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Recycling of textile waste in small clusters and its contribution to the Socio-Economic Upliftment of the Community

“As members of the present generation, we are both trustees of the environment with obligations to care for it for future generations, and beneficiaries entitled to use it for our own economic and social well-being” E Brown Weiss

Introduction

The economic growth in India in the last decade has led to significant increase in the numbers that make up the middle class. The increase in disposable income coupled with consumerism has led to increased consumption posing a significant challenge in the form of waste management and its consequential threat to the environment. It is the obligation of the present generation to ensure that carbon emissions are reduced and future generations suffer less from climate change. It is in this context that sustainable development in all areas of our life through the 4Rs i.e. Reduce, Reuse, Recycle and Recover gain increased significance.

This study presents the sustainability models practiced across the clusters of India, where used clothing is collected and products are made to order. It further analyses the work environment of a small cluster and presents recommendations for improving the economic well-being of the community.

Sustainable Development

Sustainable development has been articulated in an easy to comprehend form by Donella Meadows as “Good lives for all people in harmony with nature” (Donella, 1998)

Humanity stands at a defining moment in history. We are confronted with perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being. Given this context, integration of environment and development concerns and greater attention to them will lead to the fulfillment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this alone; but together we can - in a global partnership for sustainable development. (Agenda 21 of United Nations)

The concept of sustainable development has suggested a synthesis between economic development and environmental preservation. One of the earliest approximations of the sustainable development concept was proposed in 1915 by Canada's Commission on Conservation, "each generation is entitled to interest on the natural capital, but the principal should be handed down unimpaired." Our understanding of the concept has

matured since then, and we now recognize that social responsibility must be accounted for alongside economic progress and environmental care (Sonntag & Christianson & Strong, 1999)

One of the key sustainability issues/challenges in the clothing industry is fashion consumption – the increasing number of fashion items that we buy and then dispose of. The high street dynamics and fast fashion turnarounds mean that clothing has become more disposable. The textile & fashion being so inter-twined, it is almost impossible to see a scenario where 'Reduce' will ever work out. In the complete sustainability equation, thus, the need of impacting the other three variables of Reuse, Recycle and Recover becomes all the more important.

Recycling for energy saving

Recycling conserves energy that would otherwise be expended extracting virgin raw materials from the natural environment and transforming them to produce goods that can also be manufactured from recycled waste materials (Jeffery, 1996)

In a UK based study, the energy requirements in recycle/reuse of post consumer goods were compared to the energy required in making new products from virgin materials. The results have been astonishing. The reuse of 1 ton of polyester garments only uses 1.8 % of the energy required for manufacture of the goods from virgin materials and the reuse of 1 ton of cotton clothing only uses 2.6 % of the energy required to manufacture those from virgin materials. (Woolridge, et al, 2006)

Recycling as a model of sustainability

Quality recycling and cost of quality recycling is dependant on the waste dumping, collection and segregation processes and the challenge lies in ensuring that the whole process of collecting and recycling should be sustainable and commercially viable.

Freitag of Switzerland is an apt example of recycling being used in high fashion in a commercially viable business model. Freitag, a multimillion dollar enterprise today, started with a humble beginning in a student apartment where two brothers started recycling used tarpaulins and other used materials like bicycle inner tubes and car seat belts to create bags.



Source:www.freitag.ch

The Freitag store (Image 1)

Another High Fashion name using recycled material is Globe Hope Ltd. It uses existing materials to create unique clothing. The clothing is designed and produced from, for example, old hospital textiles, army and industrial uniforms, excess materials, or post consumer goods. Globe Hope redesigns, cuts, sews, dyes or prints materials that would

otherwise be destined for the dump, thus giving them a new lease of life. The Globe Hope line, which is produced in Finland and Estonia, includes clothing, bags, belts and other design products.

Such examples of commercially viable recycling project in Fashion are few and far between.

Recycling of Textile and Clothing

Textile or apparel waste is generally classified as either pre consumer or post consumer. Pre-consumer textile waste consists of by-product materials from yarn, textile and apparel manufacturing industries and may also be termed as post-industrial waste. Post-consumer textile waste mainly originates from household sources and consists of garments or textiles that the owner no longer needs and discards. They are sometimes given to charities but more typically are disposed off into the trash and end up in municipal landfills. Pre-consumer and post-consumer textile or apparel wastes together provide a vast potential for recovery and quality recycling.

