

Beyond Direct Business Connections

An Assessment of Environmental Initiative in Fashion Industry to
Reach Out to Second Tier Suppliers

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Abstract

Customers and the stakeholders are putting increased pressure on the companies to take responsibility for environmental issues in their supply chain. This may not be very easy for the companies, especially if the suppliers causing pollution are beyond company's direct business connections. This study tries to understand this phenomenon by means of a case study in the fashion industry. A Swedish fashion retailer, H&M has taken a Cleaner Production (CP) initiative to improve environmental performance in its second tier suppliers, which are beyond its direct business connections.

The case study is described and analysed based on two different models to understand different aspects of the initiative. Also, valuable opinions from the fashion retailer and its first and second tier suppliers have been compiled to realise the perspectives of different actors in the supply chain. Although there is still scope for improvement in this ongoing CP program, it makes an interesting study due to the presence of a business entity like H&M as a promoter of an environmental initiative. Such an involvement of a big company should encourage other companies to take up similar programs to green their respective supply chains.

The study ends by giving recommendations for the immediate improvements of the focussed case study, as well as the long term recommendations for the companies to reach beyond their direct business connects with the issues like environment. The need for integrating environmental issues with other core business issues, recognising the efforts made by suppliers at all the level have been stressed to achieve wider goal of sustainable production.

Key Words: Supply Chain Environment Management, Cleaner Production, Clothing Industry, Textile.

Executive Summary

Environmental issues are becoming increasingly important for most of the business organisations. Traditionally, environment management in the companies concentrated on the environmental aspects of their own operations and on those associated with their products. But the growing number of customers and stakeholders are exerting pressure on the organisations to look beyond their own premises and take responsibility for the environmental issues in the entire lifecycle. A lot of research has been carried out in academic, as well as the industrial world in the field of Supply Chain Environment Management (SCEM). However, in reality, companies find it extremely difficult to influence the suppliers beyond their direct business connections. In other words, if the supplier considered as the main source of pollution does not have direct business contacts, company's power to influence the environmental improvements gets limited. This limitation is due to the fact that the company can not dictate terms on such suppliers either financially or legally due to the absence of contractual agreements.

In order to further study the implications of such a situation on environmental issues in the supply chain, a case study in the fashion industry has been chosen in this thesis. Hennes & Mauritz (H&M), a Swedish fashion retailer has recently launched a Cleaner Production (CP) program in India to promote environmental improvements among some of the textile wet processing mills that are used by it. These mills did not have direct business connections with H&M and they were connected with the retailer through intermediaries- garment manufacturers. This program made an interesting case study to understand the SCEM phenomenon mentioned above. Since the program was still in initial stages, it also gave an opportunity for the author to give some of his inputs in order to improve the ongoing process.

This thesis had following two objectives:

(a) To gain more understanding on how to effectively reach out beyond first tier suppliers in the absence of direct business relationship and (b) To help a fashion retailer to effectively address the environmental problem in the wet processing mills being used by them

In order to achieve these objectives following research questions were explored:

1. What are the main objectives of the CP initiative from the fashion retailer and how is it being implemented on the ground?
2. What is the reaction of first and second tier suppliers to the fashion retailer's initiative?
3. What are the lessons that this program could learn from the experiences of other classic CP initiatives?
4. The case study is an effort to reach out to the suppliers beyond direct business connections. Under such circumstances, how environmental initiative should be packaged and communicated for an effective program implementation and how can it benefit different actors in the supply chain?

The author began his research by probing the literature for different researches in the field of SCEM. The focus of this search was to understand the basic concepts of SCEM and the factors affecting the diffusion of environmental thinking in the supply chain. These factors were then related to the specific sector of clothing industry to understand the complexities within that sector. During the literature review and expert interviews about clothing industry "wet processing operations" of the sector emerged as the most polluting segment of the supply chain. This also provided explanation for why H&M chose wet processing mills as the target group for its program. Since the case study was about CP techniques, the author's next

task was to gain more knowledge about CP and its implementation process. Interviews with CP practitioners and the literatures helped the author to identify most important factors governing the success of any CP program. These factors served as one of the criteria for analysing the case study.

The next step was to make a detailed analysis of the case study. In order to do so, the author met all the players at H&M who were responsible for the CP program in India and Sweden. He spent more than two months in India and interacted with all the twelve suppliers (six garment manufacturers and six wet processing mills). The progress made by all the mills during the first five months of the program was closely monitored. Based on the input collected through the interviews, literature and the observations during site-visits, analysis was done based on the following two criteria: Analysis based on the “Objective Model” and Analysis based on the experiences from other CP programs.

The objective based model showed that, while comparing to the “stated objectives” of the program, the initiative showed the mixed results in the first few months of the program. The performance of three out of six mills was quite disappointing, while other three did quite well. H&M did learn some very valuable lessons to deal with the situation during this period, which made it useful to fulfil “un-stated objective” of using the program as a learning process. Analysis of the program based on the factors governing the success of the traditional CP projects revealed that the biggest advantage of this initiative compared to other CP programs was H&M’s ability to convince the mills to participate in a program like this. It also identified many factors where this program could be improved for the future implementation.

Based on the experiences gained during this thesis, the author suggests certain recommendations. The recommendations are at the two levels. The first ones are for H&M to make short-term adjustments to the ongoing program to increase its effectiveness. The second set of recommendations is for the companies who wish to reach beyond their business connections to make certain environmental improvements in the supply chain. These recommendations stress the need for identifying and understanding the suppliers beyond the first tier and working with them on various issues. They also suggest that environmental issues should not be considered as isolated matters but should be integrated with other core business operations. One recommendation to motivate the suppliers beyond the business connections could be to recognise their efforts and suitably reward them for the same.

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1 Introduction

1.1 Back ground: Greening the Supply Chain

The business organisations in recent years are facing increasing pressure from their customers, stakeholders and the society in general to improve environmental performance of their products or services. This demand for improvement is not only restricted to the environmental aspects associated with the final products but also to the way they are manufactured and used. Thus, the companies are being subjected to the dual challenge of improving their market performance and taking responsibility for their own, as well their suppliers' performance in the environmental field.

This has lead the companies to realise that to achieve their environmental goals and satisfy their stakeholders' expectations, they need to look beyond their own facilities and to involve their suppliers in environmental initiatives. Examples of such initiatives could include-screening the suppliers for environmental performance, working collaboratively with them on green design initiatives and providing training and information to build suppliers' environmental management capacity. This phenomenon is also referred as 'Greening the supply chain' and 'Supply Chain Environment Management'.

Greening the supply chain is considered as a process of integrating the environmental values into supply chain. It can be defined as “ a phenomenon where environmental innovations diffuse from a customer firm to a supplier firm, with environmental innovation defined as being either a product, process, technology or technique developed to reduce environmental impact”(Hall, 2000, p.456). As it is seen from the definition, it involves two sets of organisations: customer firms (also referred as the buying firm) and supplier firms. The buying firm can either use their purchasing power to demand an improved environmental performance from the upstream suppliers or act as a facilitator to help the supply base to become more environmental friendly in a phased manner.

Success of any effort to green the supply chain depends on how the buying and supplier firms perceive and prioritise environmental issues. Since the priorities of buying and supplier firms could be very different based on their individual business strategies, their reasons to participate (or not to participate) in the environmental initiatives could also be very different.

1.1.1 Position of Buying Firms¹

“We have growing and expanding signals that consumers do look at companies not only as providers of products of services but also as societal actors and vehicles of values. Customers (and other stakeholders) do not always differentiate between a company and its suppliers and hold companies accountable for suppliers' environmental and labour practices.”

This is the opinion expressed by United Nation's Environment Program (UNEP) representative at the recent International Conference on “Green Supply Chains –Towards sustainable production and consumption”.(Bakken, 2004) The conference goes on to suggest that the buying companies should look beyond their own firm and try to improve environmental conditions throughout their supply chain. It also lists some of the advantages

¹ To facilitate the discussion, buying company could be considered as the one which is closest to the end consumers, for instance, retailing companies.

for the buying companies which are involved in Supply Chain Environmental Management (Bakken, 2004):

- Companies can achieve greater operating efficiency, reduced waste generation and savings in energy and water; these factors would collectively result in lower costs of operations.
- Generation of new business to companies through environmental conscious customers.
- Increased quality standards resulting in greater customer satisfaction
- A stronger positive reputation for the company
- Less risk of conflicts with government environmental authorities, local community and the staff.

These opinions have been supplemented by many other researchers in the fields of environment and supply chain management. Some of them suggest that the shift towards environmental issues in the supply chain finds its roots in the philosophy of “Life Cycle Thinking”. Stakeholders want companies to look beyond their firm and products and address the environmental issues at different levels of product manufacturing and usage (Joseph Fiksel, 2004).

In spite of many advantages associated with the green supply chains, there are few hurdles for the buying companies to reach out to its entire supply base with the issues like environment. Some of such barriers could be-

Is there a market for environmental friendly products? There have been many surveys conducted to analyse consumers’ attitude towards the environmental issues. But as Hall observes, most of these surveys only describe consumer’s “attitude towards ethical issues” and not his actual “purchasing preferences” (Hall, 2000). In other words, although consumers want companies to improve environmental performance of their supply chain, they take purchasing decisions based only on price and quality. This was also confirmed by a survey conducted among United Kingdom’s leading fashion retailers. Four out of five retailers claimed that the eco friendly apparels did not make business sense to them (Robins & Humphrey, 2000). Although this may not be true for all the sectors, this factor might restrict investments in environmental issues by many buying companies.

How far the buying companies can influence their supply chain? This issue is connected with the power structure within the supply chain. In many cases, the buying company would only have business connections with its first tier suppliers. As a result, rest of the chain would be out of their direct control (Forza C, 2000). It is a big challenge to influence these actors who are not controlled through any business relation. The other issue which presents an obstacle to the process of greening the supply base is the difference in the amount of pressure felt by different members of the supply chain. For instance, retailers at the end of the supply chain face increasing pressure from many directions, but the second or third tier suppliers hardly face any pressure to improve environmental performance (Hall, 2000). Hence the successful implementation of environmental policies in the supply chain would also depend on the buying company’s ability to transfer the pressure to its suppliers without disturbing the business proposition.

The above mentioned barriers hint at some of the business realities for buying firms, who wish to infuse environmental improvements in their supply chains. In spite of best of the intentions, organisations would like to start any initiative without disturbing their core business values. Thus the challenge lies in designing an environmental initiative that satisfies following requirements-

- a) The environmental initiatives should reach all the main sources of pollution in the supply chain. This means that the companies might have to reach beyond their direct business contacts, making it difficult for them to use their purchasing power.
- b) The initiatives should be cost effective and less expensive as the pay back for the environmental investments could be slow and long fetched on monetary basis.

Industries and researchers are continuously working towards finding the balance between the environmental concerns and business priorities of the organisations. Since the buying firms often initiate and facilitate environmental programs in their supply chains, most of the work in this area seems to be directed towards assisting such firms to understand and develop successful Supply Chain Environment Management (SCEM).

1.1.2 Position of Supplier Firms

Literature and experts often suggest that buying companies have enough reasons to take environmental initiatives in the supply chain, but do the suppliers have enough reasons to implement such initiatives? Business for Social Responsibility (BSR) organisation conducted a study on “Suppliers’ Perspective on Greening the Supply Chain” and here are some of their observations (BSR, 2001, p. 4)

Suppliers noted how some buying companies said they cared about environment measures and even asked suppliers to fill out environmental questionnaires and change material and processes, but then appear to base their purchasing decisions solely on which supplier came in cheapest on a bid.

Suppliers expressed concern that not all of their customers’ environmental requirements for suppliers are well-thought out. They noted that questionnaires and requirements for reporting on materials of concern are extremely burdensome.

Such statements make us wonder if there is a big gap between the intentions of the buying firms and the practical compulsions of the suppliers. There is a greater need to comprehend the dynamics between and within the supplier firms to take up environmental initiatives. Unfortunately, not many studies have been found to understand suppliers’ perception about environmental programs initiated by the buying companies. Implementation of such programs is generally the responsibility of supplier firms; hence convincing them about the benefits of the programs is vital for the success of SCEM.

1.2 This Study

As mentioned before, there are not many studies conducted to understand the simultaneous implications of environmental initiatives on the buying and supplier firms. There is further dearth of efforts to recognise and analyse the environmental issues under the limitations of “reaching beyond the direct business connection” and “constraints of investments” in a supply chain scenario. In this context, this study attempts to look at both sides of the coin: intentions of a buying firm to improve environmental performance of its supply chain and

supplier firms' reactions to such an initiative. In order to do so, an ongoing Cleaner Production (CP) initiative in clothing industry has been chosen as a case study. Through this case study, positions of buying company and the suppliers would be evaluated to gain knowledge about how an environmental initiative could be designed and implemented under the above mentioned constraints in a real life business scenario.

1.2.1 Case to be studied

Recently, one of the global fashion retailers has taken a rare initiative to motivate its second tier suppliers (textile wet processing mills) to make environmental improvements through Cleaner Production Techniques (CPT). This effort makes an interesting case study for several reasons,

- The retailer is trying to reach out to his second tier suppliers, with whom he does not have any direct business contacts. This is one of the first such efforts in fashion industry.
- This initiative is in Clothing sector, which is characterised by a complex supply chain with multiple interlinked actors. The global nature of the initiative brings-in the aspects of culture and attitude of different members of the supply chain.
- This is an effort to look at life cycle aspects of garments, since the retailer is trying to influence wet processing industry, considered as the most polluting manufacturing step.
- The entire initiative is based on providing information and educating suppliers about how they can achieve cost saving through CP. There is no provision for increasing business or for additional payment to the suppliers.
- The effort is based on Cleaner Production Techniques. This gives an opportunity to analyse the diffusion of CP innovation within the focussed industry (textile wet processing mills)
- This is an ongoing initiative, providing an opportunity to the researcher to give his recommendations in the initial stages and there by, to positively influence its progress.

Thus, this study on one hand hopes to make a positive impact on the currently running environmental initiative and on the other hand, it intends to gain valuable knowledge through this case study about the dissemination of environmental thinking within the supply chain.

1.3 Objective and Research Questions

This study has following two objectives: (a) To gain more understanding on how to effectively reach out beyond first tier suppliers in the absence of direct business relationship and (b) To help a fashion retailer to effectively address the environmental problem in the wet processing mills being used by them.

In order to reach this objective following research questions will be explored in this study-

1. What are the main objectives of the CP initiative from the fashion retailer and how is it being implemented on the ground?

2. What is the reaction of first and second tier suppliers to the fashion retailer's initiative?
3. What are the lessons that this program could learn from the experiences of other classic CP initiatives?
4. The case study is an effort to reach out to the suppliers beyond direct business connections. Under such circumstances, how environmental initiative should be packaged and communicated for an effective program implementation and how can it benefit different actors in the supply chain?

1.4 Scope and Limitations

This study was originated from a discussion between a Swedish retailer, H&M and the author. Hence the boundaries of the study regarding industry, chosen suppliers and location are drawn from that discussion.

Although the results of this research could be applicable to any sector, the case selected deals with the Clothing industry; hence some of the findings could be sector specific.

The geographical boundary is limited to India as a country of production. This was done because the case of environmental initiative was first launched in India by the retailer. Author's personal association with the country is the other reason for this selection.

The suppliers contacted during this study were considered purely due to the fact that they were participating in the retailer's CP initiative. Although they represent different type of textile wet processing mills, their numbers could be small to claim the representation for the entire industry.

The case under focus is an ongoing CP initiative and it was only six months old at the time of preparing this report. Hence not all the facets of the case could be studied during this process. For instance, the implementation process had just begun and it was not possible to analyse the effectiveness of the actual program implementation.

1.5 Research Methodology

In order to answer the research questions this study analyses an ongoing CP case study in detail. The data from the case study is then related to the literature and experts' opinion in the areas of SCCEM and CP techniques to gain understanding on the issues specific to the case, as well as wider issues of reaching beyond the direct business connections.

Following table shows the research approach taken in this study

Purpose	Approach
To understand basics of Supply Chain Environment Management and Clothing industry	Literature review Interviews with the experts.
To learn about the particular CP initiative in fashion industry and to understand reactions of different actors	Literature review Qualitative interviews with the actors associated with the case study Interviews with the experts.
To gain experiences from classical CP programs	Interviews with the experts. Literature review

To begin with, the knowledge about SCEM is gained through literature review. The next step was to relate this information with the Clothing Supply Chain. This was done first, by collecting information about the clothing industry and its environmental impacts through literature review and it is then supplemented by the opinions expressed by two experts in the field of Clothing Supply Chain.

Since the case study chosen deals with a fashion retailer's ongoing efforts to address the environmental issues in textile wet processing mills, the basic information about the case was obtained through interviews with the employees of the retailer and literature provided by them. For better understanding of the current situation, opinions expressed by retailer's first tier suppliers (garment exporters associated with the program) and the participating mills are presented along with the case.

The case is then evaluated by using following two methods.

The objective-based model

In this model, a comparison is made between the objective of the program and actual results it has achieved during the program. Since the chosen case is an ongoing program, its potential outcome is compared with its stated and un-stated objectives. The purpose of this analysis is to understand if the program was moving in an intended direction. The author's interaction with the associated organisations and observations during the visits to suppliers' premises are the primary sources of information for this model. This information is supplemented by the opinions expressed by an independent local consultant. The analysis for stated objectives is carried-out under three sections: 1) Provisions in the tools used for the program, 2) Approach from the retailer in taking the CP program to its suppliers, and 3) The process of implementation.

The progress against the un-stated objectives is evaluated mainly through the reactions shown to the program by all the participating organisations (the retailer, garment manufacturer and the wet processing mills) and the impressions gathered by the author during his site visits.

Lessons for ENFAP through other CP initiatives

This evaluation is an attempt to look at the case study in the light of experiences of classic CP programs. This is done by first learning some important lessons from classic CP programs and then relating those lessons to the case study. The purpose of this exercise is to help the fashion retailer to improve his initiative by learning from the experiences of different CP practitioners. To begin with, the information is gathered through literature review and expert interviews, conducted with CP practitioners about the other classical CP programs. This helped to learn some of the important lessons from the classic CP programs to overcome the barriers associated with them. These learning are then related to the case study to identify parallels and differences between the case and other CP initiatives. Finally, case is observed under the lights of these lessons to understand if the fashion retailer could gain from the CP experiences.

The most important reason for choosing more than one model for analysis is to understand perspectives of different actors on this initiative and there by, to look at the different aspects of the initiative.

The analysis is used to discuss barriers and opportunities to take up environmental issues in a supply chain perspective and also to gain some insight into the effective implementation of similar CP initiatives.

Finally, recommendations are given for both short term plans to make adjustments in the ongoing program, as well as, long term suggestions for any company wishing to reach beyond its direct business connections.

1.5.1 Primary data

The primary data was gathered through questionnaire and semi-structured interviews. Following is the information about purpose of interviews and the way they were conducted.

To understand how retailers deal with the environmental issues in Clothing Supply Chain:

Two experts in clothing supply chain were contacted. The experts work for big fashion retailers with several years of experience. These experts were chosen because of their experience and also because they were not associated with the case study. This helped to get different perspective on the issue. While one expert was contacted through telephonic interview, the other was interviewed personally. On both the occasions semi-structured questionnaires were used with many open end questions to learn from their experience.

To evaluate the case study:

Fashion Retailer: At the beginning of this thesis work, personal interviews were conducted at the retailer's head office at Stockholm with company's CSR Manager and Environment Coordinator. The purpose of these interviews was to understand the reasons for the retailer to initiate CP project and how it is integrated with company's overall business strategy.

In the next phase of the study, two production offices in India were visited. The program coordinator and a Code of Conduct (CoC) auditor were interviewed in Bangalore and another CoC auditor was contacted in the production office at Delhi. The main intention of these meetings was to grasp on the ground realities of the program implementation and to get the perspectives of company's employees who are directly interacting with the suppliers.

First and Second Tier Suppliers: Six first tier suppliers (garment exporters) and six second tier suppliers (wet processing mills) were associated with the retailer's environmental initiative in India. All these organisations were first sent a questionnaire which was a blend of open and closed end questions². After receiving replies from all the 12 suppliers, four garment exporters and five wet processing mills were personally interviewed. Three garment exporters were based in South Indian city of Bangalore and the fourth exporter was based in Delhi. Two of the interviewed mills were situated around Delhi and one each was based in Bangalore, Erode and Tirupur. It was decide not to visit the remaining three suppliers as two of them (garment exporters) communicated that they did not have much information to

² Refer to appendix 1 for the questionnaire.

share with the researcher and one of the mills was going through organisational changes and no contact person was available for discussion. All the interviews were conducted at the suppliers' premises, mainly with the personnel associated with the program.

Textile Wet Processing Expert: An independent wet processing expert was personally interviewed in Tirupur, India. This particular expert was chosen because of his long years of experience in the field and also he was a local consultant well aware of the conditions in Indian mills. His opinions are used to evaluate retailer's initiative with respect to achieving stated objectives.

Cleaner Production Practitioners: Two CP practitioners were contacted through telephone to learn from their CP experiences. The purpose of these interviews was to gain more knowledge about most important lessons that could be used in the initiatives like the one taken up here as a case study.

1.5.2 Secondary data

The secondary data was collected through searching literatures including books, journals, academic reports, websites, governmental publications, newsletters and so on. The literature review was conducted at two levels.

The initial literature review was conducted to gain the basic knowledge about the existing researches in the fields of Supply Chain Management, Green Purchasing, Cleaner Production, Organisational Theory and Clothing/Textile industry. This search was mainly conducted via online data bases like Elin- a collection of database with access to more than 3000 journals; ABI, a database that contains 1000 worldwide business periodicals; LIBRIS, the Swedish library system and on internet by searching websites from different organisations. Information about the case was obtained by retailer's company folders and websites. The initial information gathered was used to create a broader framework for the study.

The next level of literature was conducted to get specific information to answer the research questions. Search for information at this level was carried out after referring to the bibliographies of the articles from the initial search, consulting the supervisors and experts. Apart from above mentioned sources, The British Library collections in Bangalore, India were also used to gather information.

1.6 Outline of the Thesis

Second chapter of this thesis introduces the concept of SCEM and also discusses the factors governing its success. Chapter three discusses SCEM in Clothing Supply Chain. It also describes the textile wet processing operations in detail to verify the possibilities of using CP measures on that particular sector of the industry.

Chapter four discusses CP programs with a special focus on the lessons from classical CP programs. Chapter five describes the case study of fashion retailer attempting to reach beyond direct business connections through CP program. The next section six provides analysis of the case study. Finally, section seven outlines the conclusions and the recommendations including the feasibility of implementing the recommendations within the fashion industry.

2 Supply Chain Environmental Management

This chapter serves to introduce the readers to the concept of Supply Chain Environmental Management (SCEM) and how various researchers across the world have recognised the link between Environmental Management and Supply Chain Management.

The first part of the chapter discusses the significance of environmental issues in modern day supply chains while the second part focuses on some of the significant factors affecting the implementation of environmental concepts in the supply chain.

