirupur viser, at den miljøkatastrofe som farveriprocessen har forårsaget lokalt, samtidig kan blive den væsentligste trigger for udviklingen af en bæredygtig tekstilklynge, hvor virksomheder og offentlige og private institutioner arbejder sammen om at indføre det nordiske eller europæiske miljømærke som en gennemgående miljøcertificering.
- Analysen viser, at nordiske virksomheder ikke efterspørger miljømærkning og ikke stiller særlige krav til deres leverandører på miljøområdet (der ligger udover de lov mæssige krav i forhold til eksempelvis REACH). Virksomhederne er bange for, at produktet bliver dyrere, og i og med at pris er et afgørende konkurrenceparameter, gør de ikke noget aktivt for at forbedre den miljømæssige påvirkning i deres leverandørkæder. Dog udtrykker mange interesse for at højne de miljømæssige standarder, hvis markedet vil efterspørge og betale for det.

- Efterspørgslen på miljømærket tekstil er meget lille blandt forbrugere i Norden. Der er derfor stort behov for at promovere det nordiske og europæiske miljømærke blandt forbrugere og på den måde styrke efterspørgslen. Promoveringsindsatsen kan med fordel foregå i samarbejde mellem virksomhederne i tekstilbranchen, brancheorganisationer samt eksempelvis forbrugerorganisationer og miljømærkningskontorerne i Norden.
- Der eksisterer et stort potentiale for et fremtidigt samarbejde mellem tekstilbranchen i Tirupur og de nordiske lande. Dette samarbejde skal styrke en miljømæssig ansvarlig produktion i Tirupur, der samtidig skal vise at ansvarlig produktion også godt kan være økonomisk bæredygtig til gavn for både virksomheder, lokalsamfund og forbrugere.

Status, barrierer og muligheder i Tirupur

Tirupur står i en helt enestående situation efter at samtlige cirka 750 farverier blev lukket ned i 2010. Lokalregeringen har besluttet at farverier kun kan operere i Tirupur, hvis de lever op til høje standarder for Nul Spildevandsudledning (Zero Liquid Discharge). Nul udledningspolitikken er enestående i forhold til andre produktionsområder i udviklingslande.

To år efter den kollektive lukning er 20–25 % af virksomhederne oppe at køre igen og de seneste meldinger fra januar 2013 siger at tallet nu er oppe på omkring 50 %. De har enten investeret i den nødvendige teknologi til deres eget rensningsanlæg (typisk kun de større vertikalt integrerede virksomheder) eller er medejere af et kollektivt rensningsanlæg. Desuden har virksomhederne i området også investeret i alternative energiformer, som vindenergi, for at kunne blive selvforsynende med energi.

Det betyder, at Tirupur fremstår som et enestående eksempel på en tekstilklynge, som har investeret og stadig investerer kraftigt i at reducere deres negative miljøpåvirkning.

Når det kommer til ISO 14001 er situationen, at omkring 25 % af de største virksomheder i Tirupur har implementeret denne standard og totalt set er tallet lavere end 10 %. På baggrund af nuludledningspolitikken promoverer de lokale myndigheder aktivt ISO 14001 blandt virksomhederne, og der er lokal ekspertise og kapacitet til at rådgive virksomhederne i implementeringsfasen. Der er således gode muligheder for at øge antallet af virksomheder i Tirupur, der har implementeret ISO 14001.

Når det kommer til EUs miljømærke er situationen en helt anden. Mindre end 1 % af virksomhederne i Tirupur har denne certificering. Kendskabsgraden er utrolig lav, og de der kender til Blomsten opfatter ikke denne certificering som en potentiel merværdi for produktet, da der ingen efterspørgsel er på Blomsten-certificeret tekstil fra købere i Europa.

Der er således flere barrierer for udbredelsen af Blomsten blandt tekstilvirksomheder i Tirupur, hvoraf den største skyldes manglende efterspørgsel tættere på markedet.