Maryland, US based SMART (Secondary Materials and Recycled Textiles) is the trade association representing one of the oldest and most established recycling industries. More than 1,000 businesses and organizations employing many tens of thousands of workers divert some 2,000,000 tons of textile waste from the solid waste stream. Millions of individuals benefit from the products, operations, and programs created by the recycling of this textile waste.

The efforts of SMART have led to approximately 75% of the pre-consumer textile waste that is generated by these businesses getting diverted from the landfills and recycled. However, the figures for the post-consumer textile waste are not so encouraging. Only about 15-20% of the post-consumer textile waste is reused, diverted to charities or exported to third world countries.

Post consumer waste is more difficult to collect and separate, but it is very important as it keeps tons of material from going to the landfills. Many local recycling programmes run into trouble as there is no market for what they collect. (Dunn, C., 2007). Stephan Seuring (Carl von Ossietzky University Oldenburg, Germany), in his discussions on challenges and possible solutions in recycling of textiles from clothes says 50% of the discarded clothes are collected and only half of this fraction can be reused due to its condition or contamination. He argued that this mixed collection hinders recycling rather than promoting it.

For sustainable recycling model waste collection procedures need to be streamlined. A promising example is a Germany based company ECOLOG Recycling Network GmbH which operates a recycling network for polyester clothing, involving manufacturers, retailers, consumers, and recyclers, where the consumer returns the clothes to the retailer. The system is based on the concept of producing garments and trims made entirely out of polyester. The polyester thus collected is pure and is conveniently recycled into new buttons, fleece, fibers threads etc. (Kotzab et al, 2005)

The Indian Textile Industry Context

The concept of recycling and sustainability is not new to India and to Indian people. The origin of traditional *Kantha*¹ embroidery technique is a process of recycling where a few layers of used cotton fabric are held in place one over the other and embellished with exquisite embroidery using the thread which has been pulled out of the coloured borders of the same old fabric. Over a period of time the craft has moved to more commercially viable solutions and articles like bags, wallets, cushions, mats and many more products are created using *Kantha*. Due to the softness of used old fabric, this craft found ready use in quilts and bed spreads and even played its significant role for the care of the newborn and the mother.



Kantha embroidered piece (Image 2)

The Waghri traders in India play a very important role in reuse and recycling of post consumer clothing. These women workers go from door to door and collect clothing through a system of bartering where used clothing can be exchanged for household

items. These women then sell the collected goods to the traders. The commonest use of this clothing, which mainly comprises of *salwar kameez*², *sarees*³, *dupattas*⁴, shirts, trousers, and jeans, is for those who are unable to purchase new garments. The importance of this form of trade in ensuring economic independence for families can be seen in the study conducted by Lucy in India and she says, 'A man dealt in old shirts, buying them for Rs 6 or 7 each, while his wife washed and repaired them. He then sold them on for Rs 8 to 10. With a turnover of 150 to 200 shirts a week, the family could make up to Rs 2000 a month. Profits per garment are low, less than Rs 3, but the harder wives and daughters in the household work, the higher the turnover'. (Lucy, 2005)

India also has a substantial industry of manufacturing wool blankets from used wool clothing. This industry not only sources material from within country but also imports used clothing to meet its needs. Due to trade laws restrictions used wool clothing in the US is slashed beyond wearable condition, yet keeping it one piece for shipping, and brought in to India for manufacture of wool blankets (Hawley, 2006)

Contribution of Handloom Clusters

Majority of India's population still live in villages and depend on the traditional crafts & agriculture. The craftsmen and artisans working on handlooms are normally found in clusters, wherein they carry out their vocation based on the traditions and skills inherited from their forefathers. These clusters not only act as production centers, attracting buyers to them, but also help the craftsmen to nurture their skills and maintain their

identity and some of them utilize post-industrial or post-consumer textile and apparel to create useful and innovative products.

Gwalior Fur Furnishing Cluster uses the cut selvedge wastage of the textile mills, in the region, as weft and creates furnishing products like rugs, mats, sofa and seat covers.



A small rug made from selvedge wastage (Image 3)

In the cluster there are approximately 400 looms engaged in manufacturing with annual production of about 50,000 square feet and amounting to nearly 3 crore Rupees. On an average a weaver can weave 100-120 sq ft in one shift and earn wages of Rs 70-90. As these products are economical and durable, there is a huge market potential across the country for them and due to their resemblance to fur they are popularly known as fur products. (Entrepreneurship Development Institute brochure)

The handloom weavers in **Lawar** cluster in Meerut District form a small community and are involved in producing low cost blankets, mats, prayer rugs, *durries*⁵ and cotton

*khes*⁶ from raw materials comprising of virgin, industrial wastage or post consumer sources.