In context of the focus of this research, this chapter helps to understand some of the theories associated with SCEM in general before shifting the focus to a specific sector of Clothing industry. It also attempts to identify the issues which have to be countered by companies like fashion retailers, while reaching out to its suppliers.

2.1 Relation between environment and supply chain management

In the past few years many researchers in academic fields have investigated the possible links between Environment Management and Supply Chain Management (SCM). Literatures suggest that large companies are coming under increased pressure from various directions to improve environmental performance at their production base. Bakken (2004) states that most of this pressure comes from increasingly stricter regulations, consumers' awareness and the risk of a negative public image. He also suggests that in order to achieve their environmental objectives and to satisfy various stakeholders, more and more companies have realised the importance to reach out - beyond their own facilities. This essentially means that the companies are looking at their supply chain in a new light, by including environmental aspects while taking purchasing decisions. This integration of Environment Management and Supply Chain Management could be termed as "Supply Chain Environmental Management"(SCEM)

Researchers have defined SCEM in different ways. For instance, Gilbert (2001, p.2) defines it as "the process of incorporating environmental criteria or concerns into organizational purchasing decisions and long-term relationships with suppliers". Hall (2000,p.456) describes it as Environmental Supply Chain Dynamics (ESCD) and defines it as " a phenomenon where environmental innovations diffuse from a customer firm to a supplier firm, with environmental innovation defined as being either a product, process, technology or technique developed to reduce environmental impact". This concept has also been referred by other names such as Green Purchasing and Green Supply Chain Management.

Even though SCEM is driven by the pressure on the buying firms, Hall (2000) argues that linking Environment Management to the Supply Chain Management could actually benefit both management practices. Quoting New and Green et al., he states that "the holistic approach of SCM would benefit overall effectiveness of Environment Management; where as increased awareness of environmental issues would help to develop strategic purchasing practices and improve cooperation between customers and suppliers"

The above observation is also shared by Berger et al.(2001) who relate SCEM to "Theory of Ecological Modernisation". In this case, SCEM is seen as an effort to integrate ecology and economy in the industrial setup. SCM which was essentially seen as a supporting function for economical growth of a company is being made to meet environmental aspects, which were

for long, seen as a hurdle for business growth. Berger et al. argue that policies for economic development and environmental protection can be combined to synergistic effects, creating a positive-sum game between economy and ecology. In fact, the ecological modernisation such as stricter environmental policies could actually have a positive impact on economic efficiency and technological innovation. (Berger, Flynn, Hines, & Johns, 2001)

2.1.1 Practical implementation of SCEM

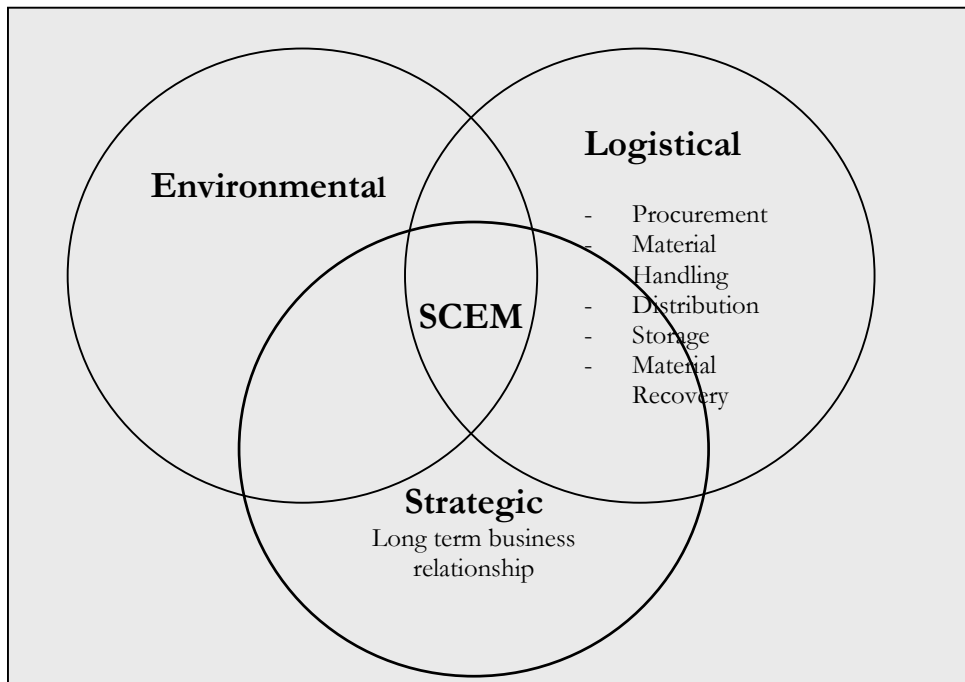


Figure 1 Integration of the approaches involved in SCEM source: (Marques, Ramos, & Nunes, 2004)

Marques et al. note that implementation of SCEM involves three approaches, as shown in Figure 1, which are- Environmental, Strategic and Logistical approaches. Strategic approach is necessary since SCM is essentially about developing long term business relationships with suppliers, logistics is equally important because, it approaches procurement, material handling, distribution, storage, material recovery etc (Marques et al., 2004). As shown in fig SCEM should be integrated into regular SCM activities and should not be considered as an additional management tool.

The United States' Environmental Protection Agency (USEPA) suggests four basic steps to infuse environmental thinking in the supply chain. The following model is a decision-making framework suggested by USEPA and is based upon the best practices of several companies that have successfully initiated and implemented environmental accounting practices in the United States. Most usually, companies customize this approach to best suit their own organizational needs and culture (USEPA, 2000).

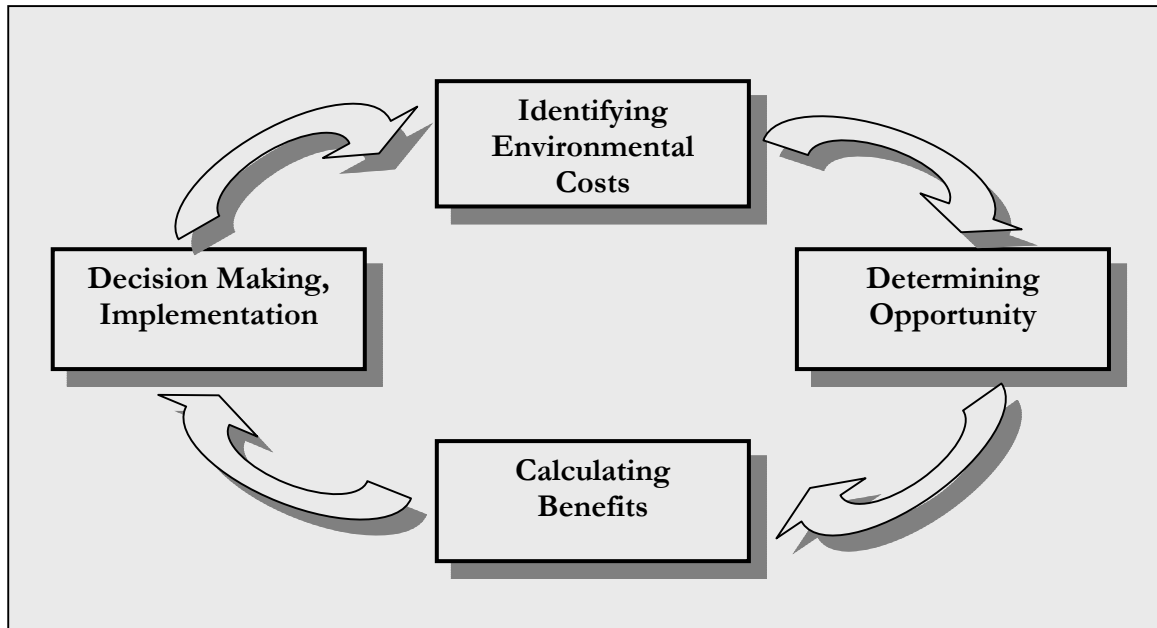


Figure 2 Four Basic Steps to implement a Green Supply Chain (USEPA, 2000)

First Step: Identifying Environmental Costs

Presence of multiple facilities or processes within a supply chain requires the team to decide the scope of the analysis. Therefore, it is essential that a systematic review of the decided facility or process is conducted to determine if and where significant environmental costs occur (USEPA, 2000).

Second step: Determining Opportunities

After the completion of the environmental cost analysis, the company needs to determine the areas offering the greatest opportunities for improvement and then specific solutions can be formulated to reduce those costs and negative impacts (USEPA, 2000).

Third Step: Calculating Benefits

Once a set of high-priority alternatives has been developed, the analytical exercise of calculating the costs and benefits of the various options could be carried out. One approach to the calculation is to conduct quantitative evaluations, which rely on empirical data, such as: Internal Rate of Return (IRR) and Economic Order Quantity calculations. The IRR is the interest rate at which the net present value (NPV) of the investment is zero. It takes into consideration the amount and timing of the costs, savings, and revenues of the investments. The higher the IRR, the better it is for the project. (USEPA, 2000).

The second approach is to conduct qualitative evaluations, which are based on observation and judgment. Through the environmental costs, a team can determine operational benefits, however, quantification of the costs and benefits may be less straightforward than a qualitative evaluation because of the difficulty of measuring some factors like their image and enhanced employee satisfaction (by switching from a hazardous material to a non-toxic substitute) (USEPA, 2000).

Fourth Step: Deciding, Implementation and Monitoring

Once the financial and environmental improvements have been estimated, the fourth and final step is to make a decision to implement the changes, and monitor the progress (USEPA, 2000).

2.2 Factors Affecting Implementation of SCEM

Models such as the one mentioned in Figure 2, could give us a feeling that SCEM is a straight forward task of integrating environmental issues into the supply chain. However, the literature suggests that, in reality the success of SCEM depends on number of factors like- pressure and incentives for corporate environmental policies, power structure within the supply chain and culture and attitude of the supply chain. These factors have been briefly discussed below:³

2.2.1 Pressure and incentives for corporate environmental policies

The pressure from customers, environmental groups and stakeholders to improve environmental performance plays an important role in persuading companies to get involved with environmental initiatives. However, it is often observed that this pressure is not always equally distributed between or within the supply chains. In general, larger and high profile firms tend to face more pressure from the environmental groups and consumer activists compared to the smaller groups (Hall, 2000). Lamming et al (1996) relate this disparity in pressure to the difference in invest patterns in environmental initiatives. They suggest that the firms with lesser pressure are generally hesitant to invest in environmental innovation since they do not expect any major gains from such moves. This point brings forward the issue of investments being related not only to financial gains but also to other incentives. Even the factors like 'effective dealing with the pressure' can act as a strong incentive for the companies to do investments in environmental issues. Above observation from Lamming et al. also helps us to understand why many of the recent innovations have been initiated by buying firms and why such innovations tend to face resistance by their upstream suppliers who are under lower pressure. There could, of course, be other reasons for smaller supplier firms not getting engaged into environmental performance improvement exercise. The factors like lack of infrastructure, knowledge and technology could prevent them to initiate environmental programs (Lamming R, 1996). Thus, there is a clear distinction between big buying firms and smaller supplier firms to participate in SCEM, in terms of opportunities and limitations created by disparity in pressure. Hall (2000) therefore argues, that in order to be successful in SCEM, "environmental pressure on consumer firms should be synthesised with supply chain pressure on the supplier firms".

2.2.2 Power structure within the supply chain

The argument about pressure being diffused from buyers to suppliers prompts us to think about the buyer's ability to influence the activities of its suppliers or vice versa. This influencing power is described in literature through the concept of "Channel Power"³. Many researchers consider "intrinsic buying power" within the supply chain as the most significant power to influence the activities of any supply chain. The term "buying power" seems to

³ Channel Power is defined by El-Ansary and Stern as "The ability of one channel member (i.e. a firm within a supply chain) to control the decisions of another"(El-Ansary A, 1972)

suggest that the power can be mainly displayed by the buying firm. However, this may not be entirely true, as the intrinsic buying power actually depends on the factors like volume of purchase, the amount of alternative sources, costs of switching suppliers, the level of transaction and or negotiating costs and the threat of backward integration. Thus, contrary to the general feeling, power can be displayed not only by the buyer but also by some influential suppliers (Porter, 1980).

There could be different types of power relationships within the supply chain depending on the source from which the power is generated. Hall (2000) discusses classification of power by referring to the work done by French et al. on “influential taxonomy”. Influential taxonomy primarily discusses the sources of power displayed by one social entity over the other. There could be five sources of power relationship between any two entities:

- 1) Reward: Where one entity feels that the other entity has the ability to mediate rewards for him.
- 2) Coercive: Where one entity feels that the other entity has the ability to mediate punishment for him.
- 3) Expert: Where one entity feels that the other entity possesses a special knowledge or expertise.
- 4) Referent: Where one entity identifies itself with the other entity.
- 5) Legitimate: Where one entity feels that the other entity has the legitimate right to prescribe behaviour on him.

The response shown to SCEM by the members of supply chain would depend on the kind of power source existing between them. For instance, coercive power could succeed in a short term to influence upstream suppliers but in the long run, the exploited firm would find a way to resist the change, defeating the basic cause of SCEM. Hence, experts suggest that the power should be used in a supply chain scenario to create a win-win situation rather than to use it for winning at the other's expense (Kumar, 1996).

2.2.3 Culture and attitude of supply chain members.

In today's world of globalisation, the successful implementation of a concept such as SCEM also faces challenges from differences in the attitudes of buying and supplier firms. This will be particularly evident if the supplier firm is in a developing country and the buying firm works from a developed economy. Yuksel studied this phenomenon and suggested that it takes a different approach to deal with firms from developing world since for those organizations, environmental problems are not always a high priority issues. The working philosophy of such firms is built around making profits and they often find it difficult to integrate environment into their core business strategy. He also mentions that the legal structure in many of these countries also creates a problem for innovation in the environmental field, as most of them focus on end of pipe solutions and not on pollution prevention(Hilmi Yuksel, 2005). Although Yuksel's observations are based on a particular developing country, it suggests that dealing with environmental issues within the supply chain also requires the understanding of cultural and attitudinal aspects of suppliers. Hence, unlike the traditional Supply Chain Management approach, managing information flow and providing education play a crucial role in SCEM.

SCEM is a relatively new trend and is still in the developing phase. Many experts have projected different trends for the future of environmentally conscious supply chain. Carter discusses these trends while studying different companies that are following the concepts of SCEM. According to him, the current trends are mainly focussing at re-manufacturing, reuse, process waste, human resource programs and in-bound logistics, where as, the future trends are towards more holistic development in this field, described here as seven propositions (Carter, 1998):

Proposition 1: The level of consumer awareness of environmental issues will further increase rapidly.

Proposition 2: Environmental issues will play greater role in firms' evaluation criteria of effectiveness of business processes.

Proposition 3: There will be rapid increase in transfer of knowledge from buying firm to supplier firm and vice versa.

Proposition 4: Four major inter-organizational forces will drive environmental supply chain activities. Those forces are governments, suppliers, customers, and competitors.

Proposition 5: Upstream members of a supply chain will increasingly affect environmental supply chain activities, and purchasing managers will need to take action to manage these effects.

Proposition 6: The level of Supply Chain Environment Management will improve with the improvements in the quality of environmentally friendly inputs.

Proposition 7: Increase in supply uncertainties will enhance the level of vertical coordination between buyers and suppliers.

Although, these propositions forecast a brighter picture for the future of SCEM, its real success actually depends on how well the actors in the supply chain can handle the factors, such as the ones discussed in this section. The challenge for the companies is to find ways to integrate environmental issues into the core business strategy without having to compromise on the profitability aspects of their business.

2.3 Key Learning from this chapter

The issues discussed in this chapter were intended to inform the reader about the complexities involved with Supply Chain Environment Management. Following are the key learning from this chapter which would be carried forward to the next sections of this study:

- The background knowledge about environmental thinking within the supply chain and why it is important for the companies to work towards SCEM.

This information could help the readers to understand why the fashion retailer in the case study is attempting to promote CP in its supply chain.

- In theory, SCEM is considered as a process of integrating environmental issues into the supply chain; however, researchers suggest that it is a far more complicated exercise which depends on number of factors. Three key factors were identified in this chapter through literature review. These factors would be taken forward to the next section and they would be related specifically to Clothing Supply Chain to recognise their importance in that particular sector.

1. Pressure and incentives for corporate environmental policies: What kind of pressure the fashion retailers and the suppliers are facing to improve the environmental conditions? What are the possibilities for the retailer to give incentives to its suppliers?
2. Power structure within the supply chain: What is the power structure in the clothing supply chain and can the retailers use their buying power beyond the first tier suppliers?
3. Culture and attitude of supply chain members: Clothing is a global industry. What kind of influence the culture and attitude could have on the environmental issues in the supply chain?

3 SCEM in the Clothing Industry

The case study chosen for this thesis belongs to the clothing industry. Hence this chapter attempts to introduce the reader to the basic elements of this industry and also, about the possibilities of promoting environmental thinking into its supply chain.

This chapter has two sections. The first section starts by explaining about different components in the clothing supply chain and their impacts on environment. After identifying the major environmental costs associated with the clothing supply chain, SCEM possibilities in the industry would be evaluated based on the three governing factors recognised in the previous chapter.

The second section of this chapter narrows down its focus to one segment of the clothing industry- wet processing operations. This is done, since wet processing is identified as the most polluting operations in the first section and also because, the chosen case study also deals with this segment of the clothing industry, for the same reasons.

3.1 Components of Clothing Supply Chain

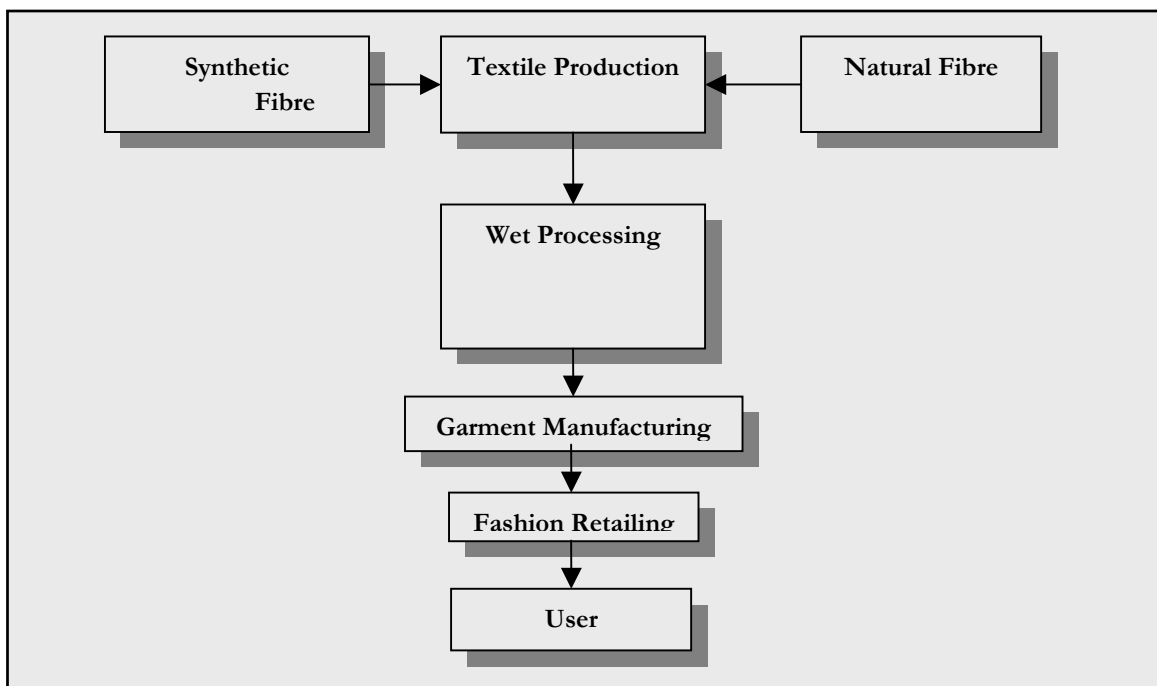


Figure 3 Components of clothing supply chain (source: (Chavan, 2001))

All the major components of the clothing industries have been shown in Figure 3. This is only a schematic representation of different operations necessary to bring out the garments to end customers. It does not capture the complexities involved in the supply chain. For instance, the fashion retailer at the end of the chain could procure garments from a number of garment manufacturers, the manufacturer from more than one wet processor and so on.

Here is a brief description of each manufacturing step along with significant environmental aspects in respective stages:

Fibre Manufacturing

Cotton is the most popular natural fibre. It is a traditional crop grown by farmers within various regions around the world. Large amounts of water and pesticides, especially insecticides, are applied during conventional cotton farming. Furthermore, irrigation for cotton fields, has led to water shortages in many regions of the world. Environmentalists often discuss the case of the drying Aral Sea in Uzbekistan due to excessive usage of water for cotton farms in that region (Chavan, 2001).

Polyester and Nylon are amongst the most popular man-made fibres. They are produced from limited natural stocks of crude oil. The raw material is polymerized and cleaned, creating polyester chips. For the production of polyester chips, heavy metal catalysts (mainly antimony trioxide) are used, which cause problems in treating reaction residues and wastewater. There are better non-toxic options available like titanium dioxide-based catalyst, but they are very rarely used because of cost constraints (Chavan, 2001).

Yarn and Fabric production

After cotton is harvested, yarn is produced by spinning (cotton fibres) or melting chips and forcing through spinneret holes (polyester fibres). Weaving or knitting⁴ the yarn, leads to the creation of fabrics. During these manufacturing steps, a number of often environmentally harmful additives are applied to allow easier production. Dust and noise are the side effects of yarn and fabric production.

Wet Processing

Wet processing of both cotton and polyester textile fabrics include processes that specify colour and improve the wearing properties of the fabric or modify its look or feel. Although there are environmental hazards during the entire production chain, experts feel that the textile wet processing step possesses maximum environmental problems (Chavan, 2001; Seuring, 2004). A number of chemicals are used in huge quantities in this step, to satisfy various quality and aesthetic requirements. Some of the chemicals like dyes and finishing agents remain attached to the fabric, whereas significant amounts are washed away in the waste water from the processing plant, resulting in water pollution. The excessive use of energy and air pollution is the other major cause for concern during this step (Chavan, 2001).

Clothing production

The next step is manufacturing of the apparel itself. The finished fabric cut-pieces are sewn together with the other materials such as zippers or buttons. While this step generates only a limited environmental burden, it could result in other social problems. Clothing manufacturing is often carried out in second or third world countries where the workers, mainly women, work under enormous pressure and difficult labour conditions (Chavan, 2001; Seuring, 2004).

⁴ Knitting is the process of interlooping a yarn to create fabric where as in case of weaving; fabric is produced by interlacing two sets of yarn on the loom.

Selling and distribution

Apart from pollution related to transportation, only limited environmental problems occur during this phase. Selling and distribution can be carried out by a single company or within a distribution system (wholesalers, retailers) of varying depth. (Chavan, 2001)

Any fashion retailing company wishing to infuse environmental consciousness into its supply chain should understand the above steps of manufacturing and identify the environmental aspects associated with them.