Rapporten anfører, at potentialet for at øge efterspørgslen på Blomsten eller det Nordiske miljømærke Svanen i de nordiske lande ligger lige for, da de store miljømæssige konsekvenser ved tekstilproduktion er i fokus i både medierne, blandt forbrugere og på den politiske scene.

Alle i værdikæden kan vinde ved at producere og efterspørge miljømærket tekstil:

- Producenterne i Tirupur ved at differentiere sig i markedet som "grøn" *first mover* og samtidig på sigt reducere produktionsomkostningerne ved at optimere genanvendelsen af vandet i produktionen og basere elforbruget på alternative energiformer.
- Indkøberne (både private og offentlige) i de nordiske lande kan ved at lade en langt større del af den importerede tekstil være miljømærket allerede nu påbegynde den omstilling til grønnere indkøb, som forbrugerene forventer, og som lovgivningen i stigende grad kræver af dem.
- Forbrugerne ved at have langt flere valgmuligheder, hvis de ønsker at købe miljømærket tekstil uden at skulle betale en høj merpris for det.

Analysen undersøger også, hvorledes en kollektiv tilgang kan øge små og mellemstore virksomheders muligheder for at påvirke deres leverandører til at implementere eksempelvis Blomsten. I de nordiske lande er der en vis skepsis overfor samarbejde, der involverer deling af leverandørinformationer, fordi det er konkurrencemæssigt sensible emner. Samtidig er der en vis villighed til at samarbejde omkring promovering af eksempelvis Blomsten til kundesiden.

Anbefalinger

Rapporten anbefaler at igangsætte et projekt, der sigter på at øge efterspørgslen på miljømærket tekstil fra Tirupur. Dette skal ske ved at danne en gruppe bestående af private og offentlige indkøbere fra de nordiske lande, der er villige til at sætte højere mål for deres indkøb af miljømærket tekstil fra Tirupur og aktivt promovere det til forbrugere.

Desuden skulle et sådan implementeringsprojekt støtte tekstilklyngen i Tirupur gennem kapacitetsopbygning af lokale virksomheder og institutioner til at kunne promovere og implementere miljømærket lokalt. Denne tilgang vil kræve at flere lokale virksomheder står sammen om at blive certificeret – eventuelt gennem fortsatte kollektive investe-

ringer i vandrensningsteknologi, bæredygtig energi og proaktiv markedsføring til nordiske indkøbere.

Dette projekt skal bl.a. føre til, at kendskabsgraden blandt nordiske forbrugere øges og forbruget af miljømærket tekstil stiger, hvilket også vil påvirke efterspørgselen i forhold til miljømærket tekstil fra andre produktionssteder end Tirupur.

6. Appendix

6.1 Appendix A

Nordic reference group

- Danish Fashion and Textile (DK) – project partner.
- Eco Label Denmark (DK).
- Hovedorganisasjonen Virke (Virke) (N) – project partner.
- TEKO, Sveriges Textil- och Modeföretag (TEKO) (S) – project partner.
- Sourcing House (DK).
- Uno Image (DK).
- Bestseller (DK).
- Hoyos & søn (DK).
- Linum (S).
- Varner-gruppen (N).

Tirupur reference group

- Tirupur Textile Committee (Tirupur).
- CAPSULE Indus Foundation (CIF) (Tirupur).
- Tirupur Exporters Association (TEA) (Tirupur).
- NIFT-TEA Knitwear Fashion Institute (Tirupur).
- Dyers Association of Tirupur (DAT) (Tirupur).
- Hydra Confedera (Tirupur).
- Textile Committee in Karur (Karur).
- Karur Textile Manufacturer Exporters Association (Karur).
- Armstrong (Tirupur).
- Mutu Fashion (Tirupur).
- B.S. Apparel (Tirupur).
- PGC (Tirupur).
- Emperor (Tirupur).
- Cotton Blossom (Tirupur).
- Divyar Garments (Tirupur).
- UK Textiles (Tirupur).
- Sree Santhosh Garments (Tirupur).
- Free Look Fashions (Tirupur).
- Arvind A Traders (Karur).
- A-Tex Home Collection (Karur).