A rug on the loom (Image 4)

There are around 1000 weavers in the cluster who work on pit looms. Most Weavers fall below the poverty line with the average income between Rs 1500 – 2400 per month. Around 75% looms in the area are in working condition and the remaining are idle due to insufficient funds for maintenance. The current socio economic condition of the community is not very good and many weavers do not even have covered work sheds and hence have to work under temporary plastic sheet covers.



Weaver on a loom under temporary shed (Image 5)



A woman engaged in sorting and cutting of fabrics (Image 6)

The raw material for this cluster is acquired from various sources like textile mills, carpet industry and small garment manufacturing units. One of the most important raw materials used for the products is post consumer unstitched apparel like *sarees*, *dupattas*, stoles and shawls. This is collected by going from door to door in the nearby areas and orders are booked to prepare products from collected material. This also

helps in recycling of post consumer apparel, which otherwise gets discarded and ends up in landfills. There is better acceptability by the customers of this recycled apparel for goods made from their own clothing as opposed to the ones coming from unknown sources.

The process

The apparel collected is washed and treated in earthen ware or aluminum pot in hot soap water and dried in open air. Fabric is then cut into thin strips, often stitched together to get the desired length, twisted and used as weft. Generally a white or black cotton yarn is used as warp.



Small pieces are often stitched together (Image 7)

Other than the planning of the single coloured warps not much time is spent in planning the designs as the same takes place directly on the loom. The randomness of colors and thicknesses combine to form an unpredictable but unbelievably beautiful set of textures, colors and surfaces. There are no planned patterns, no effort nor any attempts to be

homogenous. Every piece that emerges is magical in its uniqueness, reflecting the diversity of materials and people who make it happen.



Old sarees are used in weft to create a durrie (Image 8)

Handlooms have traditionally been run by the men folk. The economic conditions have also brought in a lot of women folk into the task and today there are about 460 women involved in the profession of weaving in a total of 1000 in the area. The women folk are also involved in other preparatory tasks and are now contributing in the whole process at almost all stages - from collecting recyclable clothes from the households to cleaning, cutting, washing and weaving. The dependency of family income on women has led to women empowerment and with the additional responsibility of all household chores; the women strive towards creating a balance between work and home. Employment & economic independence of women has led to improved quality of life for women, and also the well-being of the family.

The whole work environment is created around the dwellings, thereby facilitating the creation of work-life balance. The standard of living of these communities may be on the fringes of sustenance; the satisfaction levels of these families are much higher than what is seen in the economically better off communities in the metropolitan cities, primarily due to a greater work-life balance.



Rabea at work (Image 9)



Child on comfortable make shift cot while mother is working nearby (Image 10)

These are proud people, but rendered helplessly disoriented with changing technology and the fact that they haven't been able to find their place in the newly emerging environment. Their looms generate a livelihood for many families who had weaving running through their blood and the looms have helped them meet their basic needs for many generations. For their development and well being they need to be nurtured in the same environment and supported in need based areas and with designs and concepts for better marketability of products.



17 year old Shahnawaj working on the pit loom (Image 11)

Some government and non-governmental agencies have been spearheading entrepreneurship movement in many handloom clusters providing the right impetus to the vocation. The involvement of the Lawar cluster community in their contribution to the recycling and recovery of textile and apparel waste has created interest and has led to the adoption of the cluster by the Office of Development Commissioner of Handlooms, Ministry of Textiles in their Integrated Handloom Cluster Development Programme. The scheme will help the weavers in providing basic necessities, wages, raw material, looms

and in creating the right kind of market through design intervention and bringing in state projects. The adoption by such organizations ensures socio economic development and well being of the weaver families as it brings in job security, equal opportunities, minimum wages, working hours, freedom of association and collective bargaining.

There are numerous other clusters contributing towards recycling of pre and post consumer waste in smaller towns of India. Artisans in the Bijnor cluster in Uttar Pradesh and also certain areas of Madhya Pradesh are utilizing fabric left over during various processes in the Textile and Apparel Industry to create cord, ropes, rugs, durries, small mats, prayer rugs etc. Innovative methods are used to create products depending on available raw material.