3.1.1 Evaluation of Clothing Industry for SCEM Possibilities

As seen in the previous section, clothing supply chain includes many manufacturing steps and hence, involves many actors. These actors are often connected in an intrinsic web of business relationships (Jones, 2000). Due to the requirements of manufacturing the garments at competitive prices, products are generally sourced from different countries to keep costs at the minimum. For instance, fibre might be produced in one country, spun to yarns in the second, fabrics produced in the third and sewn to make garments in yet other country. This global nature of the industry increases the complexity of the supply chain (Abernathy, Dunlop, J.Hammond, & Weil, 1999) Because of its worldwide presence, it is often perceived that the legal system of a single country would not be able to address all the environmental and social issues associated with the sector. Seuring (2004) sees this as a reason why Non Governmental Organisations (NGOs) put additional pressure on the producers and sellers of apparels, to take some responsibility for these problems. He also states that the consumers of big fashion retailers, who often live in developed countries, fail to evaluate environmental impacts created along the supply chain. These circumstances, according to Seuring, should give more reasons for the big fashion retailers to take more responsibility to improve environmental performance of their entire supply chain and thereby to fulfil their obligations towards the society they operate in.

Seuring's arguments might look too "idealistic" in the business scenario, since the companies do not often act without substantial pressure from its consumer base. So, is it really feasible for the fashion retailers to reach out to all the members of their supply chain? This question is being explored in rest of this section. In order to do so, three factors described in section 2.1.2 are discussed here by relating them to clothing industry. Understanding of issues such as Pressure and incentives, power structure and attitudinal aspects of supply chain could help industry to identify opportunities and barriers to implement principles of SCEM.

Apart from literature, opinions of two experienced players in Clothing Supply Chain Management -Sheila O'Brien⁵ and Alan Blastock⁶, are considered as the main sources of information for the below section.

⁵ Sheila O'Brien is technical manager of sourcing division of a large United Kingdom based fashion retailer. She has more than 18 years of working experience in the field of clothing supply chain management in developing countries.

⁶ Alan Blastock has more than 25 years of experience in sourcing of textile and apparels. He is currently working as a Fabric Expert with a leading Canadian fashion retailer.

3.1.1.1 Pressure and incentives for corporate environmental policies

As discussed in previous sections, the big fashion retailers are under increasing pressure from environmental activists and NGOs to improve environmental performance of their supply chain. This kind of pressure however, is not felt to the same extent by the supplier firms like garment manufacturers. In the interviews conducted by the author, most of the garment exporters felt that the environmental pressure on them is mainly exerted by the state environmental authorities and not by the buyers. This pressure again depends on the kind of legislations and efficiency of their implementation. Regulations are often poorly implemented in developing countries like India, giving very less incentives to the firms to invest in pollution controlling measures (Chavan, 2001).

Apart from the pressure to improve the environmental performance, retailers also face certain market pressure which is typical to the clothing industry. Fernie et al (1998) attribute this pressure to the nature of fashion industry. They think that short lifecycle, high volatility, low predictability and high impulsive purchase make it necessary for the firms to take quick decisions about order placing and execution. This in turn, creates a difficulty in developing a long term plans with the suppliers. On the other hand, suppliers also face challenges to live up to this market demand, and therefore, their focus is often more on the production and not on the issues like environment. Blastock, therefore, feels that the pressure from individual retailers may not work well on its suppliers. He thinks that it could be more effective if a group of retailers form a common forum to address the issues like environment and collectively put pressure to carry forward the policies to the entire supply base (Blastock, 2005)

The other important issue is the kind of incentives that are on offer for the suppliers to take up the environmental cause. Since external pressures like consumer demand or NGOs do not directly affect the garment manufacturers or wet processors, they expect some rewarding incentives from the buyers. Studies conducted by the Business for Social Responsibility (BSR) also confirm that most of the suppliers feel that the retailer's buying decisions are basically driven by the cost and quality parameters and hence there is no market incentive for taking the initiative in the environmental field (BSR, 2001) O'Brien explains the reasons for her company not sharing the environmental expenses with its suppliers by offering monetary incentives. According to her, in spite of customer's demand for better environmental conditions in the supply chain, very few of them are ready to pay the premium price for 'environment friendly' clothes. This, further causes retailers to hesitate to invest in such initiatives (O'Brien, 2005).

This leaves us with a question on how a retailer could transfer the pressure faced by him to his suppliers without compromising on his and his supplier's business interests. Literature seems to suggest that the possible answer could be in the environmental measures which could also act as cost reducing tools. Narayanaswamy et al. feel that the initiatives such as the Cleaner Production Techniques could be useful to promote environment improvements in the clothing supply chain. They successfully exhibit the dual benefits of environmental improvement and cost reduction in a pilot program run at some of the textile wet processing mills in India (Narayanaswamy & Scott, 2001). These views are also shared by several other researchers working in the textile field (Kiran-Ciliz, 2003; Samuel B. Moore a, 2004).

Cleaner Production technology could be one possible solution to create a win-win situation for both buyers and suppliers, but is it easy to carry it inside the supply chain by using the existing power structure?

3.1.1.2 Power structure within the supply chain

Bruce et al. quote a number of researchers to suggest that the approach of collaboration and partnership between the members is the best of working towards the successful supply chain management. However, they also claim that this may not be entirely possible for the sectors like clothing, which are controlled by the giant multinational retailer companies. They feel that the difference between the buyers and small suppliers, in terms of the status and wealth, is too big to have a collaborative relationship between them. Such a situation might result in the buyer exerting power over the smaller suppliers in order to push down the prices and convince them on other issues as per his convenience (Bruce, Daly, & Towers, 2004)

Blastock and O'Brien disagree with this perception. According to O'Brien, the market pressure of cost cutting and quality are so high on the retailers that they can hardly afford to use coercive force on their suppliers. She thinks that displeasing a supplier in the middle of a season is highly undesirable for any retailer, as it is very difficult to develop a new supplier in a limited span of time (O'Brien, 2005). This point was also brought up by Seuring in his case study with the German retailer OTTO. OTTO feels that switching suppliers is not easy for them for any reason - particularly for environmental reasons. OTTO brings up another interesting point about the volumes of business. According to OTTO, it buys less than 10% of the output of each single supplier (Seuring, 2004). Both experts agree that this is quite typical in apparel industry and it acts as a major limiting factor for displaying power on the suppliers.

There seems to be a consensus between the experts and researchers on the most important source of environmental degradation - wet processing stage of manufacturing (Chavan, 2001; Seuring, 2004). O'Brien thinks that the use of pesticides during cotton cultivation and air pollution caused by transportation are the other two sources of pollution. But she states categorically that the impact is highest at the wet processing stage due to an extensive usage of water, chemicals and energy. (Kiran-Ciliz, 2003; O'Brien, 2005) Thus in order to make any meaningful environmental improvements in the clothing industry, retailers must work towards the betterment of environmental performance of wet processing sector.

Ironically, the retailers appear to have lesser power to influence wet processors compared to the garment exporters. Most of the fashion retailers buy final products from their first tier supplier (garment exporters) and they do not often have enough knowledge about the previous levels (Forza C, 2000). Thus, most of the retailers have direct business contacts only with garment manufacturers and they hardly have any interaction with wet processors (Blastock, 2005; O'Brien, 2005). Not having business connection with the wet processors further reduces retailer's power to influence that sector. Blastock and O'Brien admit this fact and inform that the only control they have on the wet processors at this point of time, is in the form of regulating residual chemicals in the final product. Even this is done not by directly interacting with the wet processors but by putting pressure on garment exporters to comply with chemical restrictions. At this stage, they are not in a position to control or monitor the actual process of wet processing (Blastock, 2005; O'Brien, 2005).

3.1.1.3 Culture and attitude of supply chain members.

This is another factor which plays a major role in deciding how the supply chain reacts to various initiatives. Blastock referring to his long years of experience in dealing with supply base in developing countries feels that there is still a big difference in attitudes of the actors in selling and producing economies. He says, "Production related issues are always given high

priority by textile manufacturers and issues like environment tend to take a back seat". He cites as an example, that most of the investments being made by suppliers over the years are directed towards increasing the production rates or improving product quality. He also feels that most of the suppliers rely mainly on end of the pipe solutions to deal with the environmental problems (Blastock, 2005).

However, the situation is getting better lately - particularly at the garment exporters level. Being first tier suppliers to large fashion retailers, they are getting exposed to the new trends of environmental thinking. They are also able to visualise the risks of losing business, if they do not adhere to international business standards. But these changes are rather slow and unfortunately, the wet processors are still untouched by these developments, since they do not face similar pressure from their direct customers (garment exporters) (O'Brien, 2005).

Considering all the limitations, there could be three ways of dealing with the wet processors on environmental issues.

- 1) Use "carrot" method to educate and persuade them to take initiatives voluntarily.
- 2) Consolidate the supply base and work more with "vertical suppliers"⁷
- 3) Nominate wet processors and there by, have direct business contracts with them.⁸

However, second and third approaches may not be practical for all the fashion retailers due to the market constraints. There are not enough vertical suppliers to produce huge quantities and the process of nomination is complex and it has its own disadvantages (O'Brien, 2005).

Based on the opinions expressed in literatures and by the experts, textile wet processing operations can be considered as the most polluting segment of any clothing supply chain. The next section will focus on this particular segment to understand the opportunities for environmental improvement.

3.2 Impacts of Textile Wet Processing on the Environment

As discussed in the previous chapter, wet processing units are the major contributors to environmental degradation within the clothing supply chain. In this section readers would be introduced to various environmental impacts caused by this step and to the possible Cleaner Production options available for the sector.

It is important here to understand why wet processing is such an important process and why the experts overwhelmingly consider this step as the "most polluting" stage of apparel manufacturing. Woven or knitted fabrics are not suitable for sewing immediately; hence they can not be converted into apparels without going through wet processing stages. During the wet processing step, un-dyed and unfinished goods (known as greige) are converted into finished consumers' goods. It involves treating the greige fabrics with chemical baths and

⁷ Vertical suppliers are those where many stages of clothing production are controlled by one firm. For instance, retailers can buy from garment producers who also have facilities to manufacture yarn, weave fabric and do dyeing.

⁸ Nomination refers to buyer asking its garment exporters to use specific wet processors for its orders. In other words, exporters will not have options to choose wet processors and processors will have direct contacts with buyer.

generally requires additional steps of washing, rinsing and drying to enhance their appearance, durability and serviceability (USEPA, 1997).

Figure 1 is a simplified illustration of the input and output of textile wet processing units. As seen in the figure, the wet processing stage is highly resource intensive. It requires a large amounts of energy, water and various chemicals and it causes extensive air and water pollution, release of harmful solid wastes depending on the kind of chemicals used. The amount of resources used and the pollution caused vary greatly depending on end-products and applications, site-specific manufacturing practices and the type of fabric being processed.

Narayanaswamy et al (2001) conducted an extensive study at Tirupur, a textile town in South India. Their calculation on the amount of water and energy required to process one kilogram of fabric throws some light on the magnitude of the situation. According to their study, each kilogram of cotton fabric requires 205 to 505 litres of water and 130 to 306 MJ of energy. In a similar study conducted in the textile mills of the United States by USEPA, about 120 to 160 litres water was being used for every kilogram of fabric dyed (USEPA, 1997) Narayanaswamy et al (2001) feel that these figures are much higher than the actual requirement of the process. They also note that for a place like Tirupur which is facing acute shortage of water and electricity, wastage of these resources are resulting in higher production costs.

Following are some of the significant impacts of wet processing industry on environment (Chavan, 2001).

Water pollution

Effluents from textile wet processing industry are generally coloured and have high Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and total dissolved solvents (TDS). Natural and added impurities, dyes and chemicals used during the process are recognised as the main sources of pollution. Direct discharge of such effluents in down streams can lead to the significant degradation in the quality of water. The presence of detergents and surfactants in the effluents would be dangerous for aquatic life and human health (Chavan, 2001). Narayanaswamy et al (2001) observe in their study that the average COD of the surveyed firms was between 780–1830 grams per kilogram of cotton fabric processed and TDS was 2060-4870 grams per kilogram of fabric.

Air pollution

Textile industry is a relatively minor source of air pollution compared to many other industries, however, the industry emits a wide variety of air pollutants, making analysis, treatment and prevention more complex (USEPA, 1997). Air pollution caused by textile wet processing industries can be categorised into four types: oil and acid mists, solvent vapours, odour and dust and green house gasses. While mists, vapours, odour and dust are dangerous for employees in the firm and surrounding population, green house gasses from fossil fuel burning results in wider problems like global warming (Chavan, 2001).

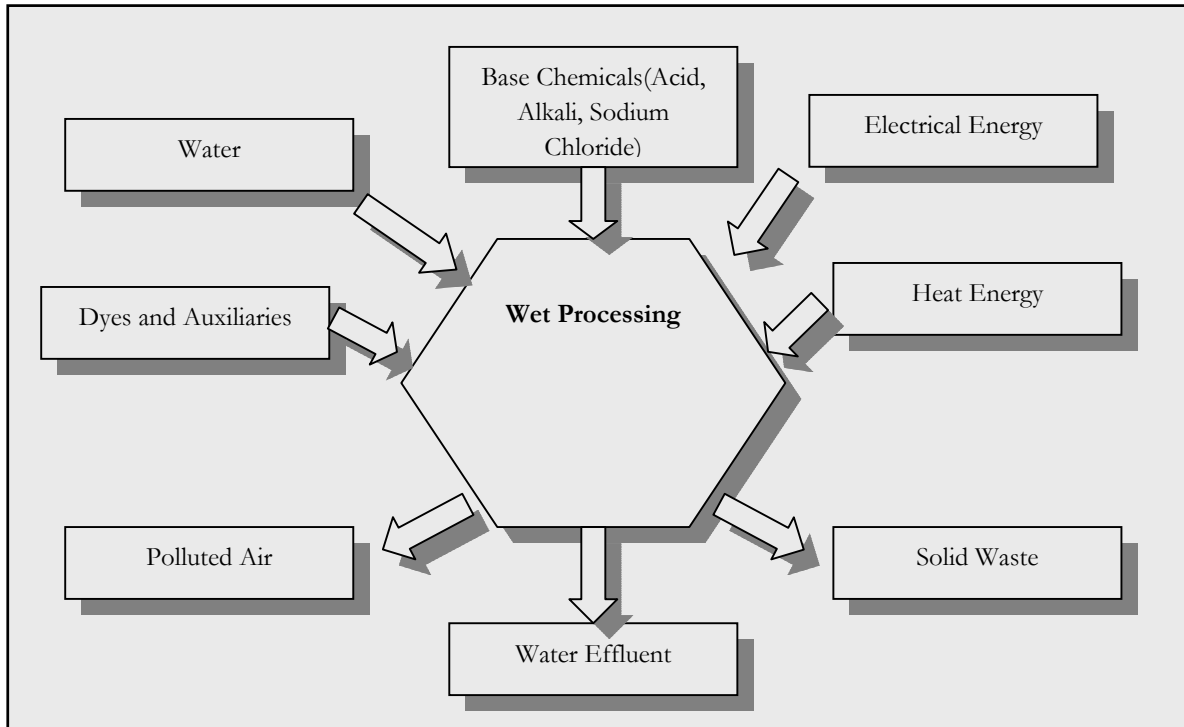


Figure 4 Input-output analysis of textile finishing processes (source(Chavan, 2001))

Solid waste

Solid waste from wet processing can be classified into four categories: hard to treat, hazardous or toxic, dispersible and high volume wastes. Some of these wastes are non biodegradable making it difficult for factories to dispose them. Also since they could contain toxic materials like heavy metals, chlorine based compounds and hazardous organic compounds, they can not be dumped into ecosystem without pre treatment (Chavan, 2001). In many countries the authorities have still not been able to find a suitable solution to deal with the solid residual from textile mills known as the sludge (Jayachandran, 2005).

3.2.1 Cleaner Production Opportunities in Textile Wet Processing

Apart from recognising wet processing as the most polluting operation in the clothing industry, the last section also identified 'Cleaner Production' (CP) Techniques as the possible approach to deal with it in the context of supply chain. So in this section, CP opportunities in textile wet processing industry are evaluated based on the literature review. This would also help to understand the case study better as the focus there is also on CP and wet processing operations.

As a useful conceptual starting point, we can define Cleaner Production as adopted by the United Nation's Environmental Program (UNEP): *Cleaner Production is the continuous application of an integrated preventive environmental strategy to processes, products, and services to increase overall efficiency, and reduce risks to humans and the environment. Cleaner Production can be applied to the processes used in any industry, to products themselves and to various services provided in society (UNEP, 2005).*

Researchers have suggested different CP approaches to improve environmental performance of wet processing industry. Most of the Cleaner Production activities in textile industry have focused on reducing chemical use, reusing process water and reducing solid wastes like pallets, cardboards etc. The following is an assimilation of different approaches discussed in a number of studies (Chavan, 2001; Kiran-Ciliz, 2003; Moore & Ausley, 2004; USEPA, 1997).

Quality Control of Raw Material

Raw material quality control programs can be implemented by establishing specific and suitable purchasing, packaging and inventory control policies. This would help to prevent purchasing of untested and harmful raw materials, which in turn could help to decrease production of off-quality product, less reprocessing and better consistency in quality. Mills can work with the chemical manufacturers to provide environment friendly raw materials (USEPA, 1997).

Housekeeping Measures

Housekeeping is a basic measure of improving environmental performance in any firm. Any avoidable, poor housekeeping practices should be identified and taken care on high priority. Wastes should be kept in assigned places and harmful materials should be stored very carefully. Cleanliness should always be given priority at the working place. Water usage can be significantly reduced through minimising leaks and spills. Although it may seem simplistic, housekeeping and work habits of chemical mixing can account for 10 to 50% of a mill's total effluent load in BOD, COD and organic solvents(USEPA, 1997). Kiran-Ciliz (2003) observes in her study conducted in Turkey that simply avoiding energy leakage, by re-insulation, etc. in wet processing unit saved about 10% total energy consumption. Improvements in housekeeping generally cost very little or nothing but improves workers' morale, workplace safety and the product quality to a large extent(USEPA, 1997).

Reduce, Recover and Reuse

Since wet processing is highly resource intensive, the industry can reduce production costs by optimising resources, recovering usable ones and reusing them after proper treatment. One often cited example is recovery of sodium hydroxide from mercerising plants resulting in huge benefits for the companies. Narayanaswamy et al.(2001) also cite an example around water reuse. They argue that it is possible to recover and reuse more than 90% of water by utilising modern techniques like reverse osmosis water treatment. Recover and reuse is an excellent way of facilitating money and energy saving and waste reduction, which truly represents the philosophy of Cleaner Production.

Process Modification

Process changes that optimise raw material usage and accelerate chemical reactions could result in resource saving, thereby, helping to prevent pollution. Modifications may include improved process control systems or changes in chemical application methods. For instance, shifting from traditional winch(beck) dyeing machine to automatic soft flow (jig) machine could save more than 50% water during processing.(Kiran-Ciliz, 2003; Narayanaswamy & Scott, 2001).There could also be savings by adjusting material flow within the existing facilities, using new technologies like counter current principle for washing etc.

Chemical Substitution

Since textile wet processing is a chemically intensive process, enough attention should be given to use less-polluting chemicals. Substitution approach requires wet processors to substitute toxic and more resource consuming chemicals with safer and less-polluting chemicals. It can also include replacing chemicals in some processes with mechanical or other non chemical treatments. Chemical substitution can eliminate chemical wastage and the need of expensive pollution control equipments. Of late, many retailers have banned or restricted harmful chemical traces like classes of amine dyes, formaldehyde and types of disperse dyes etc in the final product. This has forced dyers to use safer substitute chemicals. Similarly, dye stuffs with special properties like heavy metal free, minimum salt requiring and cold dye classes are available in the market. Their usage would not only improve fabric quality but also improve the firm's environmental performance (Chavan, 2001).

3.3 Key Learning from this Chapter

Here are some of the key learnings from this chapter, which would be used in the following sections of this study

- Wet Processing stage of clothing supply chain was identified as the most critical for environmental improvements. Wet processing has environmental impact in terms of being responsible for air and water pollution, hazardous solid waste generation and excessive usage of resources.
- Fashion retailers may not be able to use their buying power on second tier suppliers (wet processors) due to the absence of direct business contracts. Also, the buying power reduces as we proceed upwards in the supply chain.
- Since there are not many opportunities to offer external incentives to the wet processing mills, the retailers should look for the approaches that offer inherent advantages to the mills adapting to the initiative. Cleaner Production is one such popular approach suggested by the experts and literature.
- There could be three ways of dealing with the wet processors on environmental issues.
 1. Use “carrot” method to educate and persuade them to take initiatives voluntarily.
 2. Consolidate supply base and work more with “vertical suppliers”
 3. Nominate wet processors and there by, have direct business contracts with them.

But the second and the third approaches may not be very suitable for the practical reasons.

All the above points serve as the background knowledge for the reader to understand the circumstances under which the focussed case study has been initiated by the fashion retailer. It is important to realise the complexities associated with issue to recognise the significance of the case study.

4 Cleaner Production- the Process and the Lessons

Cleaner Production as a concept has already been introduced in the previous chapters, but there is a greater need to look into CP in further detail before getting into the focussed case study. This chapter discusses how a CP program is generally carried out within a company and what factors are considered to be crucial for the success of a CP program.

While discussing CP initiatives, the distinction should be made between “the facility level” and “the program level” developments. The facility level developments refer to the CP activities only within a factory or a unit, where as the program level developments refer to the happenings in an entire CP program including the initiator, promoter, the participating industries etc. This distinction is important since the case being looked into would be analysed at the program level to get different perspectives involved in the case. The developments within each wet processing mills would not be looked into at a facility level, since it is too early in the program to make such an analysis.

However, a brief introduction about the steps involved in CP implementation at the facility level could be helpful to the reader, since it gives an insight about the happenings within each of the participating mills in the program. Therefore, this chapter is divided into two sections. The first section introduces the readers to the different steps involved in a CP program within a facility. The next section is a compilation of opinions expressed by the experts to identify the most important lessons from classic CP initiatives at a program level. This could be useful for the retailer to improve his own CP program. These identified lessons will help to create a frame work for the analysis of the case in section

4.1 Steps Involved in Cleaner Production Program at a Facility Level

To get a clear picture about how the classic CP initiative works within a firm, this section will explain different stages of a CP program and the significance of each step. If not mentioned otherwise, most of the information mentioned in this part is taken from the website of UNEP’s Production and Consumption Branch (UNEP, 2005).

Following are the main steps of a CP program (refer Figure 5)

Recognised Need for Cleaner Production

For a CP to be initiated there should be a definite need and scope for environmental improvement in the facility. Recognising and identifying the opportunities for improvements is the first step of any CP program.

Planning and Organisation Phase

The real process of planning and organising starts when some interest is generated among one or more of the employees in the company about CP. This interest should be utilised to bring more awareness and to explain different aspects of CP amidst other employees. Once there is consensus about the benefits of CP, project planning is conducted in a systematic manner. Planning phase involves steps like organising a project team, identifying barriers and solutions and setting goals for every participating firm.