6.2 Appendix B

6.2.1 *“Zero Liquid Discharge”*

Introduction

Treatment of Industrial Effluent Water has been and continues to be a perennial problem for the Indian Textile Industry, more particularly to Tirupur Hosiery Cluster. The Effluent Treatment Process is three stages. The First stage is separation of purified water through Reverse Osmosis Methodology (RO) – the second is evaporating the concentrated effluent using Mechanical Evaporators– and finally the concentrated evaporator reject is fed into the Crystallizer for separating the salt present in the brine solution in solid form.

ETP system for textile dyeing industries

Textile industries use water for textile dyeing, which they normally pump out repeatedly from the ground or natural water sources resulting in depletion of ground water level. In the dyeing process textile industries generate huge quantity of toxic effluent containing colours, sodium sulphate, sodium chloride, sodium hydroxide and traces of other salts. These are generated after dyeing and after washing of garments / fabrics. After dyeing the waste water produced is called Dye Bath water and after washing the waste water generated is called wash water. Dye Bath contains higher solids in the range 4–5% whereas wash water contains only 0.5–1% solids. The basic concept of ETP System is to convert entire quantity of effluent to zero level by separating water and salt using evaporation and separation technology. The concept and the treatment are based on the removal of the entire COD/BOD and the condensate coming out to meet the fresh water quality requirement in the process.

6.2.2 *Textile waste water handling by evaporation and solid separation*

Basic principle

The technology is based on basic principle of reduction of quantity by concentrating the effluent and subsequently separation of salt and water.

The evaporation process

Textile Effluent is fed to the vacuum evaporator to concentrate up to 40% solids concentration. The total process is under vacuum and the vapors generated in the system are re-used to economize steam con-

sumption in multiple effect evaporation system with thermal vapour recompression system. The thermal vapour recompression system use Vapours generated in the evaporator and compress it by steam and the compressed vapours are used as heating medium in the evaporator, in this way steam consumption is reduced. Water recovered from the evaporator has low COD/BOD value and can be recycled in the plant.

Separation process

(Zero Liquid Discharge Section): The resultant slurry (concentrate) is fed to the thickener and centrifuging section for converting the liquid concentrate to solid waste. The mother liquor from thickener and centrifuge is recycled back to evaporator. The water separated out from evaporator is good enough in quality to recycle in the plant for Dyeing.

6.2.3 The Effluent Treatment using “Eco Green Industrial Evaporator”

The problem lies in evaporating the concentrated brine solution through mechanical evaporators and the research division of NIFT-TEA Knitwear Fashion Institute has embarked upon a Research Project called “Green Textile Movement” with a view to provide an alternative methodology to evaporate the Effluent Brine Solution. The solution “Eco-Green Industrial Evaporator” is a simple, natural, cost- effective and easy to operate alternative solution for existing expensive and complex Mechanical Evaporator. This method takes its root from the “Gradierwerk” method-

ology which was in vogue in Germany and few other European countries used for salt extraction purposes. This follows a simple methodology of concentrating the brine solution using various natural energies such as solar, wind, relative humidity in the atmosphere, etc.

Background of the Problem

Generally, Textile Units across the globe follow a methodology for managing the Textile Processing Effluent by carrying out a few initial treatments to control the TDS, BOD and COD and discharge the treated effluent either into a perennial river or into the Sea.

Similar was the practice in Tirupur also till few years back when the effluent water was being dumped into the nearby Noyyal River. But since the Noyyal River has dried up and there was no perennial water flow, the effluent water dumped into the river caused significant damage to the farm lands located in the Noyyal river bed. The courts took cognizance of the issue pursuant to a Public Interest Litigation filed by a group of affected farmers, and in the year 2006 High Court of Madras has made it mandatory to follow “Zero Liquid Discharge (ZLD)” as a pre requisite for according approvals to the processing units.

