

# **EVOLUTION OF WASTE MANAGEMENT PRACTICES: A CASE STUDY OF A LEADING APPAREL COMPANY IN SRI LANKA**

*Gunasekara, A.D.*

*Neranja, P L N*

*Karunaratne, H M M S*

*Ravihansi, B K P*

*Buddhika, A O M S*

*Wijekoon, W M D W*

*Weerathunga, N D*

*Chanika, P G S*

*Jayasighe, W T*

*Sibera, A S K P H*

## **Abstract**

This study focuses on exploring the evolution of waste management practices in a leading textile manufacturer in Sri Lanka, reasons behind the implementation of waste management practices and the issues in executing and monitoring these practices. Environmental pollution is gradually increasing and therefore the attention of public, media, social pressure groups and eco-friendly organization has been drawn towards the concept of waste management. In early days, generated waste was not considered as significant since there was a low population density and also there was a minimum environmental impact through waste. However with the urbanization and high population density, waste has become a significant topic in current context. Among the various waste generating sources, textile waste which is coming under industrial waste has highly contributed to the waste generation process. Thus for conducting this research, Hirdaramani Garment Factory which is a major textile company in the apparel industry of Sri Lanka was selected.

Exploratory research method is the research question type while sequential exploratory design is the research design method used here. Semi-structured interviews, unstructured interviews, documentary analysis including periodic management reports, magazines and other publications and content analysis are the sources that we used to gather information throughout the research. In conducting interviews, the theoretical sampling method was used until it reaches theoretical saturation. Minimum of fifteen interviews were conducted in order to gather information.

Waste management is a timely topic for which most of the organizations are now focusing on. Hirdaramani is a company which implements waste management practices in a proper manner and have won several awards for successful implementation of waste management. This study was carried out to identify genuine reasons behind the continuous implementation of such practices in Hirdaramani including evolution and the difficulties they faced in implementing and maintaining waste management practices.

**Key Words:** Textile waste, Textile waste management, Evolution, Waste management practices

## **Introduction**

In contemporary society waste management has become a crucial topic to be examined specially with regarding to the textile industry in Sri Lanka. The textile industry faces new challenges with increasing government regulations, global and environmental regulations, forcing from pressure groups and specially the interest of stake holders.

According to the definition of Wikipedia, waste management can be explored as all the activities and actions required to manage waste from its inception to its final disposal. The broader aspect of waste management can be explained as the collection, transportation and disposal of garbage, sewage, and other waste products. Waste management encompasses management of all processes and resources for proper handling of waste materials, from maintenance of waste transport trucks and dumping facilities to compliance with health codes and environmental regulations.

Most of contemporary companies in the textile industry use their own waste management methods on waste hierarchy according to their desirability in terms of minimization of waste. It is most preferred if the companies are trying to prevent from waste even though it is impractical to do so. Therefore reducing (minimizing), reusing and recycling (“3 Rs”) has emerged as the main waste management methods on waste hierarchy. Most recently, garbage landfilling has become a major environmental issue in Sri Lanka and it caused for number of social issues. As a developing country, inadequate management and governance over waste has become an ongoing challenge to all the industries and to the country as a whole. Weak institutional practices, chronic under resourcing and rapid urbanization can be identified as the major reasons for this challenge. A proper investigation on waste management is essential and it is worthwhile to investigate the waste management practices in Sri Lanka especially of textile industry as it is a major economic sector in Sri Lanka.

Hirdaramani is one of the leading textile companies in Sri Lanka with the ultimate goal to become a completely carbon neutral organization. The company has taken their first step towards achieving their ultimate goal by setting up the world’s first customer built carbon neutral “Green” factory in Agalawatte. Hirdaramani has committed to being a responsible corporate citizen in Sri Lanka through their social responsibility projects towards the society.

In 1890, Mr. Paramanand Hirdaramani commenced the business with a retail store in Colombo fort. In 1946 Hirdaramani Ltd. was born with setting up retail stores in Colombo and Kandy to sell garments, textiles and jewelry.