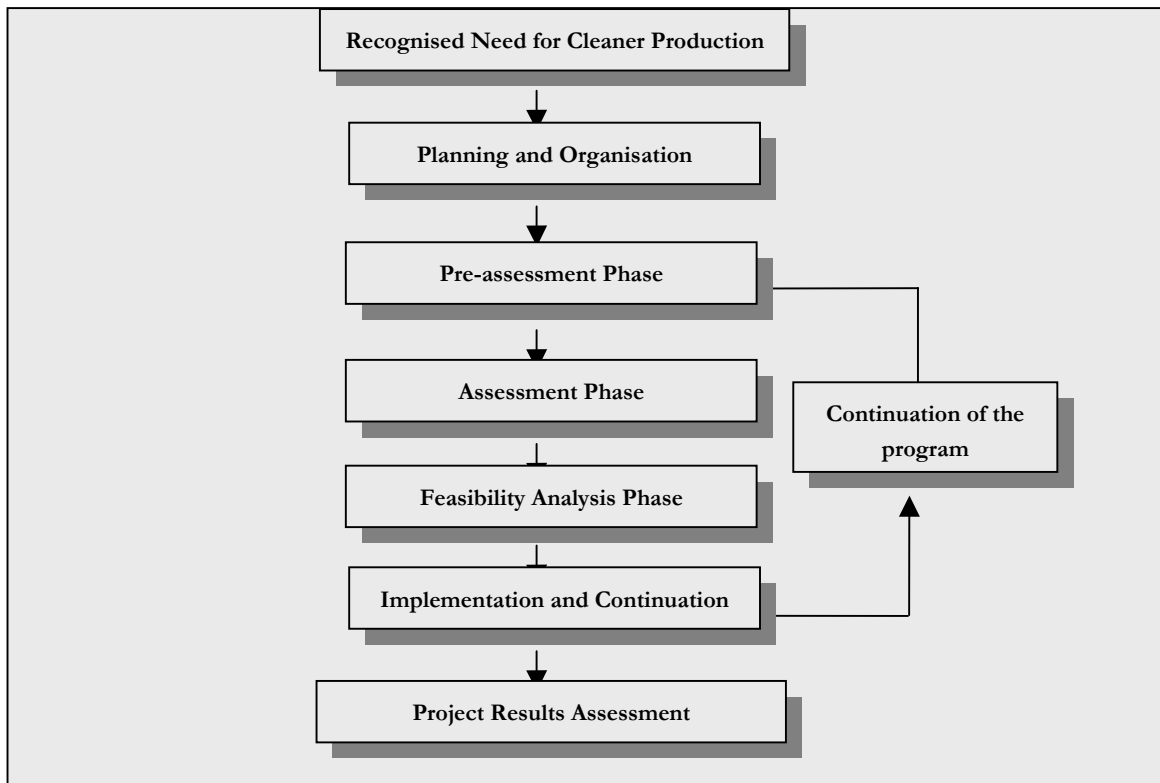


Figure 5: Steps in Cleaner Production Program. Source: (UNEP, 2005)

Pre-Assessment and Assessment Phase

The main task of the assessment phase is to study the material balance in the firm. The understanding of material inflow and outflow could help to suggest appropriate measures to reduce or prevent loss of materials. During this phase the project team uses all possible means to identify CP options. The approach generally would be to look for experiences through literature search, personal knowledge, discussions with the suppliers, examples in other companies, specialised data bases or some further R&D. The other most important tool explored at this stage is to brainstorm among the employees of the participating organisation.

The two most important tasks to be carried out before looking at the available options are – the source indication and the cause diagnosis.

The source indication gives estimation about the resources entering and leaving the company with the associated costs. This is often represented in the form of a process flow diagram, allowing for the identification of all sources of waste and emission generation.

Although, source indication helps companies to realise all the sources of waste and emission, they are not much of use if the causes of these losses or emission are not known (Dobes, 2005). The **cause diagnosis** helps in this connection, since it is an attempt to investigate the factors influencing the volume and composition of the waste and emissions generated. A material and energy balance is needed for the evaluation of the relative importance of each of the possible waste generation causes.

The next step in assessment phase is to create a vision on how to eliminate or control each of the causes of waste and emission generation. It is also called as “option generation” and could consists one or more of these alternatives- Change in raw material, Change in technology, Good operating practices/good housekeeping, Product changes, On-site reuse and recycling.

Feasibility Analysis Phase

The feasibility studies are conducted to verify if each of the options chosen is technically and economically feasible and whether it contributes sufficiently to the environmental improvement. Basically feasibility study involves different types of evaluations such as Technical evaluation, Economic evaluation and Environmental evaluation.

After evaluation, the feasible options for implementation are selected. The logical approach would be to first, eliminate technically non-feasible options as well as, the options with insignificant environmental benefits. In theory, all remaining options can be implemented. However, management has to decide on the best options for their firms, based on the funds available and their short and long term goals.

Implementation and Continuation Phase

The last phase of a CP program involves implementation of the feasible options chosen in the previous phase and also making arrangements to ensure the ongoing application of Cleaner Production. Monitoring and evaluation of the results achieved by the implementation of the first set of measures is very essential to ensure continuity in the CP program.

These steps are generally considered as the basic steps of a CP program but they could vary in specific cases depending on the kind of industries and intentions of the initiator. It could be very well seen in the next chapter that the approach taken by the fashion retailer for its CP initiative is considerably different as compared to the steps mentioned above.

4.2 Lessons from the Classic CP Initiatives

Many manufacturing sectors across the world have been working with CP issues. The diffusion of CP is understood to be more of a social and strategic issue than a technical issue (Rodhe, 2000). Hence, the lessons learnt in one sector could well be used in other sectors. In this section, an attempt has been made to learn from the experiences from previous CP initiatives. The main focus is to identify the most important factors governing the success of any CP initiative and how do they influence overall effectiveness at a program level.

The primary source for this section is the experiences shared by three CP experts. They were specifically asked to identify, what they feel as the most important factors that affect the success of any CP initiative on a program level. This information is also supplemented with some of the literatures dealing with CP program evaluation. On the basis of discussions and the literature review, following factors were identified as the most important factors governing the success of a CP program:

1. Reaching out and convincing the firms to participate in CP programs
2. Top Management Commitment of the participating firms

3. Change agents and opinion leaders
4. Benchmarking
5. Continuity and on-going improvements

1. Reaching out and convincing the firms

The first crucial factor governing the success of any CP program is the reason behind firm's interest in the CP measures. Very few well informed companies choose to be associated with the initiatives like CP, due to their internal motivation to save costs and improve environmental performance. In most of other cases, professionals like CP practitioners or environmental consultants need to put some efforts to convince the firms of the benefits of CP (Rodhe, 2005). Generally, the process of involving the firms begins with CP practitioners giving introductory view through concise oral and written presentation about CP and how such programs can benefit the firm (Laurie Case, 1995). The firms should be shown the potential for improvement specific to their unit; this is often done by site-specific visits to identify various CP options. Intermediaries like local environmental authorities, consumer groups could also be brought into the scene to convince the firms to be a part of CP programs. This is not an easy task and it could take upto six months sometimes to get a company to commit to participate in such programs (Dobes, 2005). Following are some of the popular means used by CP Practitioners to convince the firms:

Site-specific visits: To make a CP review of the facility to identify the opportunities to save resources and raw materials. By demonstrating the possibilities with a detailed financial assessment, CP practitioners try to get the consent from the top management (Dobes,2005).

Peer learning: In this case, the personnel from the facilities with more successful CP record are asked to share their experiences with other firms. This could help many of the firms to realise the benefits of the CP measures (Rodhe, 2005).

Creating a Model: CP practitioners develop one of the facilities into a "model unit" that can demonstrate all the benefits of the CP. The other firms are asked to visit that unit. The practitioner could also share his experiences about how the model was developed and how the unit is getting benefited by it (Rodhe, 2005).

Since, getting involved in a program is the first step of any project; it has crucial implications on the success of any CP plan.

2. Top Management Commitment

Top management's commitment to the philosophy and long-term process of implementing and maintaining a CP program provides the internal framework upon which a successful program can be built (Laurie Case, 1995; Stone, 2005). Managements of different firms could have different business strategies and priorities. Also their attitude and working culture could differ from each other considerably. These factors affect the way they perceive the benefits from a CP program and these perceptions ultimately shape up their commitment towards the program. Stone, in her study of one of the CP initiatives in New Zealand, feels that almost all the CP programs stress the importance of top management, but hardly any of them set up the process of actually gaining or enhancing it. Most of the programs assume that the cost saving opportunities and environmental improvements would automatically convince the top managements to express their long term commitments. This assumption may not be true all

the time and programs need a specific plan to gain and enhance commitment (Stone, 2005). One way of gaining the top management's commitments could be to develop "**Green Champions**" within each of the participating firms. Green Champions are the ones who are enthusiastic about working in the field of environment and also, who see an opportunity of a career growth for themselves. Such people should be identified within the companies and should be trained in CP measures. They would try to gain management commitment to the program not only for the sake of environment but also for their own career development.

3. Change agents and Opinion Leaders

Change agents and Opinion leaders could play an important role in diffusion of CP in any organisation. Change Agents are defined by Rogers as "an individual who influences clients' innovation decisions in a direction deemed desirable by a change agency" (Porter, 1980, p 312). They are basically communication planners whose role often includes pointing out at the need for change, establishing communication relationships, and ensuring that the adoption and change actually takes place (Windahl, Signitzer, & Olson, 1997). Typically change agents act on behalf of an agency to reach certain goals set by them. So in case of a CP program, certain individual or organisations could act as change agents to continuously work to motivate the firms to adopt CP techniques for the sake of environment and to achieve better quality products at a reduced production costs.

Opinion leaders on the other hand are the ones who could influence individuals, organisations or communities through their knowledge and the respect they command. Often, services of opinion leaders are utilised to communicate information to have a greater impact on the receivers. They differ from Change Agents, by not having any personal or organisational agenda to follow but generally considered to act for the overall betterment of an individual or community that they are dealing with (Windahl et al., 1997). Although, Change Agents and Opinion Leaders are not compulsory for CP programs, their presence acts as a good supporting tool to convince and motivate the organisations.

4. Benchmarking

Benchmarking is the next step after monitoring that could significantly influence the outcome of a CP program. In a way, it could be seen as a value- addition to a monitoring program. Benchmarking is a process of using the data collected during the monitoring program, to judge a firm's performance against its peers with the aim of identifying where the opportunities to further improve might be found (Altham, 2001). Benchmarking could be within a sector, for instance giving information about how much energy should be used in order to produce a unit of a particular product. It could also be within one industry, specifying resource usage under its own production conditions. Such approach would help industries to understand and visualise the improvements that they are making through the programs like CP, especially if the benefits can not be measured in monetary terms. It could also help firms to realise the performance gap, and thereby to identify the opportunities for improvements. It is often seen that benchmarking does help to motivate firms to take up CP initiatives (Rodhe, 2005). However, it is not always easy to benchmark operations and industries in all the sectors. Ease of Benchmarking depends directly on the number of variables for that particular industry. For instance, industries like milk dairies and cement manufacturing could be benchmarked relatively easily, compared to the industries like textiles and electronic industries (Dobes, 2005)

5. Continuity and On-going improvements

This is a very important and very widely discussed factor governing the success of any CP program. CP programs should never be promoted as “one time” project since such an approach might result in firms going back to their old habits after completion of the project. Ideally, CP program has to be designed in a way that it should have in-built mechanisms to facilitate continuity of improvements (Stone, 2005).

However, it is often seen that the firms participating in a CP project show lot of enthusiasm in the beginning but as the project progresses, their interest tends to decline. In fact, in many of the firms, “CP thinking” simply dies off after the project is withdrawn. So the greatest challenge for any such program is to keep CP continuously on company’s agenda (Rodhe, 2005). Most of the CP programs seek its participants to show commitment and pledge for ongoing improvements, but very few give concrete suggestions about how to achieve those (Stone, 2005). Management commitment discussed earlier in this section plays an important role in ensuring continuity and ongoing improvements. However, there are also other issues which significantly influence continuity, such as, opportunities for organisational learning within the firm and the ability of the management to integrate CP with other core business strategies (Ian Vickers, 1999).

4.3 Key Learning from this Chapter

- There are in total seven steps involved in implementation of a traditional CP program on a facility level, which are:

Recognised Need for Cleaner Production, Planning and Organisation Phase, Pre-Assessment and Assessment Phase, Feasibility Analysis Phase and Implementation and Continuation Phase.

However, it would be seen in the next chapter that these steps were not strictly followed in the focussed case study. It signifies that the focus and the approach shown in the case are not same as that shown in other traditional CP program.

- Five points were identified in this chapter as the most important lessons from classical CP initiatives on a program level. These factors would be used in analysis section to analyse the case study as per the experiences from other CP programs. Here are the five factors and some key question to be answered at the analysis stage:
 1. Reaching out and convincing the firms to participate in CP programs: How difficult it is for the retailer to convince the mills and what they can learn from other CP initiatives to solve the problem?
 2. Top Management Commitment of the participating firms: Is the top management in every mill really committed to the CP program? How can they make use of the lessons from other CP initiatives?
 3. Change agents and opinion leaders: Who are the change agents and opinion leaders in clothing supply chain? How can they make a difference?
 4. Benchmarking: Is there a bench marking possibility in the focussed case study?
 5. Continuity and on-going improvements: Are the participating mills ready to work continuously with CP even after H&M withdraws the project? How can this be ensured?

5 The Case Study

This chapter looks at a case, where one of the leading fashion retailers is trying to improve environmental performance of its supply chain.

A Swedish fashion retailer – Hennes & Mauritz (H&M) has initiated an environmental program called as “ENFAP”. The case study in focus in this research is only the Indian part of ENFAP, which was launched in March 2005.

This chapter has three sections. The first section introduces readers to the focussed company and various initiatives it has taken in the environmental field. The next section deals with the actual case study and its progress at the time of this research. The last and final section is a compilation of opinions from three sets of organisations associated with the program-fashion retailer, its first tier supplier (garment manufacturers) and the second tier suppliers (wet processing mills)

5.1 Hennes & Mauritz

Hennes & Mauritz (here after referred to as H&M) is a Swedish based fashion retailer. It was established in the year 1947 and as per the latest data available (for the year 2004), 45000 employees work for the company in various capacities. The company’s turnover has grown rapidly, especially over the past decade and according to financial reports for the year 2004, it stands at SEK 62 985 million. Germany is the largest market for H&M followed by Sweden, Norway and United Kingdom.

H&M does not own any production units; they instead work with approximately 700 suppliers in 25 countries. These suppliers are controlled by company’s 22 production offices, 11 in Europe and 10 in Asia and one in Mauritius. Close to 40 % of the total products are manufactured in Europe- mainly Turkey, Romania and Baltic states, and the remaining 60% is imported from Asia- mainly China, India and Bangladesh. Compared to Asia and Europe, procurement from Africa is very less (H&M, 2005).

5.1.1 Company’s Initiatives in Environmental field

Environmental issues in H&M are handled by the “Environment and Corporate Social Responsibility (CSR) Department”. The CSR manager is responsible for all the activities related to environment in the selling and production countries and she operates from the company’s head office in Stockholm, Sweden. As the name CSR suggests, this department takes care of both environmental and social issues for the entire company. The environment wing of the department is handled by two Environment coordinators at the head office and three environment-responsible people in India, Bangladesh and China. Apart from these, three forty CoC auditors in different production offices also review environmental issues during CoC audits. The coordinators, alone, based at the head office work full time on environmental issues while the others handle environment as an additional responsibility over and above their regular work profile. In contrast to this, H&M has 40 Code of Conduct (CoC) inspectors working full time on social issues in various production countries, suggesting that the environmental organisational set up is still in primary stages and centrally controlled, compared to an organisational structure handling the social issues(H&M, 2005).

H&M's environmental policy

Continuous improvement is characteristic of all H&M activities. This includes our environmental effort, which is conducted within the framework of our business operations. H&M's business concept is to give our customers unsurpassed value by offering fashion and quality at the best price. Our quality concept is based on ensuring that our customers are satisfied with our products and with H&M as a company.

To this end, we are committed to acting responsibly in our community. We also aim to co-operate with our suppliers on improving the social and environmental standards in the factories that manufacture H&M clothing, thereby contributing to sustainable development in these areas. To achieve this goal, H&M has adopted the following principles.

We shall:

- always consider the health and safety of our employees. By adopting the precautionary principle, we will continuously update our restrictions against the use of environmentally and health hazardous chemicals in the production of our garments and other products.*
- continuously update ourselves on environmental news and legislation. We will not be content to follow existing environmental legislation, but will in certain areas do more than the law requires.*
- conduct our business in a manner that utilises natural resources as efficiently as possible.*
- develop new and continuously improve existing environmental requirements concerning the purchase of products and services.*
- train, inform and motivate our employees to participate and take responsibility, thereby making environmental work an integral part of H&M's daily routines.*
- specify to our suppliers our position regarding behaviour towards the environment and human rights and follow up to ensure that our suppliers improve their operations in line with these requirements.*

Table 1: H&M's Environmental Policy

If we further compare both the wings, it can be observed that H&M has gone through different steps of learning, concerning social issues, since 1997, when the concept of CoC was first introduced into the company. The initial focus of the company was primarily on inspections and compliance with the code. But over the years, the company has learnt that inspections as a sole method is not sustainable in order to achieve long term improvements in social and working conditions in production countries, so now, more emphasis is being given to training and educating suppliers and consequently their development, in a step by step fashion (Schullstrom, 2005).

If we compare these events with the developments in environmental areas, H&M's initial focus was more concentrated on setting up an environment policy and setting long term objectives. The first environment policy statement was published by H&M in 1998, which, since then, has been revised, improvised and expanded in scope. There was some effort made to increase environmental awareness of the employees and some significant steps were taken to reduce pollution connected with transportation by shifting from air and road

transport to rail transport. Also in the last five years, the company has been contacting its suppliers regularly regarding various environmental issues and more questions are being posed regarding water, chemicals and energy during CoC evaluations (Schullstrom, 2005).

Apart from above evolving steps, H&M has also tried to take some initiatives in environmental fields, like-

Organic cotton Initiative:

Considering the toxic impact of pesticide utilisation during cotton cultivation, H&M has become a part of an initiative to encourage the usage of organic cotton. H&M is now a part of an international organisation, the Organic Exchange. This organisation brings together a number of fashion retailers who are working towards promoting pure organic, as well as, 5% organic blend fabrics. Initially, a test run was conducted in India and Turkey with some of the orders using 5/95 percent organic/conventional cotton blend. This was done after studying the availability, viability and the certifying process involved in organic cultivation and spinning. As per the latest information (August 2005), H&M's target of using 20 tons of organic cotton for the year 2005 had already been achieved and the as a next step company is hoping to expand the program to regular orders, more countries and eventually to a higher percentage blend (Khokar, 2005; Lampa, 2005)email

Supplier Environmental Motivation Strategy (SEMS)

This was a pilot project conducted during 2000-2003, with four vertically integrated garment manufacturers having wet processing facilities. The selected suppliers were based in four different production countries.

The goal of this project was to motivate suppliers to take responsibility and contribute to a better environment by moving beyond complying with the local environmental legislations. As part of SEMS, a detailed environmental review of the wet processing units was conducted. Various aspects of the production were graded on the basis of environmental significance. Then the suppliers were asked to set their own measurable targets for improvements. H&M followed up the actions taken for the entire period of the project.

In reality, SEMS lead to the development of the conceptual frame work for the initiation of ENFAP, which is discussed later in the next section.

In general, H&M's CSR Manager Ingrid Schullstrom agrees that the focus in the production centres has been to ensure, its suppliers follow the local legislation and creating awareness in the form of CoC audits. The company had hoped that the awareness among suppliers would result in self-motivation and act as a driving force for future improvements (Schullstrom, 2005).

However, this approach may not be sufficient in the competitive market, where customers are always demanding more from a responsible company. There has been an increased debate all over the world about environmental issues associated with apparels. According to Schullstrom, H&M's stakeholders and customers are posing more questions related to the effects of garment manufacturing on environment.

In the beginning of 2004, H&M decided to take some steps to address some of these questions and to focus on manufacturing areas which would have maximum impact on environment. Life Cycle thinking, about garment manufacturing, lead H&M to conclude that “textile wet processing” is the most significant contributor to environmental degradation and that needs to be addressed in order to make any meaningful improvements (Lampa, 2005).

The first brain storming meeting to find out the ways to deal with the wet processing mills was held at the company’s head office in spring 2004. The main agenda was to discuss the feasibility of conducting a program to make environmental improvements in the wet processing area. This meeting was attended by the CSR Manager, Environment Coordinator, Program coordinator from Indian production office and a technical textile person from the Turkey production office. At this stage, the proposed program to deal with wet processing steps was called ENFAP (Environmental Fabric Processing Programme) (Lampa, 2005).

5.2 Environmental Fabric Processing Program (ENFAP)

The primary goal of ENFAP was to improve the environmental performance of fabric processing mills that H&M’s garment suppliers are using. It is worth noting here that H&M has business contacts only with garment manufacturers and they do not deal directly with any of the wet processing mills. Hence it was a challenge to influence mills without having the traditional power of money or legal contracts. But this issue was not addressed in depth during the initial phases where the focus was more on identifying suitable suppliers for the program and having an organisational set up to handle this program. It was also decided at this stage that ENFAP would primarily focus on three key environmental areas of water, energy and chemicals (Khokar, 2005; Lampa, 2005).

Although the main stated objective of ENFAP was to improve environmental performance of the mills, it also had a “un stated” learning objective internal to H&M. Since this program is one of the first of its kind in fashion industry, H&M’s Environmental Coordinator, Henrik Lampa felt, that even learning a few important lessons about wet processing mills and the way they deal with the environmental issues could be a significant gain for the company (Lampa, 2005).

Initially, it was decided that the program would be carried out in three major production countries for H&M, namely, China, India and Turkey. But after initial review, Turkey was left out as it was observed that the wet processing mills there are much more developed in terms of their environmental performances compared to their counterparts in China and India (Lampa, 2005). One program representative each was identified in the production countries to co-ordinate the program.

The plan put together during the initial meetings included 2 phases.

Phase I:

Stage 1: Mapping – To identify garment exporters and processing mills, who could be interested in participating in this program and who suit the requirements of the program

Stage 2: Creating awareness amongst production managers at head offices and across production countries

Stage 3: Assigning timelines and identifying owners for each deliverable.

Phase II:

- a. Future stages planning
- b. Developing methods for environmental reviews.
- c. Target setting criteria in the areas of water conservation, energy saving and optimization the usage of chemicals
- d. Methodology development for implementation of the targets.

Execution of initial proposals:

As a part of the first phase, mapping was done by identifying suppliers who account for 75% of H&M's volume in pieces in each of the participating countries. A questionnaire was sent to all identified suppliers requesting them for information about the wet processing mills they are using for H&M's orders. In the Indian context, the replies revealed names of approximately 25 wet processing mills. A separate questionnaire was sent to these mills seeking technical details such as the type of activities in the mill, environmental awareness among the employees, size and capacity of processing etc. Post this step, approximately 10 to 12 mills were eliminated from the list based on the criteria mentioned below (Khokar, 2005).