This softer rope made from used clothes for cattle will definitely be preferred by the animals (Image 12)

Clusters in Rampur in the state of Uttar Pradesh and also in parts of Bihar utilize cut pieces of cloth as appliqué. Depending on the existing market, product ranges from decorative tents and canopies used on religious and ceremonial occasions to items like

beach and garden umbrellas, lamp shades and wall hangings. Usually, the men cut the patterns while the women do the stitching.

Clusters of Bhojpur, Rustampur Tigri and Sardarnagar Ataria in the Moradabad District in the state of Uttar Pradesh are involved in one of the most economically viable solution to Recycling used apparel. An order for a *durrie* can be placed for Rs 40 and 3 kilogram of used clothing. The apparel is shredded into pieces, twisted to develop a thick yarn and inserted as weft on a nylon warp. The weaver's family produces approximately one *durrie* in one hour assuring a good family monthly income.

Conclusion

The Governments and other Unions in the world have taken out Directives like European Landfill Directive 2001 to curb the nations from disposal of biodegradable waste into Landfills. There may not be directives specifically targeting textile related material waste but given the volumes of such items being a part of the waste it will not be long before such directives are instigated and demand for their implementations are made. Policing implementation and ensuring full compliance with these directives is a huge and daunting challenge and may take years. But due to the public concern and the apparent readiness of people around the globe to meet the associated costs and inconveniences, it will only be a matter of time before it becomes an ethical measure and societies respect the environment in which we all live (Miraftab & Horrocks, 2007)

There are a number of socio, cultural, economic and other factors that need addressing to create a viable model of sustainable development. The key factors and the recommendations thereof are as under:

a) Financing

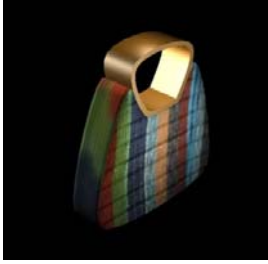
Positive direct action by the government at the grass root level to generate employment opportunities in the rural areas by nurturing handloom units in clusters and funding their technology and skill up gradation needs by channelising the financial inputs through NGOs, Co-operatives, and other developmental institutions.

b) Design Development

The products which result from these clusters are mainly made to order and are at the low end of the value chain, putting a cloud over the very sustainability of the model over a wider canvas. Most of the products are in the form of rugs and durries, with low value addition. There is a need for design intervention to take such products up in the value chain, thereby enhancing the economic viability and sustainability of the model. Using one such basic product, designs have been created of high fashion garments and accessories with high value addition.



Design 1 (Image 13)



Design 2 (Image 14)



Design 3 (Image 15)



Design 4 (Image 16)

c) Researching environment and development interactions

Research should be undertaken with the explicit objective of assisting policy decisions and providing recommendations on improving management practices to understand the interactions between and within social, economic and environmental considerations in a comprehensive manner.

d) Enhancing education and training

It is imperative that significant efforts are made to improve education and technical training, particularly of the women and girls, by including interdisciplinary approaches, as appropriate, in technical, vocational, university and other curricula in order to develop human resources required to undertake the integration of environment and development at various stages of the decision-making and implementation process.

While organized and unorganized sectors have made a small, yet commendable effort in the recycling and reuse of textile waste, there is a need for a concerted effort by the educational institutions and the government agencies to recognize its need and create awareness amongst the younger generation.

e) Promoting public awareness

There is a need to have an inclusive agenda for promoting public awareness of the importance of considering environment and development in an integrated manner. All possible groups need to be involved in this exercise - national institutions, NGOs, interested scientific and sociological organizations, media, and the international community.

f) “Systems Approach” to the issue of sustainable development

The need of the hour is to move away from narrow sector approaches, progressively move towards full cross-sectoral coordination and look at the issue of sustainable development in a holistic manner. The Systems Approach takes an integrated look in

order to understand the parts, rather than treating the parts in isolation and then trying to understand the whole.

Kantha¹ *Traditional embroidery of the state of West Bengal*

Salwar kameez²: *A two piece dress commonly worn with a stole by many Indian women and girls*

Sarees³: *Most traditional to India, it is 6 yards rectangular fabric and draped by various communities in different styles by majority of Indian women*

Dupattas⁴ *Type of stole worn with the salwar kameez*

Durries⁵: *Type of floor covering*

Cotton khes⁶ *Thick cotton shawl*

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