In 1954 Hirdaramani introduced their brand name as “Popular” and changed in 1960 as “Diplomat”. During 1974 to 2000 company has expanded its branches to new locations such as Katunayake free trade zone, Seethawaka Industrial park, Eheliyagoda and Kuruwita.

In 2000, Hirdaramani Industries limited relocated from Maharagama to Kahathuduwa and Hirdaramani group moved its head office to World Trade Centre, Colombo. In 2009, the group’s first eco factory named “Mihila” was opened for the operations and it was awarded LEED Gold from the US Green Building Council while becoming the first apparel company in Asia, certified as carbon Neutral. In 2014, Hirdaramani Industries Kuruwita received LEED Gold certificate and in 2015, Hirdaramani Vauniya and Hirdaramani Industries’ Kahathuduwa received LEED Gold certificate and LEED platinum certificate respectively. Now company has expanded and diversified its business as one of the leading companies in apparel industry with over 60,000 employees spread across six industries.

Since Hirdaramani is a leading group company in the apparel industry, it is worthwhile to investigate the milestones of evolution in waste management of Hirdaramani, the main causes and motives for the introduction of waste management practices and as well as the practical difficulties which are faced by the company when carrying out their practices.

### **Problem Statement and Research Questions**

Waste management, a highly discussed topic in today’s world is the main foundation for this research. With the technological development waste has become a major problem for the whole world. According to S. Kavitha and G. Manimekhalai (2014), waste is linked to the development of the human society technologically as well as socially. There are many environmental and social issues that arise due to the improper waste management practices. In Sri Lanka the awareness on waste management practices is in a very poor state. The main foundation for the better waste management practices should be laid down by the major organizations in the country because the generation of the highest amount of waste is done by them. In this research the main focus is on waste in garment industry.

The garment industry in Sri Lanka has been a well-developed and the major export oriented industry. Because of this reason there is a high generation of solid waste in garment industry. Most of the garment factories do not have proper solid waste disposal facilities in the factory premises or in the vicinity. Where possible, waste is subject to open burning in the premises; otherwise it is transported to landfills or dump sites by private contractors or the factories' own transport. (T.C.T Weerakoon, S.C Pilapitiya', H.B Kotagarna and Y.D.A Senanayake, 1996). Decomposition of textile waste releases harmful gases to the environment which could be a contribution for the global warming. And also the dyes and chemicals contained in the clothes will make a negative impact on soil and groundwater. In the long run this could be dangerous for the wellbeing of the environment as well as the human life.

Due to this significance, the problem identified by the researchers is to examine the driving forces for a garment established in Sri Lanka to adopt waste management practices and practical issues faced when practicing waste management.

According to the problem statement, the study is primarily focused on studying the evolution of waste management practices of Hirdaramani, one of the leading garment factories in Sri Lanka from the inception to the current position. The followings have been identified as the research questions for this study.

1. What are the significant milestones of evolution of waste management in Hirdaramani?
2. What are the reasons behind the introduction of waste management practices at Hirdaramani?
3. Are there any practical issues in relation to the implementation and maintenance of waste management practices inside the organization?

### **Research Objectives**

Main objective of this study is to explore the evolution of waste management practices of the textile industry in Sri Lanka, Hirdaramani Limited was selected in order to achieve the objective. The data collection and analysis is more focused towards the waste management practices evolution from inception to current position of Hirdaramani Limited.

In addition to the main objective, it can also be established a set of secondary objectives which will also be associated with this research as follows;

- 1) Explore the millstones of evolution of waste management in Hirdaramani Limited.
- 2) Investigate the main causes and motives for the introduction of waste management practices of Hirdaramani Limited.
- 3) Investigate the difficulties when implementing waste management within the organization.

### **Significance of the study**

The current context in Sri Lanka, waste management has become one of most of discussed topic. Because of the globalization, environment pollution is gradually increasing and therefore the attention of public, media, social pressure groups and eco-friendly organization has been drawn towards the concept of waste management. This concept has emerged as an attractive area for sustainable development of organization. Coming to the Garment industry, companies focus on reducing waste to a great extent during production stage.