(i)Willingness to participate (ii) scope for environmental improvements in the mills and (iii) long term prospects for the mills to work with H&M orders. In the later stages two more criteria were considered namely, (iv) mills having their own Effluent Treatment Plant (ETP) and (v) they should not be ISO certified for environment.

The last two criteria were extensions of the second criteria. It was assumed that by having their own individual ETP, mills would be able to measure the improvements in environmental performance effectively. H&M also felt that the non-ISO certified companies had more scope for improvement than the structured ISO companies (Khokar, 2005). One important decision taken at this stage was to exclude "vertical suppliers" from this program. Although it was relatively easier to influence mills attached to vertical suppliers due to direct business connection, it was decided not to include them to avoid giving them the impression of them being "easy targets" for any new program. Also, the company valued vertical suppliers and believed that the vertical set up is very essential for future business plans. So it was important to reassure such suppliers and give them time to prepare for this program (Lampa, 2005).

As per Khokar, the program coordinator, the final list was agreed upon, after considering various factors like type of fabrics being processed in these mills, size of the factories, locations and management's commitment towards the cause of this project in addition to the above mentioned criteria. Thus the final number was brought down to 6 (Khokar, 2005). It is clear from the list of suppliers, that there was some flexibility allowed while selecting the mills. For example, one mill was selected, in spite of being relatively advanced in terms of environmental issues, because of its status in the region. H&M was planning to use that mill as a "flag bearer" in the region and it could bring in enthusiasm and curiosity in other mills in that area about the project (Khokar, 2005). In spite of their intentions to not select any mills sharing ownership with H&M's garment exporters (vertical set-up), one of the mills selected in south India happened to be part of vertical set up.

After identifying the participating mills, the next phase was to consider practicalities of the project. It is worth mentioning that when the mills were selected, there was still no solid plan to propose to these mills, they were only told that the project would be dealing with environmental issues in their factories. In other words, willingness of the mills to cooperate with this program was irrespective of the proposed contents of the program.

The ENFAP program coordinator then contacted different environmental consultants and experts in India and abroad to design the actual program to be implemented in the identified mills. During discussions, Cleaner Production was identified as the most suitable approach to be used for this project. It was finally decided to contact BECO, a consulting company based in Netherlands to prepare a tool to put the ideology of ENFAP into practice (Khokar, 2005).

The tool was termed as a Low Hanging Fruit (LHF) Tool, keeping in mind H&M's intentions, of focussing initially on easy-to-achieve targets for environment improvements in the wet processing units.

5.2.1 Low Hanging Fruit (LHF-Tool) Tool

LHF-tool is essentially a device to implement the ideas of ENFAP, prepared on the basis of Cleaner Production techniques. It was developed jointly by BECO Group (the Netherlands), Wuppertal Institute (Germany) and the Indian National Cleaner Production Centre per H&M's request.

The stated aim of the LHF tool is, *to help wet-processing mills supplying to H&M, improve their environmental performance and consequently reduce their production costs.* It further states that the *tool would help the wet-processing mills identify options that lead to reduced energy and water consumption and reduced toxicity and/or quantity of chemicals used.* There are also some management options in the tool with the aim to help the mills implement these options and monitor their progress.

As a first step, the goal was to develop an action plan for the participating mills for the year 2005-2006, which could help the mills to improve its efficiency and reduce costs. H&M aimed to follow up the results of the action plan either directly or through garment exporters.

The focus of this initiative was on the Cleaner Production approach, which entails “producing more and better quality products with fewer resources and thereby improving production efficiency and decreasing production costs”. As the name suggests, H&M wanted to help the mills to chose the targets that are “Low Hanging Fruits” referring to the options that are either easy to implement and/or that have a short pay-back period for investments.

5.2.1.1 Contents of LHF tool

The LHF tool consists of 5 parts:

1. Instructions for the H&M Code of Conduct Auditors
2. Manual for Performance Improvement Options
3. Questionnaire for mills
4. Feasibility Checklist
5. Action Plan

1. Instructions for H&M Code of Conduct Auditors

Code of Conduct Auditors in the chosen H&M production offices were made responsible for coordinating with all the exporters and wet processing mills associated with ENFAP. This part of the tool worked as a guide to the auditors to implement the LHF tool in the participating mills. It contained practical tips on how to prepare themselves before and during the visits to the mill. Auditors were instructed to make at least two visits to all the participating mills. The main purpose of the first visit (introductory visit) would be to go

through different Improvement Options mentioned in the tool, to briefly mention the sections of the LHF Tool and how it works and where ever necessary, to briefly reinforce the advantages of CP techniques. During the second visit (main visit), the H&M representative together with a suitable person at the mill (production manager, senior engineer, etc.) was asked to go through the LHF Questionnaire and fill in the questionnaires. It was also emphasised in the instructions to involve the mill staff responsible for water/ETP, energy/boilers and chemical stores during this meeting.

It was observed by the researcher during the discussions that these written instructions were helpful in many ways. They gave clear guidelines to the auditors and prepared them for the visits by giving practical tips about the Do's and Don'ts. Auditors were advised to keep an open mind during all their interactions with the mills and to not give away any preconceived ideas. The other advantage of written instructions was to reduce the "subjectivity" associated with different approaches by different auditors. This was especially important since the ENFAP program is carried out in two countries, by three different auditors.

2. Manual of performance improvement options

This manual contained 41 performance improvement options. First five options were termed as "Management Options", which basically dealt with setting up an efficiency improvement team and measuring the usage of water, energy, wastewater and chemicals. These options were considered as "basic" or compulsory by H&M and it expected all the mills to choose these options, if they were not already following them. The rest of the thirty six options were termed as "technical options", these were the selection of measures that any wet processing mill could take up to improve their environmental performance and also save production costs. Every option was explained in terms of a brief description about the option and how they can be achieved, environmental effects of the measure, its applicability and financial aspects associated with it. Most of the options were also supplemented with a section about where further information could be obtained about that particular option. H&M wanted the mills to take up at least three technical options in the first phase of the program.

Although H&M wished for mills to choose to all five management options and at least three technical options, the company wanted to keep it truly "voluntary". Hence if the mill did not wish to choose eight options, they were requested to select at least two management options (constitution of efficiency improvement team and measuring of waste water stream) and one technical option in order to realise the benefits of cleaner production.

3. Questionnaire to mills

The questionnaire was developed to help identify performance improvement options for the particular mill. It mainly contained three parts; the first part intended to help the mills and auditors to understand the existing measuring systems in the mill and to recognise previous achievements and future plans of the mill in terms of CP techniques. Second part was meant to identify performance improvement options by going through each one of the thirty six technical options. The participating mills were asked to mention their opinions about every option by stating if it was beneficial to them or not - if the mill thought it was beneficial, the concerned person in the mill was asked to grade that option as a low, medium or high priority for their factory. Depending on the replies given by the mill for the first two parts, a list of "provisional options" for the mill was formed in the third part. Thus this entire questionnaire was designed to act as a self evaluating tool for the mill and to come to conclusion about the most suitable options for the particular mill. The complete

questionnaire could be found in Appendix 2: LHF -Questionnaire sent to the mills by H&M, of this thesis.

4. Feasibility checklist

This was an optional tool for the mills. They could check the feasibility of the options chosen in the questionnaire by using this checklist of questions regarding technical, economical and environmental aspects of that option. Some of these feasibility checks could be done by the mill and the H&M representative at the time of their main visit. Other checks needed technical input from the mill's own staff or from external consultants, and could be time consuming.

5. Action plan

The Action Plan was a summary of options that the mill chose to implement based on the results of the Questionnaire. The mill was asked to include in the Action Plan, the expected start and end dates of implementation of the options, as well as the name of the person responsible for each task. The participating mill was given a fixed period (around 1 to 2 months) of time to develop an Action Plan based on the potential Option List. This was done because in some cases, especially the options requiring large investments, it would be necessary for the production manager to consult with the director/owner of the company and in other cases, further investigation regarding the feasibility of the option would be needed.

This Action Plan was intended to be used by H&M to follow up on the implementation of the selected options. Follow-up was to be done every alternate month, over phone or perhaps by a visit if possible. In addition to the information provided in the Action Plan, H&M might consider asking for information about the results in terms of reduction of the amount of water, energy or chemicals used. The entire action plan can be found in appendix 3 of this thesis.

H&M was planning to use the information gathered through follow up of action taken by the mills, primarily to encourage the mills to further improve their new mills. The other purpose of following up was to understand the perspectives of the mills regarding the environmental issues.

5.2.2 Progress of ENFAP in India

As explained earlier, six exporters and one respective wet processing mill for each exporter were chosen by H&M in India for ENFAP. Since H&M buys garments from exporters based both in northern and southern parts of India, three mills each were chosen from each of these regions. According to the ENFAP coordinator, it is generally perceived that there is a considerable difference in the working atmosphere, attitude and knowledge level of mills in north and south part of India, making it necessary to equally distribute them to spread message of ENFAP across the supply base (Khokar, 2005).

All of the six mills were contacted even before the LHF- tool was ready. Garment exporters buying from these mills were also kept in the loop during initial discussions. The LHF-tool was introduced to the mills during March 2005. The initial introduction was done in the form of a seminar and the following aspects were highlighted to the mills as well as garment exporters during that seminar

- H&M as a company and its social and environmental commitments
- Introduction to Cleaner Production as a concept with an emphasis on cost saving opportunities associated with it.
- A brief introduction to Cleaner Production opportunities available in the textile field.

This seminar was conducted by H&M's CSR Manager, Environment coordinator and ENFAP program coordinator. It was supported by two experts connected to National Cleaner Production Centre in India. The seminar was able to generate lot of enthusiasm in the participants due to the presence of high level management team from H&M's head office and the local experts. (Khokar, 2005; Lampa, 2005) H&M intended to introduce LHF –tool during individual meetings with the participating mills to enhance the effectiveness of the knowledge transfer, hence not too many details about the tool were revealed during the seminar. (Khokar, 2005)

The next step in the program was to meet the mills individually and go through LHF-tool in detail. It should be noted that garment exporters were not present during these meetings; and hence, were unaware of the actual contents of the tool. The responsibility of coordinating with the mills was delegated to two of H&M's CoC auditors. South Indian mills were handled by the auditor in Bangalore and north Indian mills were contacted by the auditor based in Delhi. The procedure was, as mentioned in the previous section; starting with the questionnaire, moving ahead with the feasibility checklist and finally obtaining the action plan prepared by the mills.

5.2.2.1 Progress in South Indian Mills

At the time of writing this report (August 2005), all three South Indian mills had reviewed the Questionnaire and had sent their Action Plan to H&M with their chosen targets. All three mills were very proactive in their approach compared to their North Indian counterparts. H&M auditor's attributed this difference to better attitude and long term thinking of southern mills (Jose, 2005; Malhotra, 2005). The management options in the tool had already been implemented in these mills even before ENFAP and they had chosen four technical options each for the coming year.

Although the general perception about the regional divide in attitude was expressed during the meetings with H&M staff, this can not be treated as a sole reason for different responses from the regions. The mills chosen for ENFAP in the South Indian mills were generally considered to be better compared to the mills chosen from the north in terms of infrastructure and facilities. In fact, two of the three mills chosen in the south are perceived to be the best in the region for their environment awareness and long term thinking; the third one is trying to restructure itself with modern technology (Jayachandran, 2005). This fact was also mentioned by H&M's auditor "Almost 85-90% of the options mentioned in the LHF-tool had already been implemented in two of the mills, and was hence very challenging to identify relevant options not already implemented in the mills" (Jose, 2005).

Overall, H&M is satisfied with the response it has received by the South Indian ENFAP mills and they are looking forward to work closely with these mills for the coming years. They feel that it would be good learning experience for both H&M and the participating mills (Jose, 2005; Khokar, 2005)

5.2.2.2 Progress in North Indian Mills

Contrast to the South Indian experience, ENFAP is facing hurdles in North India. Although all the three mills had submitted their action plans, the response had been far from H&M's expectations. One of the mills had chosen only management options and had decided not to choose any technical options. The second mill was not very keen on giving an action plan and H&M's auditor had to coerce them to take it up. Although the attitude of this mill can be attributed to the classic 'reluctance-to-change' attitude, there could be other reasons too for this response. The first reason could be the fact that after the launch of the program, H&M's order volumes for the mill reduced due to some contractual failures between H&M and a sister concern of the mill. (Malhotra, 2005) The other reason could be the long term plan of the mill of investing approximately 3.5 million USD on modernising the infrastructure and that they find the targets of LHF not fitting into their long-term plans. (Mill4, 2005)

The third mill in the north was said to be better than the other two in terms of involvement and enthusiasm. They decided to concentrate on two management options and two technical options from the tool. But unfortunately, both the individuals responsible for ENFAP at the mill decided to leave the company midway. This meant rework for the H&M auditor who had to go through the entire process all over again due to lack of a backup for the individuals who had resigned. Also H&M realised that this mill was going through a bad financial situation and eventually decided to drop this mill from ENFAP. Now they are looking for a new mill to be part of the program (Malhotra, 2005).

In conclusion, H&M was not happy with the response from the mills in the north. They were hoping that the situation improves with time and that they would be able to make some progress by using the experience gained in the south during the first phase.

5.3 Perspectives of Different Actors towards ENFAP

In this section opinions expressed by all the three sets of actors associated with the program have been put together. All three sections of the supply chain were contacted by the researcher, as mentioned below:

- 1) H&M: Initiator and supporter of the program. Personal interviews were held with company's CSR Manager, Environmental Coordinator (both in Stockholm), Program Coordinator and CoC auditors (in Bangalore and Delhi, India)
- 2) Garment exporters: Intermediate in the program. Since H&M and the participating mills do not have direct business connection, exporters act as a crucial link between them. All the six participating exporters were first contacted through a questionnaire and four of them were later personally interviewed (three in Bangalore and one in Delhi). The other two were not interviewed, since they communicated that they did not have much information to share other than the ones expressed at the questionnaire stage.
- 3) Wet Processing Mills: Implementation point of ENFAP. Main targets of the entire program. All the six mills were sent questionnaires to understand their initial reaction towards ENFAP. After receiving replies to the questions, five of them were personally interviewed at their factory premises. Two of the interviewed mills were situated around Delhi and one each was based in Bangalore, Erode and Tirupur. The sixth mill could not be contacted since it was going through organisational changes and no contact person was available for discussion. All the interviews were

conducted at the suppliers' premises, mainly comprising of the personnel associated with the program.

All players at these three levels were asked questions to understand their perspectives about ENFAP in accordance with the SWOT model. SWOT stands for Strengths, Weakness, Opportunities and Threats.

Strength: The perception about the advantages of ENFAP for the focussed actor.

Weakness: The weaknesses in ENFAP and its implementation as per the actor.

Opportunities: Suggestions from actor for further improvements.

Threat: Most important hurdles in implementation and continuation of ENFAP

5.3.1 Perspectives of the initiator- H&M

Strengths of the program

H&M is very clear about the mutual benefits for all the organisations associated with ENFAP. The reason for starting this initiative is very obvious for the company, as it thinks that being one of the largest fashion retailers in the world; they should take their share of responsibility towards its supply chain and environment. The major business area for H&M is Europe where consumers' awareness towards environmental issues is on the rise. H&M is known to have stakeholders who demand continuous improvement in working conditions at the production units (Schullstrom, 2005).

According to the CSR manager, it is very difficult to quantify benefits that H&M could gain from ENFAP or any other environmental or socially responsible initiatives. Looking at it in a short term perspective could make it seem like a cost to the company due to the expenses involved in terms of consultancy fees, travelling expenses and time and efforts spent by its staff. In the long term, however, the benefits are too high to be ignored. The company will be in a better position to handle potential concerns from its stakeholders and more importantly, the company hopes to understand its suppliers better through such programs. In other words, benefits of such a program go beyond objectives of CSR department and even help production and quality departments of the company (Schullstrom, 2005)..

The ENFAP coordinator felt that improving environmental performance of supply chain cannot be achieved overnight and that the company was not apprehensive to commit mistakes in the initial stages of the program, and learn from them. (Khokar, 2005) In general, H&M looked at ENFAP as the first step towards greening its supply chain and considers it as a part of its responsibility towards the society and environment.

It is also worth mentioning that H&M was categorical to say that "there is no hidden agenda" behind this initiative. The company did not have any intention of using ENFAP to learn more about wet processing costs for any future cost reduction plans. There were also no immediate plans of choosing and nominating wet processors for future H&M orders (Lampa, 2005).

The most important reason for H&M to build ENFAP around the Cleaner Production techniques was the cost saving opportunity that CP provides for wet processors. The company did not want to impose its policies on second tier suppliers but wanted them take it up voluntarily. The company was hoping that the cost reduction would act as good incentive for the wet processors to participate in this program. That was one of the reasons why H&M

had projected this program as money saving tool rather than environmental tool (Lampa, 2005; Khokar, 2005)

Weakness of the program

H&M was still in the process of evaluating ENFAP for weaknesses and it regularly asked the participating mills for feedback. The lack of previous examples of such initiatives could act as a hurdle during the implementation phase. Not many fashion retailers are trying to reach wet processing units with environmental concerns at this stage. However, ENFAP program coordinator in India feels that there were lot of benefits in being “a first mover” in reaching the second tier suppliers with an environmental tool. This gives H&M an opportunity to learn with their suppliers and this in turn could help to build a better long term relationship with them (Khokar, 2005)

Threats to the program

As per H&M CoC auditors, the threat to the program was not from the program itself but from the attitudes of some of the participating mills. As it was clear by looking at the progress that ENFAP had made so far, there was a sharp contrast between North Indian and South Indian mills. CoC auditors attributed this difference to the disparity in the attitudes of the mills in these two regions. ENFAP mills in south were observed to be having long term business plans and they look at ENFAP as a learning opportunity and were attempting to use it to build better relationship with European buyer like H&M. North Indian mills on the other hand, were more focussed on their “core business area” of fabric processing and did not connect environmental issues to their business plan (Jose, 2005; Malhotra, 2005)

Lack of enthusiasm in some of the mills could also be a threat to the continuity of the program. H&M needed to convince such mills to attend meetings and agree to deadlines. This went against the intentions of the company to make the program voluntary, which had to be driven by the mill’s own zeal and interest (Malhotra, 2005). In spite of initial hurdles in some of the mills, H&M auditors were hopeful that mills showing slower response would realise the benefits of the program and the situation would improve with time.

Opportunities for improvement

Since the program is still in the initial phase, H&M wanted to run it in the present form before making any big changes. The challenge of course, was to reach out to the mills that were comparatively “less enthusiastic”. Although CoC auditors working on this project expressed many opportunities for improvements in the program, they wished to be patient at this stage and learn from the experiences of working with all six wet processing units.

5.3.2 Perspectives of Intermediates - First tier suppliers

Garment exporters were the first tier suppliers to H&M and they acted as an important link between H&M and the wet processors. In case of ENFAP, these organisations were only brought into play to get information about the wet processors being used for H&M orders and to develop contacts with such units. Although they were part of the seminar when ENFAP was launched, their involvement was restricted to the elementary and they did not seem to have adequate knowledge about either ENFAP or the LHF-tool.

Strengths of the program

In spite of not having sufficient information about ENFAP, garment exporters generally showed interest in the program. Their exposure to Cleaner Production techniques was limited to the seminar conducted by H&M and hence they felt that wet processors could be benefited by taking part in ENFAP. When asked about what kind of benefits they were expecting for themselves, two out of six mills felt that there was no direct benefit for them since the program was aimed primarily at wet processors. The remaining four exporters felt that the most significant benefit was “the sense of satisfaction of being involved with the project initiated by a European buyer”. They were hoping that such involvement could help them to develop long term business relationship with H&M.

Since the exporters were not directly involved in this project, they did not feel that there would be any direct impact for their business. All the exporters wished to wait to see what kind of progress wet processors make in this program. They hoped that mills would make best use of H&M’s initiative and would be able to reduce costs; and that in turn would help exporters when they process fabrics in such mills.

Weakness of the program

Here again, exporters did not seem to know much about the practical barriers in the implementation of ENFAP due to lack of information about the program. When asked if mills discussed with them, any difficulties in implementation of ENFAP, all the exporters interviewed, answered in the negative. According to them, the mills hardly discussed ENFAP issues with them since they were in direct contact with H&M.

Threats to the program

None of the garment exporters interviewed was aware of any initiative by any other buyer to reach second tier suppliers. Hence they also did not think about any great threat perceptions to ENFAP. Most of them seemed to understand that H&M was doing this project as part of its responsibility towards environment, however, one exporter expressed apprehensions about the possibilities of H&M using ENFAP to have direct contacts with wet processors and use the knowledge for nominating the wet processors themselves in the future.

Opportunities for improvement

Three exporters stated that they were not in a position to give any suggestions since they were not directly involved with ENFAP. The remaining three expressed their willingness to discuss with the mills used by them and give feedback to H&M if required. When asked if they would like to play a greater role for future programs similar to ENFAP, five out of six exporters did not have a problem in accepting bigger responsibilities. They felt that such involvement would help them learn about cleaner production and could even help while dealing with other wet processing mills.

5.3.3 Perspectives of Implementation point- Wet processing mills

Strengths of the program

H&M projected ENFAP as a program which has five fold benefits to the wet processing mills which are participating in the program

- 1) Reduction in production cost
- 2) Edge over the competitors (Better company image)

- 3) Improvement in fabric quality
- 4) Benefit to environment
- 5) Help to comply with Pollution Control Board regulations

H&M consciously decided to focus more on reduction in production costs to make business sense to the participating mills. During this research, all six participating mills were asked to grade these five benefits to indicate what they consider as the most significant gain for them. Here is a short summary of the responses

Table 2: Responses from mills on the benefits of ENFAP

Most Significant Benefits	Number of Mills
Benefit to environment	3
Reduction in production cost	2
Edge over competitors	1

It is also interesting to note that the two mills which graded “Reduction in production cost” as the most significant benefit are more knowledgeable about Cleaner Production than others. In spite of H&M’s efforts to promote cost reduction as a prime objective of ENFAP, its benefits to environment seem to have attracted more attention from participating mills.

However, every participating mill agreed that almost all the options mentioned in LHF tool would result in some kind of cost benefits. They were happy to be a part of an initiative that gives opportunity to look at their own factory in a different perspective.

One mill expressed, that the improvement of environmental performance makes good business sense to them. This mill is situated in Southern Indian and they are known to have a tradition of managing environment friendly operations. The marketing manager of the mill suggested that initiatives like ENFAP could be used to project the mill as “environmental friendly” among foreign buyers. These views, however, were not shared by other mills involved in the program. They felt that such initiatives could only help strengthen the factory internally and develop systems to optimise the use of resources.

When asked about the greatest strength of ENFAP, all six mills were unanimous in saying “voluntary nature of the program”. They were all used to getting requests from customers on quality issues which were “compulsory”. Hence, getting to choose their options and set up timelines was appreciated by all six mills.

Weakness of the program

The biggest weakness as realised during the interaction with wet processing mills, is the non-integration of programs like ENFAP, with core business areas of the industry. Most of the mills contacted expressed their concern on the lack of recognition for process improvements done by them. In other words, they did not see improvements in environmental performance fetching them more business from their customers.