This Effluent Treatment Process, as already stated, involves three stages – The First stage is separation of purified water through Reverse Osmosis Methodology (RO)-the second is evaporating the concentrated effluent using Mechanical Evaporators – and finally the concentrated evaporator reject is fed into the Crystallizer for separating the salt present in the brine solution in solid form. Every CETP has successfully implemented the technique of RO methodology to purify the water which is being returned to the member units.

But the process of mechanical evaporation is a new technology first attempted to be used at Tirupur through these CETPs and IETPs whereby the concentrated effluent is evaporated by heating the same using bio fuel and power. This Mechanical Evaporation Technique is technically flawed with the following deficiencies:

- First and foremost is that this methodology is totally new and nowhere used across the globe – and Tirupur has become a testing ground for this technology.
- Mechanical evaporation is being done by a process of heating the concentrated effluent using steam energy and power– for which enormous quantities of firewood and electricity is required – which obviously results in deforestation and carbon emission.
- Despite such a huge cost incurred on account of consumption of firewood, power and high quality skilled manpower to operate the

plant, this process poses several technical and other difficulties while actually implementing the same.

Concept of EGIE – German Gradierwerk

- A Gradierwerk or graduationWork is a plant for salt production commonly used in Germany since 16th Century.
- Since the Bronze and Iron Ages, salt has been produced by evaporating natural brine in clay pots over open fires. The saltwater used for this generally had low concentrations of salt (less than 10 %), which meant that large quantities of water had to be evaporated. The energy required for this was obtained from wood, which led to deforestation of the areas around the salt works. Ways were sought to enrich the saltwater, i.e. to increase the percentage or degree of salt content.
- From the end of the 16th century, this was done in so-called salt works. It consists of a wooden frame filled with the fagots (mainly blackthorn). The saltwater is pumped into containers at the top of the thorn rooms. From there, it trickles down, and vaporised. The water content is reduced by wind and sun, thus increasing the percentage of Salt content.
- Nowadays, this Gradierwerk technology is being used in Spas across Germany as a health treatment for Asthma and other similar diseases. As a side effect of the evaporation of the saltwater, the conditions

around a salt works are similar to those at the coast. When inhaled, this fresh air provides relief for many illnesses of the upper airways and a pleasant prophylactic effect.

Working of Eco-Green Industrial Evaporator (Egie)

This project adapting the idea of German Gradierwerk with necessary structural and other modifications to suit the requirements of evaporating Concentrated Effluent Brine Solution emanating from the Reverse Osmosis Process being carried out by Process Houses.

- First step is to create a wooden structure with necessary civil backup - similar to the one displayed in the next page - with facilities to pump the RO Reject effluent to the top of the structure.
- Then tightly fill up the structure with wooden sticks-mainly thorn plant - which is widely available in Tirupur and nearby areas;
- Wooden troughs will be installed on the top of the structure to hold and pour the effluent being pumped from the effluent tank through motor pumps.
- The pumped RO Reject water is carried to the top of the structure and poured from the top - from there it tickles down while falling through the wooden twigs and sticks - and in the process evaporates a sizeable portion of the water content in the effluent and the balance water will fall in the tank constructed underneath the wooden structure.
- This process is repeated continuously so that the concentration of effluent reaches a particular stage of TDS and Specific Gravity.
- The real secret behind substantial increase in evaporation rate as compared to normal solar ponds is the *increase in surface area* due to

the fact that water passing through so many sticks and twigs thereby creating the condition conducive for evaporation of water molecules through effective use of solar and wind energy.

- The remaining concentrated effluent water which is the resultant of this repeated process will then be taken to the Crystallizer and chilling plant for solidification.