With the past scenarios happened in Sri Lanka such as “Rathupaswala” and “Meethotamulla Garbage Dump”, the importance of waste management is highly emphasized. Most of such companies are struggling to operate in the society due to lack of social license. Due to the pressure from public and media, companies have adopted the concept of the waste management has come into the picture. Therefore the survival of the business organizations depends on the way of managing waste and treating the environment.

Waste Management has now become a globally concerned concept since environmental related issues are continuously rising by causing huge impacts on the survival on the man-kind. This has led to the improvement of legal requirements relating to waste management and environmental protection.

This research study is focused on the evolution of waste management practices of Hirdaramani Limited. The study examines how the company has implemented waste management practices in their organization, what are the reasons behind implementing the waste management practices and what are the difficulties when implement waste management practices. Finally, it helps to know various benefits associate with the waste management practices such as cost reduction, a marketing tool, corporate image, legal compliance, customer attraction and social well-being.

Currently, executive management of most companies is in the trend of linking waste management practices to their strategies in order to enjoy such benefits. Future strategies need to be on prevention/reduction of waste at source. Therefore, waste management is significant to survive, to grow and to beat the competition of companies operating in current competitive market.

## **Literature Review**

The literature review identifies what is already known about the research area and then it synthesizes to the findings. Both the qualitative and quantitative studies are considered in this review. The main objective is to identify internal and external factors which affect the evolution of the waste management in textile Industry. There is no time restriction placed for the literature review. As per Wikipedia, waste management is the all the activities and actions required to manage waste from its inception to its final disposal.

### **Textile Waste in apparel sector**

As per Sonja Jordava, Current State of Pre-Consumer Apparel Waste Management in Macedonia, Textile waste mainly consists of apparel cuttings. Textile waste can be divide in to two categories. Those are postconsumer or household waste. Further waste has a low value within the context of textile application. Therefor alternative usage should be explored. When comparing the apparel cutting waste items, it mainly consist with woven fabrics, pre dominate cotton and cotton blends. As per there research

disposal in landfills is the dominant waste management practice. Most of companies think only about their profits. So they perform recycling only if there is an additional value to the profit.

### **Waste management in textile industry**

As per study of Dalia M. M. Yacout, M. A. Abd El-Kawi and M. S. Hassouna Dalia M.M Y, Applying waste management in textile industry, it was examined on developing a waste management system within a textile company. Waste management program reduces the negative environmental impacts of the manufacturing process. Therefore, after implementing the action plan, it was able to reduce the waste with large monetary amount. Since that research is going towards the quantitative approach, the researchers have used ratios and trend analysis to interpret the results. However that research has not mentioned other external factors which affect to the implementing waste management system. Ex: political influence, Top management attitude. It can be identified as the research gap.

As per S.Kavitha & G.Manimekalai's thesis of "A Study on waste disposal management in Garment Industry", it has examined that increasing cost, the reduction of the availability of the landfill space, natural resources can be identified as the major incentives of the need for effective apparel waste management. According to the research the major barriers for the recycling are lack of equipment and technology, lack of material to recycle, lack of customer awareness .The research concludes that the customer knowledge and awareness on recycling needs to be developed in order to preserve the environment optimally and the resources will not be exhausted unnecessarily.

### **Waste Disposal practices in Sri Lanka**

As per Nilanthi J.G.J. Bandara, "Environmental impacts with waste disposal practices in a suburban municipality in Sri Lanka", it was examined the environmental impacts associated with current practice of waste management in a municipality in Sri Lanka. That research has measured the disposal practices with a consideration of quantitative approach. For that researcher has used household waste composition, mean generation of waste per day and residential per capita waste generation.