Three mills also pointed out that H&M does not even commit itself to give continuous business to the mills associated with ENFAP, even if they achieved considerable improvement in environmental performance. These mills were not sure if “cost reduction” could successfully serve as a sole driving force under these circumstances.

Threats to the program

As suggested by H&M's CoC auditors, the attitude of some of the processing mills posed a big threat for the success of ENFAP. Since it was a new kind of initiative for this industry, mills which were not used to "sustainability thinking" tended to show less enthusiasm. This point was further proved by observing the progress made by six mills. Three mills from South Indian mills were more enthusiastic since they had prior experience of Cleaner Production technologies compared to North Indian mills.

When asked if the mills had ever faced any pressure to improve environmental effects of wet processing, they were unanimous in saying, "there is no pressure other than state pollution control boards". This pressure from authorities seemed to be stricter on the ground in Southern states compared to North Indian states. The above statement indicates that the participating mills are not facing any pressure from either its customers (garment exporters) or foreign buyers. This lack of incentives, other than cost reduction, poses another threat to the continuity of ENFAP.

None of the participating mills had ever come across any initiative from foreign buyers similar to ENFAP. European buyer's effort to reach out to its second tier supplier with environmental issues is something very new for these mills and hence some of them are curious about H&M's intentions. Although all the mills visited, expressed their happiness about H&M's initiatives, at least three mills seemed to think that this could lead in H&M looking closely into costing-calculations of wet processing; which could ultimately result in wet processing units being asked to decrease their production charges. This view however was only an apprehension and they did not want to comment any further since ENFAP is still in the initial stages.

On the other hand, one mill thought that H&M is doing this exercise to choose the best mills for their operations. According to the mill's technical manager, H&M could have been looking at nominating mills associated with ENFAP and all the garment exporters supplying to H&M could be asked to process their fabrics from the nominated mills, giving them more business. In fact, during the meeting the technical manager even went a step ahead to say – "It looks like we are almost nominated for H&M, only an official letter is missing!"

It was clear from the interviews held with the mills that H&M's real intentions behind ENFAP of "taking responsibility towards environment and to meet future demands of the customers" had not reached all the concerned mills.

Opportunities for improvement

Since ENFAP was only a few months old an initiative at the time of this study, the participating mills were not very forthcoming in giving suggestions for improvements. However, the management of all these mills were vastly experienced in textile field and hence were willing to share some of their knowledge. Suggestions given could be broadly divided into two categories: short term measures and long term measures.

Short term measures

Most of the mills wished to see more practical examples of implementation measures mentioned in LHF tool. According to the dyeing manager of one of the mills "Looking at the actual cases of implementation in the mills helps management to understand the tool better - most of the technical staff in Indian mills believe in "on-the-floor" experiences rather

than academic suggestions”. They also suggested these experiences could be shared by means of video clips or talking to managers of successful mills.

Three mills who were already doing a lot in the field of Cleaner Production, wanted to know more about developments in other parts of the world. They felt that most of the mills in India had very little interaction with mills outside the country. H&M is in a unique position of buying textile products from 25 countries; and hence the mills wished that H&M employees from other countries could share their experiences of working with mills from abroad. This was said to be particularly important since Indian mills were facing fierce competition from Chinese mills on a global level.

Only one or two representatives of each mill had attended the seminar conducted by H&M to launch ENFAP. It was observed during the visits to the mill, that the message of Cleaner Production discussed during the seminar was not shared with all the concerned people at the facilities. H&M had sent CDs of the seminar’s presentations to all the participating organisations but none of them had even looked into it. When asked about how mills were willing to spread the knowledge within their organisations, the Marketing Manager of one of the mills came with a suggestion that H&M should conduct at least three seminars specifically designed for three target groups.

- (a) The first one for the mill owners about financial benefits of ENFAP and to inform them about how it can help them in the future.
- (b) Second seminar for middle management involving technical information of all the options mentioned in LHF tool.
- (c) Third seminar on the basic worker level to bring about awareness on the factory floor.

If we look at the program completed thus far - H&M has indeed worked on the first two target groups through the seminar and informal meetings with all the technical staff. They (H&M) want mills to take interest in the program and carry it forward to its workers. However, in reality, this knowledge is not reaching the working floor because none of the mills had a formal organisational infrastructure to take such initiatives to the worker level.

Some mills suggested that H&M could give them more technical information about the different options mentioned in LHF tool, specifically - how these options would affect the quality of fabrics. Alternatively, H&M could also make some kind of agreement with a local consultant who would be able to give suggestions at reasonable price for all mills associated with ENFAP.

Some managers in the mills were particularly happy with H&M’s initiatives. As stated by Technical Manager of one of the mills: “H&M’s involvement helps us to convince our owners on many technical issues”. He wanted H&M to create a forum of all the mills associated with ENFAP. They should also facilitate regular meetings between technical managers of all six mills to share experiences - not only on environmental issues but also with respect to quality measures. When asked why these mills themselves can not take initiatives to meet each other, he replied “None of the owners encourage such meetings on technical matters, but H&M can use its power as a buyer to bring together knowledge from different mills. Such meetings are already being held in the areas of social compliance, but no one has initiated this for wet processors”.

Long term measures

Barring two mills, others were complaining of lack of recognition for the efforts they put into environment and other similar fields. They wanted buyers like H&M to commit to a certain volume of business as a reward for all the improvements done beyond legal requirements of the country. Although couple of mills are hoping H&M will nominate them for all their exporters, others wished H&M should at least recommend ENFAP mills as “preferred mills” for their orders. They agreed that most of the provisions in ENFAP were for their own benefit. However, since no other buyer was asking for such measures, they felt that a little recognition from H&M would encourage mills to enthusiastically participate in such programs. One mill also thought that recognition from a company like H&M would encourage other mills in the area to take up steps to improve the environmental situation on their own, helping the larger cause of sustainable production.

Mills also felt that companies like H&M should have more control on garment exporters with regards to where the fabric is being processed. Buyers generally did not bother where the fabric was being processed, encouraging exporters to go for cheaper options in the region. This in turn forces mills to cut down on their production costs by taking short cuts in quality and environmental measures.

The Technical Manager of one of the South Indian mills brought up other interesting questions: “Can a company like H&M also compromise slightly for the sake of environment? Can they accept some shade difference in their fabrics to reduce harmful impact on the environment?” According to him, traditional wet processing mills were redyeing up to 40 % of the fabrics in order to match the buyers’ colour standards exactly. He argued that the standards that buyers were asking are too strict to meet for many Indian mills. He also feels that the standards are measured by optical spectrophotometer and it may not be so important for the customers coming to shops. He added that even a small discount in the shade standards would drastically bring down the redyeing percentage saving lot of resources for the mills and also making lesser impact on the environment.

5.4 Key Learning from this Chapter

- This chapter essentially answered the following two Research Questions of this study.
 1. What are the main objectives of the CP initiative from the fashion retailer and how is it being implemented on the ground?
 2. What is the reaction of first and second tier suppliers to the fashion retailer’s initiative?

Section 5.2 provided the main objectives and the process of implementation of ENFAP. Section 5.3 was a compilation of the reactions expressed by the first and second tier suppliers of H&M towards ENFAP.

- The procedure followed in implementation of ENFAP and the opinions expressed by the different actors are used extensively to analyse the program in the next chapter.
- The stated and un-stated objectives of H&M have been identified in this chapter and they would be utilised in analysing ENFAP by using “Objective based model”.
- The results from the first five months of the program would be further explained and evaluated in the next chapter to understand some of the reasons behind the developments.

6 Analysis of the Case Study

Conventionally, Cleaner Production programs such as ENFAP are evaluated based on the benefits in economic and environmental terms. But such evaluation may not always give the true picture about such Cleaner Production programs (Stone, 2005). Also, it is too early to realise any economic and environmental benefits from ENFAP at this stage of the project.

Hence, this study has attempted to evaluate ENFAP by using two models that are often used in the field of evaluation research. The decision of using two models was taken to capture two different perspectives associated with the program. The first model attempts to analyse the developments in ENFAP so far based on the goals it has set for itself, while the second one looks at ENFAP in the lights of experiences gained from other CP programs.

The objective-based model

This is an effort to look at ENFAP with the viewpoint of H&M's intentions behind the program. As discussed in the earlier chapter, H&M had set both stated and un-stated objectives in the beginning of the program. These objectives would be compared here with the progress achieved by ENFAP so far and its potential for the future. The analysis is based on the information gathered by the author during his interactions with the associated organisations and his observations during the factory visits. Also a local wet processing expert from India was consulted to get an independent opinion about views expressed by the organisations.

Lessons for ENFAP through other CP initiatives

In this case, ENFAP is primarily looked at as “an unconventional” CP program, where a buying firm is trying to promote CP measures to its suppliers beyond its direct business connections. This program has some similarities and many differences as compared to other classic CP initiatives but there are many lessons that ENFAP could learn from other CP initiatives for its own future improvement. Such lessons have been discussed in section 4.2 and the same would be used here to analyse the program. The idea is to help companies like H&M to gain knowledge from the success or failures of other CP initiatives.

So, ENFAP would be analysed in this chapter in the following manner:

1. Objective Based Model: (a) Stated Objectives and (b) Un-stated objectives
2. Lessons for ENFAP through other CP initiatives.

The analysis is done to gain three different perspectives mentioned above. Therefore, some of the outcomes from different perspectives might overlap each other. This can not be avoided in multi faceted analysis, as different facets of the analysis might be reflecting similar outcome. In a way, these often repeated factors could be considered as the most crucial outcome of the analysis.

6.1 Objective Based Model of Evaluation

Ideally, an objective based model should be used at the end of the project to evaluate if the project has achieved all the stated objectives. (Stone, 2005) But ENFAP is an ongoing program. Therefore, an attempt has been made to analyse it at two levels, first to analyse the

developments in the first five months of the program and then to analyse its potential outcome in the coming years.

The first part of objective based analysis would evaluate ENFAP based on the stated objectives and the second part would look into the development in comparison to the un-stated objectives.

6.1.1 Stated Objectives of ENFAP

Following are the stated objectives of ENFAP as mentioned in the instructions of LHF tool

The LHF tool aims to help the wet-processing mills supplying to H&M improve their environmental performance and consequently reduce their production costs. More specifically, the LHF tool will help the wet-processing mills identify options that lead to reduced energy and water consumption and reduced toxicity and/or quantity of chemicals used.

It further adds specifically,

The goal of this “exercise” is to develop an action plan for the target mills for the coming year that can help the mill improve its efficiency and reduce costs.

These two statements collectively give us the following information about the main objectives of the ENFAP program:

- 1) H&M wished to improve the environmental performance of wet processing mills supplying to them: No specific number has been mentioned about the percentage of H&M’s fabric source that will be targeted through ENFAP. However, since it is in the initial phases, H&M wishes to start with some of the biggest mills supplying to them in India and would think about spreading to other mills at a later stage.
- 2) H&M aimed at reducing production costs for participating mills: Here again no measurable targets had been thought, about how much the mills could save through ENFAP. Since it is a first experience of H&M with CP at such a scale, it was not possible for them quantify the benefits at this stage.
- 3) The main focus would be to reduce consumption of energy, water and chemicals: Here again no reduction targets were set for the mills.
- 4) The first phase of the program is for the year 2005-2006; mills were to decide on the options by themselves.

It should be noted that H&M was ready to follow-up on the developments in the participating mills and it wished to see ‘measurable’ improvements in the target mills. It is also worth mentioning that by naming the tool “Low Hanging Fruits”, H&M is attempting to convey a message to the participating mills that its intention is only to focus on “easy-to-achieve targets” in environmental field. In that sense, H&M has lower ambition levels in the first phase compared to many other CP programs, which attempt to generate behavioural changes in the organisations.

After understanding the stated objectives of the program, it has been analysed below, in two parts: the first part would evaluate the progress made by the participating mills in the first five months of the program (between the launch of the program in March 2005 till this report is being written in August 2005), while the second part attempts to analyse potential outcome of ENFAP based on the way program has been designed and the approach taken by different actors.

6.1.1.1 Progress Made By the Mills in the First 5 Months of the Program

As explained in Section 5.2 in the first five months of the program, H&M has conducted a seminar for all the participating mills and garment exporters, H&M representatives have had at least two meetings with each of the participating mills, mills have gone through the questionnaires and feasibility check and they have also submitted the action plan with selected options for the coming year.

During the questionnaire stage, H&M's CoC auditors went through every option mentioned in LHF tool and the mills, in consultation with the auditors decided on potential options for their facilities. These options termed here as, "identified options" in a sense, represent the options that the particular mill was expected to choose.

After this stage, mills got 1 to 2 months time to discuss these options within their organisation and revert to H&M with "Action Plan". Action plan contained "selected options" for the mill with the time-frame decided by the mill itself. Thus, the difference between "identified options" and "selected options" reveals, that if the management of the particular mill is interested to make environmental improvements based on the scope for improvement or other priorities. Table 3 is an assembly of information gathered from H&M's representatives and the mills about the progress done in the first five months. For the purpose of discussion, it should be noted that Mills 1, 5 and 6 were based in north India where as the Mills 2, 3 and 4 were based in south Indian states.

It can be observed that the Mills 2, 3 and 4 selected the same options which they identified as the most important CP measures for their factories while the other three had shown disappointing progress. At the first look, it could be observed that all the 'better performing' mills are situated in the south. This is also in agreement with the opinions expressed by H&M's CoC auditors. They attribute the results to the "attitudinal problems" with the north Indian mills.

But is the attitudinal issue associated only with regional disparity? And even if it as an attitudinal problem, should it be taken as an explanation for the failure of a program such as ENFAP?

Table 3: Progress Made By the Mills in the First 5 Months of ENFAP

ENFAP Mill	Management Options		Technical Options	
	Identified options	Selected options	Identified options	Selected options
Mill 1	To setup efficiency competence team	-same-	Cleaning boiler pipes	None of the technical options was chosen in action plan. However, the owner mentioned that all of them have already been implemented!
	Measuring energy consumption	-same-	Maintaining condensate pots	
	Measuring water consumption	-same-	Implementing enzymatic scouring	
	Measuring waste water generation	-same-	Minimising dye paste in rotary screen printing	
Mill 2	To setup efficiency competence team	-same-	Caustic soda recovery from mercerising process	-same-
	Measuring energy consumption	-same-	Eliminating dye stuff losses due to spillage and mixing	-same-
	Measuring water consumption	-same-	Minimising failure rates	-same-
	Measuring waste water generation	-same-	Written instructions for safe and efficient use of chemicals.	-same-
Mill 3	To setup efficiency competence team	-same-	Applying enzymatic rinsing in reactive dyeing	-same-
	Measuring energy consumption	-same-	Optimising packaging for transportation	-same-
	Measuring water consumption	-same-	Minimising failure rates	-same-
	Measuring waste water generation	-same-	Written instructions for safe and efficient use of chemicals.	-same-
Mill 4	To setup efficiency competence team	-same-	Reducing heat loss through stack gas	-same-
	Measuring energy consumption	-same-	Optimising packaging for transportation	-same-
	Measuring water consumption	-same-	Minimising failure rates	-same-
	Measuring waste water generation	-same-	Written instructions for safe and efficient use of chemicals.	-same-
Mill 5	To setup efficiency competence team	Mill was dropped from ENFAP due to organisational changes and bad financial situation	Maintaining condensate pots	Mill was dropped from ENFAP due to organisational changes and bad financial situation
	Measuring energy consumption		Setting boiler pressure at the lowest acceptable level	
			Eliminating dye stuff losses due to spillage and mixing	
			Written instructions for safe and efficient use of chemicals.	
Mill 6	Planning for total overhaul of the mill by bringing in a dyeing consultant. So no option from LHF tool was chosen at this stage.			

To start with, there was a huge difference between the mills chosen by H&M in the South and North India. All the three mills in the south informed the researcher while answering the questionnaire that they were “aware of CP techniques”, whereas the mills from north did not know enough about CP. At least two out of the three mills in south had extensively worked with CP in their facilities and almost 80-90% of the measures mentioned in LHF-tool had already been implemented by them. So it would not be completely justified to compare such advanced mills with the mills from the north that are not at the same level. It would have been more interesting if H&M had chosen mills at the similar level of knowledge and infrastructure in both the regions. That would have given a more accurate indication, if the difference in the attitude is associated with “regional reasons” or because of different priorities in the mills at different levels of advancement.

If we assume that, indeed there is a problem of unfavourable attitude from some of the participating mills, how should it be treated in the context of the programs like ENFAP? ENFAP is supposed to be the CP program customised for Indian wet processing mills being used by H&M. Therefore, its success lies in the program being effective in the prevailing conditions, and the ‘prevailing conditions’ also include the non-supportive attitude from some of the participants. The program should certainly have some provisions to counter attitudinal differences between and within the regions. In other words, H&M needs a different approach to deal with north Indian mills as compared to the ones in the south. ENFAP can not expect “ideal conditions” for CP dissemination in countries like India and China. The real challenge of the program lies in being successful in spite of all the inherent problems in the system.

Also, if we consider the mills which have shown better response, three CP options have been chosen by the majority of them: Optimising packaging for transportation, minimising failure rates and providing written instructions for safe and efficient use of chemicals. There could be two explanations for these choices: a) The mills have already implemented other important options and these are the only relevant options left OR b) Mills are choosing the least expensive options, since these three measures require considerably lesser investment. It is difficult to identify the real reason for their choice unless a detailed environment review is conducted in these mills. But since at least two mills informed the researcher that the provisions in LHF tool are “too basic” for them and they needed much advanced measures, and three other mills wanted more detailed information about many measures, stressing the need for taking more customised tools to different mills based on how advanced they are in terms of environmental performance.

6.1.1.2 Analysis of Potential Outcome of ENFAP

Since it is difficult to assume the outcome of ENFAP at these early stages, the components of this program have been analysed here to understand how suitable the program is for the given conditions. Certain criteria have been selected for each component to do more specific evaluation. These components and criteria have been selected in consultation with Mr Jayachandran, who is a wet processing mill expert from India. He has many years of experience in this field and he is well aware of the local conditions prevailing in the country.

- 1) Provisions in the tool (LHF Tool)
 - Complexity of the tool
 - Relevance to the stated objectives
 - Suitability for the participating mills

- Provisions for measuring/ monitoring
- 2) Approach from H&M in taking ENFAP to suppliers
 - Mills chosen for the program
 - Voluntary participation of the target groups
 - Support given to participating mills
 - Setting up of time frame and provisions for follow up
 - 3) Process of implementation
 - Flexibility in the implementation process

6.1.1.2.1 Provisions in the tool

Complexity of the tool

In general, most of the mills interviewed, felt that the LHF tool is well designed and easy to understand. Each option in the tool contains a short explanation-information about environmental effects, applicability and financial aspects. The mills could get enough basic knowledge from the written material and the discussions they had with H&M representatives. There was also some effort to include information specific to the Indian conditions. However, not all the mills felt that the options are completely customised to the Indian situation. Two mills felt that certain options were ‘too general’ and needed to be fine tuned to suit to Indian wet processing mills.

Relevance to the stated objective

Since the main objective is to reduce the production costs for the mills and consequently improve environmental performance, most of the options given in LHF seemed suitable for this objective. However, detailed observation indicated that the “house keeping measures” have not been given enough importance in the tool. Good house keeping is always considered by the experts as the basic step towards the cleaner production and there should have been more emphasis on the measures such as the cleaning up routines and material flow mapping. For instance, even if a mill implements all the options mentioned in the LHF-Tool, it could still give an impression of being ‘messy’ and ‘untidy’ for a visitor since no option discusses the importance of cleanliness of the work place.

Suitability to the participating mills

The participating mills were divided on assessing LHF on this criterion. Two mills felt that most of the technical options were too elementary for them and they had already implemented most of those measures. On the other hand, at least three mills needed more explanation for some of the options because they were very unsure if certain options were practical to them for implementation. Considering the diversity of mills being chosen for this program, it perhaps would have been difficult to have a ready made tool suitable to all the participating mills. However, since the mills were chosen much before preparing the LHF tool, H&M had an option to do a short environmental review of the selected mills and give the agency (that put the tool together) a brief background about them. The other option could have been to involve some of the mills in the process of formation of the tool, giving them that additional sense of involvement in the program.

Provisions for measuring/ monitoring the improvements

Majority of the 36 technical provisions mentioned in LHF-tool have information on how resources like water, energy and/or chemicals can be saved by using that particular option. These technical options were supplemented with five compulsory management options which mainly aim at measuring the improvement in their performance. The measuring requirement is considered as a basic requirement for any CP program and hence it was a good move on behalf of H&M to make these options compulsory. However, some experts also feel that only measuring input and output of resources may not help to monitor the progress of CP provisions. According to them there should also be a system to identify the factors that are responsible for the resource losses in the facilities (Dobes, 2005). The CP provisions should attack these factors, rather than making some pre determined changes in the system. No such arrangement was observed in ENFAP to identify the factors responsible for the losses in each mill.

6.1.1.2.2 Approach from H&M in taking ENFAP to its suppliers

Mills chosen for the program

As mentioned before, H&M had chosen six mills in India for ENFAP. Three were from South India and the rest from the north. After looking at the list of mills and visiting their facilities, it can be easily asserted that at least two of the mills chosen in south did not give enough scope for improvements, as per the criteria set by H&M. These two mills were much ahead of the other mills in the region in terms of environmental performance and infrastructure. This was also confirmed by these mills and H&M's CoC auditor who thought it was difficult to choose options from the LHF tool as most of them had already been implemented in those mills. However, H&M could still take advantage from these modern mills by learning from their experiences and using that experience to train the other mills in the program.

Voluntary participation of the target groups

H&M was not trying to impose its policies on its second tier suppliers but rather hoping for voluntary participation from them. All the participating mills expressed their satisfaction about not being pressurised by H&M or garment exporters, either to participate in the program or to choose the particular options. They were even allowed to set their own time frame for working on the options.

However, H&M did not use the opportunity to transfer greater responsibility to its first tier suppliers. Garment exporters, being direct customers to the mills, would have made some difference to the proceedings. The other advantage of involving the exporters was to spread the message to different mills, which could help the greater cause of environmental initiatives like ENFAP.

Support given to the participating mills

Most of the mills were happy with the support they received from H&M as part of ENFAP. H&M launched the program with a seminar involving the management staff of the company and local experts; then they followed it up with at least two meetings with the mills by CoC auditors. The only additional support that few of the mills asked was more technical support to implement certain options. It could be difficult however, for a retailer like H&M to give technical support to the mills but an option for H&M could be to collaborate with a local

consultant. This was also suggested by some of the mills during the interview with the author.

Setting up the time frame and provisions for further follow up

The first phase of ENFAP would run for the year 2005-2006. Also since the future of this program depends on the outcome of the first phase, it is important to be able to measure improvements at the end of first year. It is suggested by the experts to do follow ups at short intervals like a month or two, since long duration follow up routines tend to slow down the mills' responses. Both H&M and the mills agreed that so far, the follow up had been done on a regular basis by H&M and they hope to continue in a similar fashion.