Model Plant of Eco Green Industrial Evaporator (EGIE) Advantages of EGIE

- The major advantage of EGIE is that it facilitates huge volumes of water through natural process using natural resources such as wind and solar energy.
- It maintains cool temperature in the vicinity thereby allowing retention of moisture content in the soil so as to facilitate plantation growth.
- Results in significant savings in electricity and bio fuel required for operating the mechanical evaporator thereby considerably reducing the operating cost of the evaporator.
- Do not require huge tracts of land as required by solar ponds to evaporate the effluent – structured can be installed in a small area inside the premises of the dyeing factory or CETP.
- By installation of EGIE to evaporate the industrial effluent of Tirupur City, the process of evaporation of water molecules caused on account of this has got the potential to increase the rainfall in the area thereby contributing to the agricultural growth as well.

Economic Feasibility Details

Estimated cost of Installation	Rs. 60 lakhs (Approx.) excluding the cost of land area
Total recurring expenses including fire wood, fuel and manpower cost in case of mechanical Evaporator	Rs. 1/- per litre of RO Reject per day Approximately Rs. 1,00,000/- per day
Total Recurring Expenses including pumping cost, feed water heating at night hours and manpower cost in the case of EGIE	Rs. 5000/- per day
Savings per day	Rs. 95,000/- per day

Tirupur Industry has been and continues to be a vibrant industrial city and seen as the Knitwear Capital of India significantly contributing to the growth of Indian Economy. Closure of Dyeing Units will obviously result in serious disturbance in the Export Trade thereby bringing the economy of Tirupur to a complete stand still causing several sociological issues. Eco – Green Industrial Evaporator methodology has the potential to solve all the above pollution related issues of Tirupur by providing for a simple and cost effective alternative methodology for evaporating the effluent brine solution of Dyeing Factories. The success of EGIE will not only solve the gruesome problem that is endangering the survival of textile industry of Tirupur, by a process which is environmental friendly, carbon emission free and in a cost effective way, but also enhance the Brand India Image of the Country in the eyes of the outside world.

Source

Promotional Material of Various ETP Systems Service Providers, Case Study findings of Research Articles of the Institution.

This report can be used as a reference material to understand the process at a very basic level only, not to be referred for the core process study.

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6.3 Appendix C

DESCRIPTION: 1: What is it, 2: Platform/Reference, 3: What do you get, 4: Consumer health, 5: Accreditation

Logo	Name	Target	Description	Price	Issuing Body
EU Ecolabel	B2C	<ul style="list-style-type: none"> - Ecolabel. - Criteria set from a Life Cycle assessment. Restriction: Negative list. - Harmful substances restricted. Demands on wastewater treatment, quality demands on final product. - Yes. - Revised every 3–5 years. 	<ul style="list-style-type: none"> - Application and renewal fee: €350, €600 or €1,200 (depends on company size). - Audit costs outside Denmark. - Fixed yearly fee: €350, €750 or €1,500 (paid the following year) (depends on company size) (all prices are ex 25% tax). 	<i>Ecolabel.dk</i>
Nordic Swan	B2C	<ul style="list-style-type: none"> - Ecolabel. - Criteria set from a Life Cycle assessment. Restriction: Negative list. - Harmful substances restricted. Demands on wastewater treatment, quality demands on final product. Organic demands for vegetable fibres. Few demands concerning ethical behavior. - Yes. - Revised every 3–5 years. 	<ul style="list-style-type: none"> - Application fee: €2,000. - Renewal fee: €1,000. - Audits Europe: €500. - Audits outside EU: €1,500. - Yearly fee: approx. 0.3% (based on turnover). - Extension fee: €0–1,000. - Minimum and maximum fee in Denmark (paid the following year). (all prices are ex 25% tax) 	<i>Ecolabel.dk</i>
Bluesign	B2C/B2B	<ul style="list-style-type: none"> - Ecolabel/system. - Input-oriented approach with positive list. Criteria for companies as well as inputs, production and outputs based on comprehensive risk assessments. - Requirements regarding: resource productivity, air emissions, occupational health and safety, water emissions, consumer safety. - Yes. - Revised every 3 years. 	The price is variable. It depends on company size, company type and complexity.	<i>Bluesign.com</i> SGS
Global Organic Textile Standard	B2C	<ul style="list-style-type: none"> - Organic farming of raw materials, Ecolabel and social demands. - Based on Positive list. - Organic end product, environmental management and social compliance (ILO) throughout the whole supply chain. - Yes.- 	<ul style="list-style-type: none"> - Certification costs. - Yearly licence fee: €120 (for each facility that is inspected). - Fees are paid in advance and according to a calendar year. 	<i>Global-standard.org</i> ECOCERT Greenlife ETKO ICEA Soil Association Certification Ltd
EU834/2007	B2C/B2B	<ul style="list-style-type: none"> - Organic farming of raw materials. - International organic standards. - Organic raw material guarantee. - Yes. - EU. 		LINK: http://ec.europa.eu/agriculture/ofis_public/r8/ctrl_r8.cfm?targetUrl=home&lang=en
Oeko Tex 100	B2C	<ul style="list-style-type: none"> - Health label focused on consumer use. - REACH and chemical restrictions above the legal level. - Guarantee for consumer health and quality requirements. - Yes. - Regularly. 	<ul style="list-style-type: none"> - Yearly licensing fee: 1,200 CHF. - Costs for company audits. 	<i>Okotex.dk</i> Hohenstein India Pvt. Mangalam Road, 641 604 Tiripur, India