### **Solid waste disposal methods in textile industry**

As per T.C.T Weerakoon, S.C Pilapitiya, H.B Kotagarna and Y.D.A Senanayake, topical agricultural research Vol.8 1996, 262-273, the research has identified qualitatively and quantitatively the generation of solid waste and disposal methods in the garment industry in order to recommend guidelines on appropriate management methods. In all waste management system, five steps as minimization,

recovery or re-use, recycling, treatment and disposal can be identified. The predominant component of garment industry waste is cloth. At present re-users are not provided any assistance by the government and if there is an incentive scheme, even the industrialists will be willing to re-use waste. Main reason for improper disposal of waste is lack of knowledge of waste management. When identified the research gap, research has been done only on solid waste management on selective industries. So there are plenty of to be researched on solid waste management of other areas of Sri Lanka as well as liquid and air waste management in Sri Lanka.

As per Rajib Dhakal, “Best practice of solid management of Nepalese cities”, the research provides details regarding the findings from several cases of best practice and it helps to understand the roles of various organizations. This mapping is necessary in the context of integrated and sustainable waste systems, for which an understanding of people, systems and technologies is fundamental. Considerable effort has been invested by municipalities and NGOs to improve solid waste management in Nepal. Various organizations from the private sector and NGOs are involved. The main areas of focus for these organizations have been primary collection, composting and recycling. The municipalities have become interested to make improvements in final disposal, which is often a neglected aspect of waste management and it still needs to be done to upgrade many aspects of solid waste management systems.

## **Theoretical studies**

### **Stakeholder theory**

Stakeholder theory holds that the purpose of an organization is to add value as much as possible for its stakeholders, not just shareholders. It explains that organizations need to satisfy customers, suppliers, employees, communities, pressure groups, environment and shareholders.

Freeman, E. (2010) argued that managers are not just answerable to shareholders. In addition to shareholders they also need to consider any group of individuals who can affect or is affected by the achievement of the firm’s objectives. According to ethical branch of stakeholder theory, all stakeholders including shareholders need to be treated fairly irrespective of their power to influence the organizational activities.

Waste management practices are not mandatory requirement for every organization. But adopting those waste management practices, the organization ensures that it is considering the interest of all stakeholders, specially regulators, environmental pressure groups, etc. According to park and Ghauri (2015), customers are important primary stakeholders that appear to be particularly influential for the firm in view of their corporate citizenship. Customers become aware of ethical implications its quality standards to enhance corporate reputation. Stakeholders have a legal or moral right to expect a firm to satisfy their interest (Lafreniere et al., 2013).

By adopting waste management practices within the company, Hirdaramani Company ensures that they are considering the interest of all stakeholders and through that the firm can maximize the value generated. Hence broadly the stakeholder theory with ethical and moral perspective is relevant to the study on waste management practices drastic development over the time.

### **Legitimacy Theory**

Suchman (1995, p.574) states that “legitimacy is a generalized perception of assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs, and definitions.” Humphreys and Latour (2013) argues that in a context where firms need to behave in a socially appropriate way and fulfill their obligations to the society, goes beyond profit making activities. Legitimacy theory assumes that every organization operating in the society has a social contract with society about how the organization carries out its operations. Since the society provides its resources to the organizations, society expects the organizations to be practiced in a way that maximizes the interest of all stakeholders.

It is believed that a legitimacy gap exists when there is a lack of correspondence between how society expects from an organization to be operated and how it has actually acted in the society. One way of reducing this gap is development and adoption of waste management practices within the organization. With the passage of time the legitimacy gap might be increased due to changes in social expectations. To face this challenge, organizations must take continuous initiatives such as development of waste management practices and this situation has been captured by the study carried out.

Thus, it is clear that engage in efficient waste management practices within a particular industry reflects that organizations are performing their duty towards all stakeholders in order to legitimize their operations.

### **Methodology**

Main objective of this case study is to explore the evolution of waste management practices in Hirdaramani: one of the leading apparel company in Sri Lanka. The data was collected through unstructured and semi structured interviews with the management and the employees of the Hirdaramani and used data to elaborate desired research objectives in qualitative perspective. The historical data of the company was collected and analyzed to find out the connection of the waste management practices over the performance of the company.