6.1.1.2.3 Process of implementation

Flexibility in the program

The focus of H&M has been on the implementation of options mentioned in the LHF tool. There could be some instances where the mills could be looking at other options producing the same or better results. Any program should be flexible enough to include such options in its implementation plans. Already, one of the mills had expressed its intention to modernise its facilities with big investments and that such a mill may not be too keen in committing itself to short term changes, as mentioned in the LHF tool. Although the questionnaire to the mills included the "future plans" section, such provisions had not been accommodated in the final action plan. Thus, there was a scope to make changes to the tool to make it more flexible to the needs of the participating mills.

In conclusion, the approach from H&M was being appreciated by all the participating mills. Since H&M is essentially targeting "Low Hanging Fruits" at the initial stages, the approach had been simple and practical so far. However, if H&M wants to focus beyond LHF in the future and target a larger cause of sustainable production, then they might have to make considerable changes in their approach.

6.1.2 Un-Stated Objectives of ENFAP

Apart from the stated objectives mentioned in ENFAP, H&M also had an un-stated internal objective: "to learn a few important lessons about the wet processing mills supplying to H&M and to understand the ways to influence them on environmental issues". Following are some of the points that the researcher came across during the course of this study, which could serve as lessons to the retailer to carry the program forward in an effective way.

"Cost-Saving opportunities" alone may not serve as a sufficient driving force for the mills to implement ENFAP:

It can be observed from the results obtained in the first few months of the program that 50% of the mills are performing below expectation. Their interaction with the researcher confirms that they expect something more from a program like ENFAP. General reaction from them suggests that they are looking towards integrating the programs like ENFAP with the core operational areas, so that they get a business advantage from the improvements they make in environmental field.

Suppliers could have very different attitudes and priorities from each other, even though they geographically belong to one country:

The difference between the participating mills is very evident to H&M's representatives at this stage. This difference could either be attributed to the attitudinal differences due to 'regional reasons' or due to disparity in the individual priorities of the mills. In any case, the important lesson to be learnt is that each mill has to be approached individually after studying the prevailing conditions particular to them. A ready made "one approach for all" attitude may not work.

First tier suppliers can play an important role:

H&M has already realised to some extent that garment exporters should be involved in more active capacity. They could not only have positive influence on the entire program, their participation could also make it easier for H&M to do the follow up with the mills.

Suppliers might be predicting "hidden motives" behind ENFAP:

Not all the garment exporters and wet processing mills contacted by the researcher were convinced about H&M's motives behind initiating a program like ENFAP. Some of them felt that H&M might be doing it to 'nominate' wet processing mills in the long run, while the others were concerned that ultimately H&M would try to ask for price reduction after learning about the production costs. It is very important for H&M to convince all the participating suppliers that these concerns are baseless.

Top management's commitment is vital for the success of the program:

Most of 'ENFAP responsible' in the mills belong to middle management. Although they could be very useful in taking the program to the employees' level, they were observed to have limited capability to convince the top management. Also, the program should not suffer, in case if the responsible person decides to leave the company midway. Therefore involvement of the owner and top management is very important to ensure the continuity in the program.

A single tool may not work for all the mills:

Essentially, LHF-tool is a ready made tool expected to cater to the needs of all participating mills. However, since the mills are in different levels of advancement, each of them has different expectations from the tool. Therefore, LHF-tool might have to go through revisions and perhaps be split into two parts (basic and advanced) to be more useful to all the participating mills.

These lessons came across in the discussions that the researcher had with H&M's representatives in India. They realised most of these issues and had already started to work on some of them. In that sense, the 'learning objectives' set by the retailer seemed to be working fine at the stage of writing this report. H&M is hoping to make use of some of the lessons learnt through the initial stages of Indian part of ENFAP to improve not only the program in India but also the ongoing program in China.

6.2 Lessons for ENFAP from other CP initiatives

As explained earlier, H&M's focus for the first phase was on the "Low Hanging Fruits" for environmental performance improvement in textile wet processing mills. The objectives set by the company also reflect the same intentions. Literature and experts in the field of Cleaner Production tend to suggest that achieving improvements by focussing on LHF may not result in sustainable long term improvements, because most of the producers will return to their habits after the Low Hanging Fruits are picked. Hence, the most critical issue in Cleaner Production initiatives is to get commitment to achieve continuous improvements. Some of the firms might have a sense of "environmental and social commitment" built into them but most others need an external assistance to build such a commitment. Thus experts feel that the ultimate success of Cleaner Production initiatives depends on bringing in behavioural changes in the organisation to commit to larger causes of sustainable production. (Ian Vickers, 1999; Stone, 2005)

This section tries to analyse ENFAP based on the factors emphasised in Cleaner Production literatures and expert opinion. Here, ENFAP is evaluated based on the experiences from other classical CP programs. The five learnings from classic CP programs discussed in section 4.2, are used as criteria for evaluation. Each of those criteria is applied to ENFAP at the present situation to understand what H&M can learn from other CP initiatives and how it could help them to further improve the program.

Reasons implied by H&M for having LHF targets, are quite clear- they felt that the concept of Cleaner Production is new to them, as well as most of the participating firms. Also, reaching out second tier suppliers is also a relatively untried approach in the clothing industry. These reasons prompted H&M to start at the basic level to later expand it depending on the results of first phase. Considering these issues, the author would like to make it clear that this section is not a critical evaluation of ENFAP, since the focus of this program is not as wide as the other CP programs being discussed by experts. This is only an attempt to give some insight into the lessons learnt through other CP initiatives. H&M could use them if they would like reach beyond the Low Hanging Fruits.

6.2.1 Reaching out and convincing the firms

As the experts suggested, one of the biggest problems in CP programs is to convince the industries to be part of the program. ENFAP can be said to be in an advantageous position in this respect as H&M's presence had an easier access to all the wet processing mills it was using. This "reaching out" step can be considered as a big leap in CP perspectives.

ENFAP has reached out to the mills, but are they "convinced"?

The term "convincing" takes a different meaning in ENFAP compared to any classic CP program. In case of a classic CP program, a factory is generally convinced about the benefits of CP measures before agreeing to be an active part of the program (there could be some exceptions to this). But in case of ENFAP, the mills were contacted by H&M much before the actual CP program was ready. This suggests that the contents of the program (or LHF tool) were not the driving forces behind the involvement of the mills. In other words, their mere participation does not mean that they are convinced about the benefits of the CP measures.

Hence, making the mills agree to participate is only half the battle won. H&M should put almost same efforts (or perhaps more efforts, since some mills were suspecting H&M's intentions) as other CP programs to convince the participants that CP is actually beneficial for them. It could be worth for H&M to learn how it is done in classic CP programs to include some of their elements into the future revisions of ENFAP. Here are some of the methods used by CP practitioners in order to convince the industry:

Site-Specific visits

It may not be possible for H&M to carry out site-specific visits to all the participating mills. In fact, not all the mills require it, since at least three of them are already convinced about the benefits CP program. However, a site-specific visit could be conducted by a CP expert in at least one of the “less enthusiastic” mills and give them detailed information about how they could be benefited by CP. This would not only motivate that particular mill but its results could motivate many others.

Peer Learning

In a sense ENFAP is lucky to have the mills at different levels of advancement. H&M could use some of the more advanced mills to share their knowledge with the others. Two of the more advanced mills expressed no problem with this move during the interviews with the author. Such peer learning process is extensively used by the CP practitioners to convince other firms.

Creating a Model

Since H&M is thinking of long term plans for ENFAP, they can look at concentrating on one of the factories in any of the ENFAP countries. This could well be developed into a “model” over the years with the joint efforts of H&M and the company. Such a model plant could be effectively used to convince other mills to take up CP measures in their premises.

6.2.2 Top Management Commitment

ENFAP relies heavily on the “cost reduction” factor of the program to sell the CP concept to the mills. It is also assumed that once the concept is introduced to the mill, the person appointed in the mill for the implementation of ENFAP would be able to work internally and earn top management's commitment. This does not seem to have worked in at least half of the participating mills. In this case H&M can learn following lessons from a classic CP program.

The driving force behind CP dissemination

The classic CP program are generally not projected only as “cost-saving option”, they also have elements like environmental improvements and risk factor associated with environmental degradation. Since CP practitioners believe that only cost saving factor would make CP to compete against other money making tools, which is always desirable. Although H&M touched upon these elements during the launch of ENFAP, the major focus has always been on cost saving. The possibilities of including other factors to gain top management's commitment have been further discussed in the recommendation section of this thesis⁹.

⁹ Refer to section 7.2.1

Encouraging Green Champions

In almost all participating mills of ENFAP, the persons responsible for the program were observed to be from the middle management who were chosen due to their technical knowledge or the position in the company. These people are the most important factors to earn top management's commitment for the program. Most of the ENFAP responsible personnel from the participating mills seemed to have neither personal interest in the program nor sufficient influence on the top management. Most of them relied on H&M to exert pressure on their top management, which defeats the purpose of self generation of commitment within the firm. CP researchers therefore, advocate encouraging "green champions" within the company. There is a possibility that every participating company has someone in its fold, who is interested in environmental issues and who also sees an opportunity in developing his own career with the help of programs like ENFAP. They should be recognised, trained in environmental issues and eventually should be developed into "green champions" who would work extra hard to gain top management's commitment. However, it must be conceded that at this stage H&M might find it difficult to recognise such people since they do not have employee level interactions with any of the mills.

6.2.3 Change agents and Opinion Leaders

If we consider how Change Agents have been described in literature, H&M could well be called as a Change Agent in case of ENFAP. It has a definite agenda to improve environmental performance of the wet processing mills it has been using and also has an organisational interest to have a better image among its stakeholders and customers. The only problem in this case is to decide how far H&M can go to bring in attitudinal changes into mills' environmental thinking or rather how much capable is H&M to act as a change agent to bring about such changes. The definite limiting factor in this case is the non-existence of any business contact between H&M and the mills. H&M cannot use their buying authority to display either rewarding or coercive power against the wet processing mills.

This takes us to the discussion about the role of garment exporters in the entire program. As mentioned in Section 5.3, the role for garment exporters had been very limited in case of ENFAP. Since the exporters have direct business relationship with the mills, their views are heard and well respected among the mills. This should be reason enough for H&M to use them as opinion leaders. This may not be very easy since these exporters have their own agenda and priorities in dealing with the mills. Also, H&M prefers not to disturb its own business relationship with the exporters by giving them additional responsibility at this stage. However, the researcher felt during the study that for the overall success of ENFAP, H&M has to rethink the role it wishes its exporters to play in the entire program. This issue has been further discussed in recommendation section¹⁰.

6.2.4 Benchmarking

Significance of benchmarking has been stressed by experts to attract and encourage industries towards CP programs. LHF- tool does not have any provisions to help the mills to benchmark their performance against the performance of their peers. At the first glance, this

¹⁰ Refer to section 7.2.1

might look as one of the deficiency in ENFAP. But in reality, it could be very difficult to set benchmarking for an industry like textile wet processing which has so many variables involved with it (Dobes, 2005). Also, since LHF-tool was not “customised” to the participating mills, the experts preparing the tool did not seem to have sufficient knowledge about the targeted mills to give suggestions for benchmarking.

But looking at the kind of mills being chosen for ENFAP, there is a great opportunity for the program itself to create a framework for future benchmarking. For instances, two of the participating mills are much advanced in terms of environmental performance compared to other four mills. This gives a chance to learn “good practices” and “bad practices” from all the participating mills to understand, “why they are the way they are?” Such thinking might eventually help H&M or the mills themselves to settle on to certain criteria to benchmark wet processing operations. The possibility of benchmarking the mills has also been discussed in recommendation section of this thesis¹¹.

6.2.5 Continuity and On-going improvement

It is observed during this study that not enough emphasis had been placed on on-going improvement and continuity in ENFAP. LHF-tool for instance, asked all the participating mills to set up an “efficiency improvement team” and also suggested the required qualities in the members of the team. But there was no mention of the measures to keep the team unaffected by the changes in organisations. The program had already suffered in one of the participating mills due to this, as “ENFAP responsible” in the mill left the firm midway and no other person had adequate knowledge to take the initiative forward. Eventually, that mill had to be dropped from the program.

The researcher felt that the mills though ENFAP was a project of implementing certain options listed in LHF tool. The real reason behind H&M’s initiative of promoting ENFAP as a “Philosophy of Cleaner Production” was not evident to the mills. This suggests that for the mills, LHF-tool is a centre of the entire program and there is a fear that the day H&M decides to stop following up the program, mills could stop thinking about ENFAP and its benefits. Unfortunately, there is not much mention about “how to achieve continuity” in CP literatures and the experts do not have any general solution for this problem. Most of the Cleaner Production guidelines and manuals convey the need for continuity and on-going improvements, but very few tell the firms how to achieve them. The only way of achieving continuity could be to help the mills to realise the benefits either in their units or in some other units who are using CP measures in their facilities.

6.3 Summary of Analysis

Here are the key factors identified during the analysis of the case study.

Objective Based Model

- Three of the participating mills showed favourable response to ENFAP in the first five months where as, the performance of the other three was disappointing. The difference in the performance emphasised the need for different approaches for each participating mill.

¹¹ Refer to section 7.2.2

- In general the LHF-tool was considered as good by all the participating mills. However, there is still some scope for improvements in the tool namely,
 - Including more “housekeeping measures” in the tool
 - Fine tuning some of the technical options as per the conditions prevailing in Indian wet processing mills
 - To check the possibilities to divide the tool in two levels- Basic and advanced
- H&M’s approach was widely appreciated by all the mills. Some improvements that could be done are,
 - More involvement for the garment exporters in ENFAP.
 - To check the possibilities of giving more technical support to the mills either directly or by collaborating with a local consultant.
- Here are some of the valuable lessons for H&M from the first five months of ENFAP as part of their learning objective:
 - “Cost-Saving opportunities” alone may not serve as a sufficient driving force
 - Suppliers could have very different attitude and priorities from each other, even though they geographically belong to one country
 - Suppliers might be predicting “hidden motives” behind ENFAP
 - Top management’s commitment is vital for the success of the program
 - A single tool may not work for all the mills

Lessons for ENFAP from other CP initiatives are:

- Although six mills have agreed to be a part of ENFAP, not all of them are convinced about the benefits of CP. H&M could utilise some of the frequently used CP methods like, site specific visits, peer learning and developing a model mill to convince the participating mills.
- H&M can try to gain more commitment from the top management of the mills by-bringing in issues like threat perception and better working environment, along with the cost saving opportunities. Also, green champions could be developed in each of the participating mills.
- H&M itself is acting as a change agent to bring about CP innovation into its supply chain. They also have an opportunity to use garment exporters as the opinion leaders.
- Although bench marking is difficult in the processes like textile wet processing, at the end of the first phase, H&M can try to evaluate all the participating mills and try to develop a ranking system.
- There is no guarantee at this stage that all the participating mills would continue with CP even if H&M decides to pull out of the program. It depends on how much progress these mills would make till that stage.

7 Conclusions and Recommendations

In order to achieve objectives of the study, this thesis aimed to answer following four research questions.

1. What are the main objectives of the CP initiative from the fashion retailer and how is it being implemented on the ground?
2. What is the reaction of first and second tier suppliers to the fashion retailer's initiative?
3. What are the lessons that this program could learn from the experiences of other classic CP initiatives?
4. The case study is an effort to reach out to the suppliers beyond direct business connections. Under such circumstances, how environmental initiative should be packaged and communicated for an effective program implementation and how can it benefit different actors in the supply chain?

In this chapter, the conclusions will be drawn from these research questions to understand the greater implication of the case studied. The second part of this chapter gives recommendations to H&M and other such companies which wish to reach beyond their business connections to make environmental improvements within the supply chain.

7.1 Re-visiting the Research Questions

Objectives of ENFAP and the process of its practical implementation

ENFAP, in a way represents the hopes, opportunities, difficulties and compulsions in many of the supply chains today. Most of the companies are coming under increased pressure from their customers, stakeholders, environmental groups and the society in general, to improve environmental performance of their production base. Although, the pressure to improve second level of supply chain is not overwhelming at least in the fashion industry, companies such as H&M are trying to initiate certain programs like ENFAP. However, such efforts are often encountered by the difficulties associated with business realities. For instance, in the case studied, in spite of being a major force in fashion retailing industry, H&M's power to influence its own supply base depended heavily on the kind of business relationship it shares with its vendors. Since it does not have a direct business connection with the wet processing units, the power it could display on them was quite limited.

This limited opportunity could also be seen in the objectives set by H&M for ENFAP. Although, the intention was to make environmental improvements in the wet processing units, they could not quantify the targets in terms of number of factories to be included or the pollution or resource reduction targets. Thus, the targets mentioned could look "too general" and toothless. The results shown in the first six months of the program also depicts that on the paper, the overall impact of ENFAP on at least half of the participating mill has been disappointing.

However, as H&M admits by itself that the other important objective is to learn from the experiences of taking ENFAP to its second tier suppliers. In a true sense, the greatest gain for the company is the lessons it is learning through this program. The understanding of the environmental problems within its supply chain and making an effort to improve the situation could very well put H&M ahead of its competitors, in terms of a sustainable

business development. These initial lessons could go a long way in helping H&M to develop a successful policy to work with their second tier suppliers.

Reactions of suppliers towards ENFAP

Interaction with all the participating mills and garment exporters was a fascinating experience for the researcher. The sheer difference in the attitudes and the level of advancement between the mills formed an interesting basis for this study. It was evident during the literature review and the interaction with experts, that the suppliers' perspective towards SCEM has often been neglected in the academic and industrial researches. The reactions expressed by the suppliers were collectively shaped by the business priorities, past experiences, culture, attitude and the future goals of the participating firms. It was interesting to note that none of the suppliers visited were against the idea of H&M bringing-in an issue like environment. In fact, most of them expressed their happiness that a buyer from far away Sweden cares for the environmental conditions in India.

However, the reactions were varied on what they expected out of an initiative like this. The motivating factor was different for different mills depending on what kind of goals they had for their future. The ones having a long term goal of developing a successful business to cater to an international market, showed better interest towards ENFAP as compared to others. During the visits to the mills, the difference between "enthusiastic" and "not so enthusiastic" mills was quite apparent to the researcher. The ones who showed enthusiasm and were proactively involved with ENFAP had much cleaner and efficient facilities even in terms of quality standards and working conditions. This further emphasises the point that the advocates of sustainable production have always been highlighting – "Better performance in environmental issues also reflects in improvements in other aspects of the production".

ENFAP in the light of other CP experiences

One of the biggest differences between ENFAP and other traditional CP programs is the involvement of a business entity like H&M, in the form of a facilitator. This opens many doors to take CP into the core of supply chain. Reaching out to the companies and convincing them of the benefits of CP have always been a major problem for the CP practitioners over the years. The fact that H&M could actually convince the mills to be part of this initiative, without giving them sufficient details about the contents, makes us realise the power that the business entities possess to influence its supply chain. In spite of lower initial success, ENFAP should encourage the companies and CP advocates worldwide to look for more of such efforts of using the corporate power for environmental gain.

In terms of the results of CP measures, ENFAP still have to travel a long way before being able to stand next to the other successful CP initiatives. Its success depends on the changes H&M makes in its approach to counter the "resistance-to-change" attitude of many of the mills. But the most important contribution of ENFAP towards the CP community is the way it is showing the opportunities for other big companies, to reach beyond their business connections for the improvement in environmental conditions. Irrespective of the results achieved by such initiatives in the factories, they will always be considered as the right steps towards a sustainable world. At least, for that reason companies like H&M should be commended for their efforts.

The need to integrate environmental programs with the core business strategy for better dissemination

The need to make the environmental performance was constantly raised by many of the participating suppliers. They showed the disappointment that their efforts in the programs like ENFAP is often overlooked by the buyers while making purchasing decisions. This was also seen as the biggest barrier for dissemination of ENFAP. On the other hand, H&M also faced certain problems to promote ENFAP as an “environmental program”; since they feared that such an approach could keep many of the suppliers away from the program. This further emphasises the necessity of integrating the environmental issues into the core business areas of the companies. It certainly will not be easy to achieve this, as there would be some resistance at every level of supply chain. But the efforts should begin somewhere to check the feasibilities of such integration. No such effort seems to have been done, at least in case of fashion industry.

The next section of this chapter puts forward some recommendations that could help the companies to integrate environment into supply chain in a step-by-step manner.

7.2 Suggestions and Recommendations

This section begins by giving some short term recommendations to H&M about how they could make adjustments to ENFAP for improved outcome. The next part would be looking at the much bigger plan of integrating environmental programs with the other business priorities; this part essentially also answers the fourth and the final research question of this thesis.

7.2.1 Short term Suggestions for Adjustments in ENFAP

It should be noted that many of these suggestions were already discussed with H&M during the process of this research. Some of them had already been realised by the representatives of H&M representatives in the process of the program, and they were working on most of them at the time of writing this thesis.

Suggestions for the on-going process

- To give more practical examples of implementation measures mentioned in LHF tool.
- Making provisions in ENFAP to include future plans of the mills in the environmental field, even if they are not part of ENFAP
- To work closely with the wet processing mills to understand if they need any more technical information. H&M can utilise a local consultant for this purpose.
- Facilitate meetings/seminars between all the participating mills to share their experiences after the first phase.
- Start to work on dividing LHF-tool based on the compatibility to different sets of mills. One tool could be prepared for “basic level” mills and the other one for more “advanced level” mills.
- To include more options for house-keeping improvements.

- To include a plan for continuity- in case ENFAP responsible person quits the company, there should be some back up arrangement.
- To share experiences from other countries, with the participating mills.

Suggestions for the future approach towards ENFAP

- To more actively include garment exporters in ENFAP implementation

As it has been stressed many times in this thesis, garment exporters could play more important role in the implementation of ENFAP. Either they can be used as opinion leaders to spread the program among other mills and help in replication or can be used to motivate the mills further. On practical terms, their involvement could help H&M auditors to monitor the progress made by the mills. The practical process of including the exporters depends a lot on H&M's relationship with the particular exporter. It is often seen that the top management of the exporters are not always enthusiastic about getting involved in such program since they do not see any direct benefits for themselves. Therefore, the author suggests involving the merchandisers from the exporters to be part of ENFAP program. Since they often deal with the mills on a day to day basis, they could be quite effective in monitoring as well as repeatedly reminding the mills about the benefits of the program.

- To reconsider the strategy of excessive focus on “cost-saving opportunities”

As explained in Section 5.2, not all the mills were very convinced about the cost saving opportunities of ENFAP. Such realisation could only be seen after the program is some years old. Also, CP experts worldwide suggest that the sole focus on “cost-saving” may not always work, because in that case CP has to compete with other “money making” options that could be more profitable. So the author suggests, to bring-in more focus on the issues like “risk perceptions” associated with bad environmental performances. The risk could be either for the future business, environment of the locality, workers' health and so on. H&M could also use the risk factor to explain the often raised question “Why H&M is taking this initiative?” They can explain that H&M might be at the risk of losing their customers if they do not act, and also inform that there are many other retailers who think the same. So environment could well be important criteria for future product sourcing, and hence the risk could be ultimately transferred to the suppliers. Explaining how other factories or even countries are trying to deal with this risk could also be a motivating factor. For instance, the growth of fabric sourcing from China seemed to be a big matter of concern for most of the suppliers visited by the author. They all wanted to know what they should do to be effective in this competitive market.