Logo	Name	Target	Description	Price	Issuing Body
ISO 9001	B2B	<ul style="list-style-type: none"> - Certifiable management system. - International guidelines. - Systematic and continuously quality management. - Annual report on progress. Improved quality of end product. - Regularly. 	The price is variable. It depends on company size, company type and complexity.	<i>Ds.dk</i> Different issuing bodies e.g.: Bureau Veritas Danish Standards
ISO 14001	B2B	<ul style="list-style-type: none"> - Certifiable management system. - International guidelines. - Systematic and continuous environmental performance of production progress. Annual report on progress. Improved quality of end product. - Yes. - Regularly. 	The price is variable. It depends on company size, company type and complexity.	<i>Ds.dk</i> Different issuing bodies e.g.: Bureau Veritas Danish Standards
ISO 26000	B2B	<ul style="list-style-type: none"> - Management system. - International guidelines. - Guideline to systematic CSR work and documentation for comprehensive and all-embracing implementation. The standard is non-certifiable. - Yes. - Regularly. 	The price is variable. It depends on company size, company type and complexity.	<i>Ds.dk</i> Different issuing bodies e.g.: Bureau Veritas Danish Standards
DK 49001	B2B	<ul style="list-style-type: none"> - Certifiable management system. - Based on ISO 26000. - Systematic CSR work and documentation for comprehensive and all-embracing implementation. - Yes. - Regularly. 	The price is variable. It depends on company size, company type and complexity.	<i>Ds.dk</i> Different issuing bodies e.g.: Bureau Veritas Danish Standards
OHSAS 18001	B2B	<ul style="list-style-type: none"> - Certifiable management system. - International recognized guidelines. - Guarantee for systematic and continuously improvement of occupational health and safety. - Yes. - Regularly. 	The price is variable. It depends on company size, company type and complexity.	<i>Ohsas.org</i> Different issuing bodies e.g.: Bureau Veritas Danish Standards

norden

Nordic Council of Ministers

Ved Stranden 18
DK-1061 Copenhagen K
www.norden.org

TemaNord 2013:540

The Potential for Green Textile sourcing from Tirupur

This report provides a thorough analysis concerning the situation in Tirupur, India, where the local government has imposed strict requirements on zero liquid discharge of wastewater in textile production. The report analyzes how Tirupur can turn the Zero Liquid Discharge requirements into a competitive advantage by creating a green textile cluster based on the European Eco-label Flower and ISO 14001. The report also includes an analysis of the demand situation for environmentally certified textile in the Nordic countries and how this demand can be affected positively.

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