### **Triangulation**

The validity of qualitative research has always been a concern within the research community. Qualitative validity is the degree to which the researchers claim the knowledge being presented corresponds to the reality of the subject being researched. Triangulation is a process of identifying common themes, or categories that arise through multiple methods of data collection as suggested by

Creswell & Miller (2000). Triangulation is a validation procedure that gives researchers collecting qualitative data rather than simply relying on a single resource. For this study, data collected through interviews, publications of the company and e-sources were triangulated to validate data presented in the research.

### **Population and Study Sample**

Since this is a case study, Hirdaramani Company was selected as the sample case within apparel industry.

Reason behind this selection is that Hirdaramani is a one of leading textile companies in Sri Lanka with the ultimate goal to become a completely carbon neutral organization and has taken their first step towards achieving their ultimate goal by setting up the world's first customer built carbon neutral "green" factory. With this purpose, the company is maintaining well-structured waste management practices within the company. This creates a good background for the research case study.

### **Collection of Data**

According to the selected case study, the main data generation sources were unstructured and semi structured interviews, periodic management reports, magazines and other publications on waste management practices of the company. Based on data collected from these sources, research has carried out highlighting the areas relevant to the waste management practices within the company.

Both primary and secondary data collection methods are used to analyze the findings of the study. Unstructured and semi structured interviews were conducted with key informants of the company including group sustainability manager and Human Resource Manager as primary sources. They were selected based on their involvement with textile waste management generated by the company. A questionnaire was developed to guide unstructured and semi structured interviews with the key informants. Photographs were taken during the document the process and the interview was recorded for future use.

Publications and data gathered via internet were used for the analysis as secondary data collection sources.

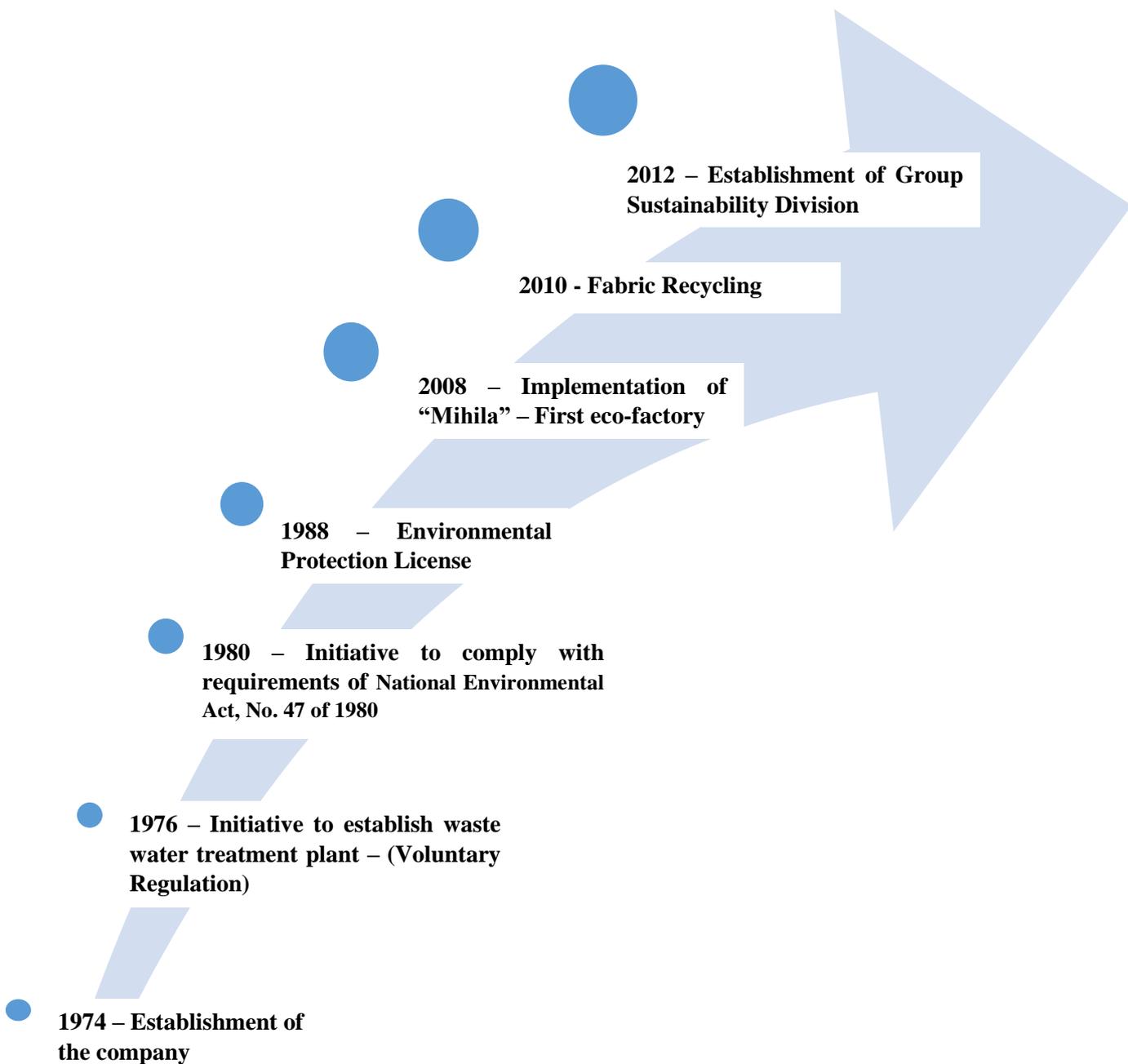
### **Data Analysis and Data Management**