Apart from CP practitioners, services of other individuals from the institutions like local health care centres, NGO's, Apparel Export Promotion Centre (AEPC) could be used to make the mills to realise the risks of their present operations. This approach could be particularly useful in some of the north Indian mills, where ENFAP has not been very successful so far. The author's own experience with the Indian mills suggests that most of them are “risk averse”, and hence they might show favourable response with this approach. However, this does not mean cost saving opportunities should be neglected, but a multi directional approach could be more useful.

7.2.2 Long Term Recommendations to Reach Out Second Tier Suppliers

A five step model has been suggested here, to formulate long term plan for a company like H&M to reach out to second tier suppliers. This model has been constructed after analysing the information obtained during this study and interaction with various players in the clothing supply chain.

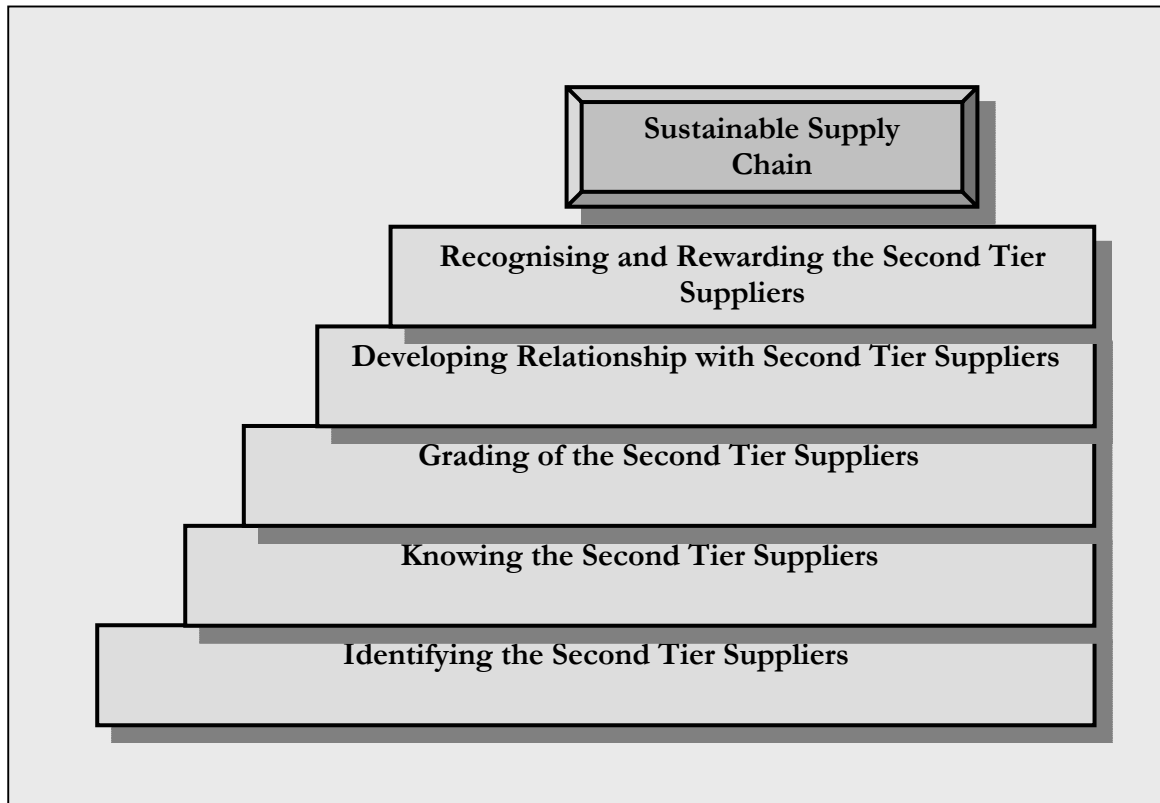


Figure 6: Suggestion to reach beyond the direct business connections

Step 1: Identifying the Second Tier Suppliers

It is observed that companies having direct business contracts with only first tier suppliers often do not care about next level of suppliers. The general perception is that, the first tier supplier should take care of the next levels of supply chain. But in reality, the quality of work by the suppliers at all the levels and working condition in them, always affects the end product and thereby ultimately effecting the business proposition of the buying firms. It may not be practical for every company to have a direct business contacts with its second tier suppliers, but they could surely make efforts to at least gain knowledge about the member of their supply chain.

Therefore, the first proposal for a company is to identify all its second tier suppliers. H&M for instance, had some knowledge about different textile wet processing mills being used for its products in India. However, this knowledge did not seem to be comprehensive enough to describe how much of the product volume is handled by which mill.

In case of ENFAP, H&M had to rely on its first tier suppliers (garment exporters) for the information about wet processing mills. Program coordinator sent out a questionnaire to the

garment exporters to gather information regarding the mills. This approach may be sufficient to get the overall picture of the situation but the information may not always be accurate. For instance, some of the mills suggested that this kind of questionnaires do not always give the correct information. According to them, when exporters are asked to give any information as part of a project, they tend to be extra careful and reveal names of only the best mills in the region. Authenticity of this statement is difficult to verify and it may not be true for all the exporters. But it makes definite sense to get the information about the mills through a regular informational channel rather than an exclusive program.

Garment exporters should be asked to notify the mills as part of order accepting process. The information can include the quantity of fabric distributed between different mills, in case exporter decides to use more than one mill for the same order. It should be made clear to the exporters that H&M can contact the mentioned mill at any point of time if there are any quality issues in the products (it is better not to mention social or environmental reasons, since CSR policies do not cover second tier suppliers at this stage). H&M should gather information about all the mills and the volumes of fabric they are processing through different garment exporters. This way, company can identify all the wet processing mills in couple of seasons.

Step 2: Knowing the Second Tier Suppliers

After identifying all the mills, the next step should be to try and get to know more about them. This can be done by directly contacting these mills and seeking information about their operations. If time and resources permit, some of the mills could be visited to get the first hand impression. Getting information from the mills should not be a difficult task as most of the mills contacted during this study were more than happy to entertain high profile fashion retailers like H&M. Since this will not be for any “social” or “environmental” reasons, the first tier suppliers should not have a problem with the fashion retailers getting to know more about the mills and their production capabilities.

However, the information collection should be done collectively by the CSR and quality departments. This integrated approach helps to get holistic picture about the mills, rather than limited focus on only environmental or production related views. The questions asked to mills can cover areas like mill’s infrastructure, quality assurance systems, speciality of work, social policies and environmental performance indicators.

Step 3: Grading of the Second Tier Suppliers

Based on the information collected in the second step, mills can be adequately categorised. Criteria like production capability, quality assurance standards, social and environmental performance can be used to grade the mills. It is generally believed that grading of the firms based on such a varied criteria is not an easy task. But experts in textile wet processing industry feel that all these criteria are very closely connected to each other, good performance in one field often assures better performance in the others. Jayachandran confirms that most of the companies in India with good environmental performance also have a good reputation in quality issues. Mills could be put into three categories: Good, Acceptable and To be avoided.

The advantage that H&M has at this stage is to use LHF-tool to grade the mills. So far the tool had been used with a focus on implementation, but it could easily be used as a “recording tool”. For instance, all the options already implemented by every mill could be listed and that could be used to evaluate them on environmental performance.

Some basic requirements should be identified as “compulsory”. Here are some examples of such obligatory requirements-

For quality reasons: Availability of spectrophotometer and light boxes for shade matching, inspection procedure for fabrics, independent quality assurance department etc

For production reasons: Availability of soft flows (jig) and not winches (beck), production capacity etc

For environmental reasons: Treatment facility for effluent water, availability of safety data sheets for all the chemicals used in the unit etc

Exporters should be asked not to use the mills that are not equipped even with the basic requirements.

This grading system could also help in the process of “benchmarking” of the mills discussed in Section 4.2. This kind of benchmarking not only helps the suppliers to realise their position as compared to their peers. It could also act as a motivating factor for further improvement to reach to the next level.

Step 4: Developing Relationship with the Second Tier Suppliers

Some mills can be selected to work closely with them. The selection of mills can be based on (a) Volume of business for H&M, (b) Potential for future business growth, (c) Cooperation and commitment from management, (d) Scope for improvements.

A comprehensive plan should be prepared to deal with the chosen mills. It is observed that mills did not always show enough commitment to ENFAP and one of the reasons identified was ‘lack of integration of the program with the core businesses’. Hence the companies like H&M should try to ensure that their plan towards their mills is holistic and should include both environmental and quality parameters. Meetings, workshops, seminars could be used as the means to develop better coordination with the chosen mills. The measures like ENFAP could be part of this process and hopefully then it would get much better response as it would not be projected as an isolated program.

Thus, this step should be seen as a learning and confidence building exercise both for the mills and for the companies like H&M.

Step 5: Recognising and Rewarding the Second Tier Suppliers

Most of the ENFAP participating mills expressed their frustration over their efforts (particularly in the areas like environment) not being recognised by the buyers. They also felt that, they would like companies like H&M to be open in expressing their appreciation towards the better performing suppliers. This recognition could be in the form of awarding “appreciation certificates” or promoting them among the garment exporters. Some of the suppliers also suggested that H&M could even nominate better performing mills for its orders.

Nominating might not be an option for a company like H&M. Because by nominating, H&M would become responsible for all the quality issues in fabric processing. Nominating is also seen by many companies as an additional work for themselves.

But there are other ways of recognising the second tier suppliers. Some of the European and American buyers have already used an approach of conferring the titles like “preferred” or “recognised suppliers” to their better performing vendors; such vendors expressed their pride for getting this appreciation. According to them, the recognition from a multinational company not only acts as a moral booster, but they could also use it as a ‘marketing tool’ to promote themselves among other customers. Hence, the importance of such recognition can not be underestimated.

Involving Other Companies and Stakeholders

One of the important reasons for lesser commitment from the mills is the lack of demand for environmental improvements from other buyers. It could be difficult for H&M alone to convince the suppliers about the benefits of CP. It could be much more effective if some other fashion retailers also express their desire to have more environmentally conscious supply chain. Such a collective approach could also help mills to see more benefits for themselves by implementing the programs like ENFAP. An example of such a collective approach could be seen in case of the efforts to improve the social and working conditions in the garment manufacturers. Most of the buyers demand similar conditions in the factories with regards to social compliance. This has helped the suppliers to understand the requirements better and to implement the measure more effectively.

There is also a possibility for a company like H&M to involve other stakeholders such as local authorities and the NGOs in the efforts like ENFAP. Such involvement not only gives a holistic outlook to the entire program, it would also give some assistance to the company to carry forward its mission. Participation of local stakeholders would give a “local flavour” to ENFAP and that in turn could result in the program becoming more appealing to the mills.

7.2.2.1 Feasibility of the Suggested Long Term Recommendations

It was realised during this thesis that many of the companies, especially in the fashion industry are not ready to have a direct business connection with the second tier suppliers. Also, not many companies at this stage are ready to pay a premium price to its suppliers for the improvements in the environmental performance. This could essentially mean that providing information about environmental improvements and motivating the suppliers about mutual benefits of the measure like CP is the only effective way to improve the situation.

The above mentioned five steps have been formulated keeping these constraints in mind. It might be difficult to sell environment as a sole message in the supply chain, hence the key is to integrate environmental issues with the other elements of the core business area. It was also felt during the course of this study that it is more difficult for a company like H&M to have a lone battle against the environmental degradation in wet processing mills. As part of this thesis, the author contacted five other international fashion and textile retailers and none of them had any comprehensive plan to deal with the second tier suppliers¹². The absence of such interest on part of the other buyers is making the mills to comprehend that there is no market demand for the environmental improvement. Therefore, to be effective on the grass root level, the fashion retailers can get together to form a forum to collectively deal with the situation. The above mentioned five steps could serve as a guideline for such a forum. Such initiatives have already been in function in some parts of the world to discuss and analyse social and environmental issues in the supply chain. For instance, representatives of certain

¹² Opinions of two of the companies’ representatives have been presented in section 3.1.1.

brands in India meet frequently to discuss CoC issues in the social and environmental fields (Malhotra, 2005); there is also a global “water-group” which is actively involved to discuss ways to improve the water pollution problems in textile factories. Such collective approaches can make it easier not only to disseminate environmental knowledge into the supply chain but also make it cost effective compared to individual efforts.

Of course, the integration process like the one suggested in the previous section adds some additional costs to the company’s operations. It could also mean additional work for many of the employees working in the sourcing department. But a successful integration implies that the “environmental thinking” becomes a part of company’s working culture and hopefully, would negate the feeling of additional work in the long run. There was a time when buying and quality assurance used to be two different departments acting independently of each other (Blastock, 2005) but these days the two fields have been more or less integrated in many of the companies. So this could also be done with the environmental issues. For example, IKEA, the Swedish consumer goods giant, has attempted an integration approach in its CSR operations. According to their environment expert in South Asian region, CSR department of the company is only responsible for the auditing and guiding the suppliers on social and environmental issues. Implementation of the suggested improvements is a responsibility of IKEA’s production and merchandising team. A merchandiser always accompanies environmental auditor during all the inspections and he or she later ensures that the particular supplier implements all the measures suggested by IKEA (Vohra, 2005). This is one way of sharing social and environmental responsibilities with the business developers. Even at H&M, social and environmental issues used to be handled separately till recently; but now CoC audits also include environmental issues and company is in the process of revising its CoC policies towards more integration with the production department.

In brief, feasibility of the suggested options could be summarised as,

- H&M is not required to climb all the steps mentioned in the recommendations. Every step mentioned has its own advantages. For instance, even if company decides to go through only first three steps, it would have still gained considerable foothold in its supply chain. So although climbing all the five steps is desirable, company can decide how far it wants to travel on the roads of sustainable supply chain depending on its priorities.
- As H&M realises very well, measures like CP could save considerable production costs. Hence, by integrating CP into its other sourcing criteria, H&M could actually get the benefits of lowered production cost. The company has been advocating to the mills that investments in CP measures have quick payback advantages. This also holds true for H&M, they could also realise whatever investments they put into such integration process would return to them with profits in terms of reduced costs, better quality and enhanced brand image.
- Working together with other like minded fashion retailers would be very beneficial for the entire clothing industry. It could also make such efforts cost effective for all the participating companies.

In conclusion, it is about time that the companies realise that they are in more than one way responsible for the environmental degradation at the production facilities of their suppliers. Hence they can not escape from their responsibilities towards the environment and the society. Efforts such as ENFAP should serve as an example for rest of the business community. The companies could think of hundred reasons why they can not go beyond direct business connections, but there is one unmistakable reason why they should-

The future generation deserves better environment to live...

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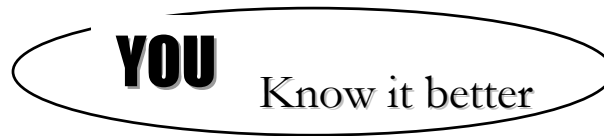
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Abbreviations

BOD	Biological Oxygen Demand
BSR	Business for Social Responsibility
CoC	Code of Conduct
COD	Chemical Oxygen Demand
CP	Cleaner Production
CPT	Cleaner Production Techniques
CSR	Corporate Social Responsibility
ENFAP	Environmental Fabric Processing Program
ESCD	Environmental Supply Chain Dynamics
ETP	Effluent Treatment Plant
H&M	Hennes & Mauritz
IRR	Internal Rate of Return
LHF	Low Hanging Fruit
NCPC	National Cleaner Production Centre
NGO	Non Governmental Organisation
NPV	Net Product Value
SCEM	Supply Chain Environmental Management
SCM	Supply Chain Management
SEMS	Supplier Environmental Motivation Strategy
TDS	Total Dissolved Salt
UNEP	United Nation's Environment Program
USEPA	United State's Environmental Protection Agency

Appendix 1: Questionnaire to Suppliers for this research



Questionnaire

Name of the company:

1) Were you aware of Cleaner Production Techniques before being a part of H&M's LHF-tool? (Please tick the appropriate box)	

2) How do you rate the information given to you as part of H&M's LHF- tools? (Please tick the appropriate box)	
Sufficient information	
Need more information	

3) What are the three main reasons for your company to be a part H&M's LHF-tool project?	
a)	
b)	
c)	

4) What according to you are the most important benefits of Cleaner Production Techniques projected through H&M's LHF tool? Please rate below benefits from 1 to 5 (1- Most significant benefit; 5- least significant benefit)	
Benefit to environment	
Reduction in production cost	
Edge over the competitors (Better company image)	
Help to comply with Pollution Control Board regulations	
Improvement in fabric quality	

5) What do you like the most about H&M's LHF-tool?	

6) Are there any practical barriers (problems) to implement programs such as LHF- tool? Please share them with us.

7) Approximately how many employees are aware of (or working with) LHF-program in your company?

8) Please give your suggestions to further improve LHF-tool, in order to facilitate easier implementation:

Appendix 2: LHF -Questionnaire sent to the mills by H&M

Questionnaire – Identifying Low Hanging Fruits (date:/...../200....)

at _____ (mill’s name) _____ (H&M supplier)

This questionnaire is a part of the Low Hanging Fruits Tool, which is developed to help identify performance improvement options most of which require no or low investment costs. The goal is to develop an action plan for the coming year that can help your company improve your efficiency, save money and improve your environmental performance. You are kindly requested to communicate the final Action Plan to H&M for follow-up.

This questionnaire is to be filled by a production manager and an H&M representative together.

A. Getting started

Please answer the questions below to the best of your knowledge. If the answer is “no”, then refer to the *LHF Manual* on how the suggested option can be implemented. If the answer is “yes”, then compare the existing manner with the option suggested in the *Manual*.

No	a. You can manage what you measure...	Yes	No
1	Do you have a team in place that is responsible for identifying and implementing performance improvement options? Describe :		
2	Do you measure your energy consumption regularly? How ?		
3	Do you measure your water consumption regularly? How ?		
4	Do you measure your wastewater generation regularly? How ?		
5	Do you measure your chemicals consumption regularly? How ?		

b. Previous achievements	Yes	No
Have you already implemented any performance improvement options in the past years?		
<i>What? When?</i>		
<i>What? When?</i>		
<i>What? When?</i>		
c. Future plans	Yes	No
Have you already identified any performance improvement options or production plans in general that you would like to implement this year (or in the near future)?		
<i>What? When?</i>		
<i>What? When?</i>		
<i>What? When?</i>		
<i>What? When?</i>		

Any future plans should be also be run through a feasibility check.

B. Identifying performance improvement options

The questions below will help the mill identify performance improvement options.

- If the option is not relevant for your facility, please check the “n.a.” (not applicable) box.
- If the option has already been implemented by the mill, check n.a. and write “done”.
- If the answer is “yes”, then this option will be further evaluated regarding its priority. First complete the whole questionnaire by filling in the “Benefits” column, then for the ones answered “yes”, carry out the “Priority” check.

Question: Do you think your company would have any benefits regarding financial, health and safety, and environmental performance, if you would implement the below listed options?

No	Performance improvement options	Benefits?				Priority		
		yes	no	n.a.		low	medium	high
Electricity								
6	Providing optimum lighting conditions in the facility							
Steam								
7	Cleaning the boiler pipes at the exhaust-end							
8	Insulating steam installations							
9	Installing steam traps in the main header of steam lines							
10	Maintaining condensation pots of the steam circuit on a regular basis							
11	Setting boiler pressure at the lowest acceptable pressure level							
12	Reducing heat loss through stack gas							
13	Installing condensate recycling system							
14	Installing automatic closing valve in the chimney							
15	Blowing down the boiler water in an optimal way							
Pumps and motors								
16	Installing soft starters and variable speed/frequency drives for motors							

Textile wet processing								
17	Recovering and reusing cooling water as process water							
18	Combining or eliminating process steps in textile manufacturing							
19	Combining process steps in synthetic textile processing industries							
20	Implementing enzymatic removal of residual hydrogen peroxide after bleaching							
21	Implementing enzymatic scouring							
22	Applying single stage desizing, scouring and bleaching of the processing of the cellulose							
23	Recovering caustic soda from mercerisation process							
24	Counterflow washing of textiles							
25	Minimising the liquor ratio in textile dyeing							
26	Eliminating dyestuff losses due to spillage and mixing							
27	Installing overhead moving rail with stirrer in colour kitchen							
28	Installing water-saving systems for the cleaning of screens, squeegees and barrels							
29	Minimising dye paste use in rotary screen printers							
30	Applying exhaust dyeing to cellulosic fibres with low salt reactive dyestuffs							
31	Reusing dye liquor							
32	Reusing spent dye bath from polyester dyeing							
33	Implementing Cold Pad Batch (CPB) Dyeing							
34	Substituting dyestuff for effective dyeing							
35	Substituting pentachlorophenol by di-chlorophenol							
36	Optimising drying process of fabrics							

37	Replacing electric resistance heaters by infra red heaters							
38	Applying enzymatic rinsing after soaping in reactive dyeing							
	Management							
39	Optimizing the packaging used for transportation							
40	Minimising Failure Rates							
41	Providing written instructions for safe and efficient chemical use							

Potential Option List

Please write in the table below the potential options that you have selected as high priority based on the questionnaire above. After this, if necessary, carry out a feasibility check by using the *Feasibility Checklist* provided in the LHF tool. If there is no need for a feasibility check, you can skip this table and fill in the selected options in the *Action Plan* in the next page.

No	Title of the performance improvement option chosen	Feasibility check needed

After each feasibility check come back to this table and make a note if the option is still to be kept on or deleted from the Potential Option List.

Appendix 3: LHF – Action Plan to be submitted to H&M by the mills

LHF Action Plan for _____ (mill’s name and city)

H&M supplier : _____ (company name)

Name of the H&M representative: _____

Instructions

Please type in the table below the options that your facility will start implementing soon after filling in this form. Please indicate the expected start and end dates of implementation, as well as the name of the person responsible for this task. Where applicable, please also indicate how you will implement the options. This “how” can be described in a few lines on page 2 and 3 of this document.

Once completed, please fax all pages of this form to your customer (direct supplier of H&M) as well as the H&M representative who assisted you with filling in the *LHF Questionnaire*.

The *Action Plan* already contains options that should be carried out together with the selected options. These pre-defined options will help the implementation of the selected options. If you have already implemented them in your company, you may need to revise them based on the instructions provided in the *Manual for Performance Improvement Options*.

Action Plan

No	Title of the option chosen	Start Date	End Date	Who?
	Management options			
1	Set-up (or re-think) the efficiency improvement competence team			
2	Measure your company’s (or selected processes) energy consumption regularly			
3	Measure your company’s (or selected processes) water consumption regularly			
4	Measure your company’s (or selected processes) wastewater generation regularly			
5	Measure your company’s chemicals consumption regularly			
	Technical options			

Action Plan / HOW ?

No	Title of the option chosen
	Management options
1	Set-up (or re-think) the efficiency improvement competence team : HOW ?
2	Measure your company's (or selected processes) energy consumption regularly : HOW ?
3	Measure your company's (or selected processes) water consumption regularly : HOW ?
4	Measure your company's (or selected processes) wastewater generation regularly : HOW ?
5	Measure your company's chemicals consumption regularly : HOW ?
	Technical options HOW ?