In-depth analysis of the case has been done based on the data collected through primary and secondary sources.

Data collected through the above-mentioned methods was recorded properly by taking notes, recording interviews and summarizing the data collected. The collected data was summarized in an effective manner and stored in both documentation and electronic sources. When conducting the research, due attention was given to conduct the research in an ethical background. There were no questions related to highly sensitive areas. Also, confidentiality of the information has been protected. Data will be exclusively used for the above-mentioned research objectives.

## **Analysis and Discussion**

### **Evolution of the Waste Management Practices**



The evolution of the waste management practices have been commenced from the establishment of the company in 1974. From the beginning of the company, the management self-assessed their operations and identified the main source of waste that they were generating as “cutting waste”. As a solution for managing this waste, they distributed them to the retailers of garments in nearby rural areas for free or at a very less charge. This was a voluntary initiative implemented by the company to reduce its waste while giving a business opportunity to the community to reuse those “cutting waste”. This upgraded the lives of people of that area creating an image as a sustainable business organization.

When it was around 1976, the company drew its attention towards minimizing the impacts of waste water. At that time, operation practice of the company was to discharge waste water to a nearby tank in the area without purification. This created huge impacts on day today lives of people around that area. Due this unethical practice of the company, the community began to protest against the company asking for a better solution to discharged waste water which reduce harmful impacts on the lives of people. This social pressure persuaded the company to pay their attention on purification of waste water. Although company searched for regulations relating to discharge of industrial waste water, there were no accepted regulatory standard on waste water purification. Therefore company tend to find the alternatives to overcome this issue. As a solution, they established a new “industrial waste water treatment plant” through their self-investigations.

In 1980, the government imposed the “National Environmental Act, No. 47 of 1980”. Regulations were made by the Minister of Environment and Renewable energy under section 32 of the National Environmental Act, No 47 of 1980. Enactment of this act was a major influence on companies operations. Mainly, company had to comply with regulations in the areas of boilers, incinerators, engine services and requirements for pollutant based standards which was a major milestone of the evolution of waste management practices of the company. Since waste water was a major source of waste in the company, tolerance limits for industrial waste water (effluents) discharged into the common waste water treatment plant provided under National Environmental Act were strictly adhered to.

In 1988, with the amendment to National Environmental Act, company obtained the Environmental Protection License which is issued by the Environment Management Department of the Board of Investment of Sri Lanka with the concurrence of the Central Environmental Authority (CEA).

Year 2008 was a key milestone in the process of evolution of waste management practices in the company. “Mihila” (meaning Earth), the group’s first eco-friendly factory was opened for operations in 2008. It is also the first custom built eco-friendly factory in the world. Mihila is also awarded LEED (Leader in Energy and Environmental Development) Gold form the US Green Building Council. This factory is carbon neutral. Company identified the cost-benefits of effective waste management practices and environmental friendly procedures through this project.

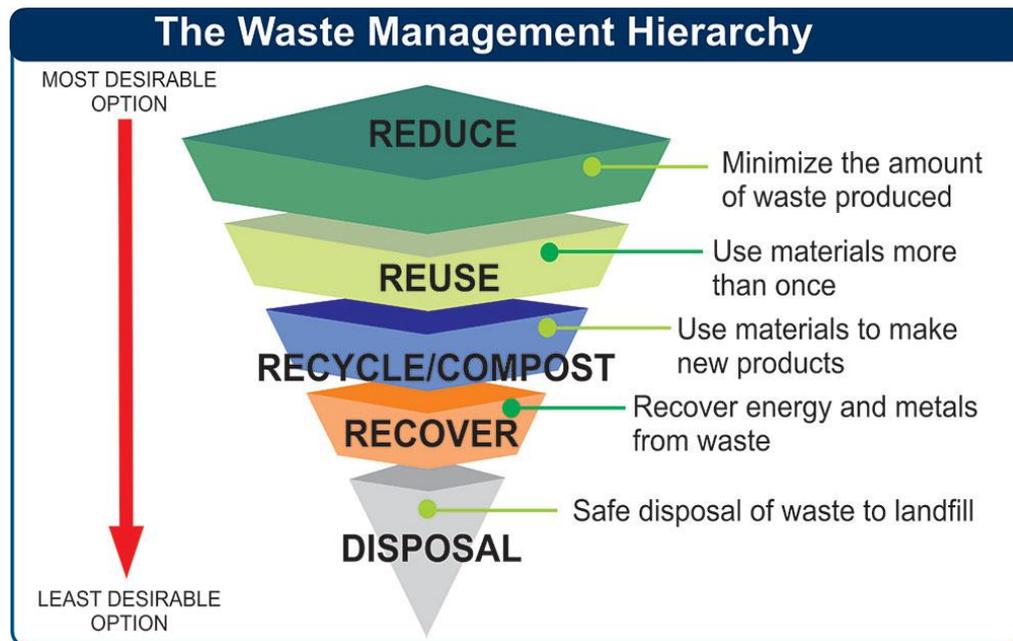
This factory focuses on three key areas namely, energy consumption, water consumption and waste generation. This created a culture of sustainability to the public, which was later followed by many other companies.

By this time, waste water treatment had been given the priority in waste management of the company, while a large amount of fabric waste had being generating out of company’s operations. But, there are no industrial fabric recyclers in Sri Lanka and company therefore company was not able to find a proper way to dispose fabric waste within the country. Small and medium sized companies which were engaging in fabric recycling came and operated in Sri Lanka from the years 2010 and 2011. Although they were not well established within our country, company had to deal with them regarding fabric recycling since there was no other alternative.

In 2012, making it a gold era, company put steps to establish a separate division for sustainability. This group sustainability division was established to fulfil the requirements of all companies under the group in relation to environmental protection, waste management and related regulations. This division headed by two main personnel, leads the company towards sustainability by formulating a waste management policy, implementing waste management practices, proposing and executing environmental friendly practices and procedures in operations, assisting in minimizing cost of operations and waste by implementing proper procedures. Duties and responsibilities on waste management and sustainability are segregated to relevant managers in every factory and monitoring is carried out by the group sustainability division. During this year the company was certified as the first apparel company in Asia which is carbon neutral. With the establishment of sustainability division, company has drawn its attention on cost saving methodologies which are environmental friendly as well. Initially, they have used CFL bulbs to save energy usage which has now been replaced by LED bulbs. This division continuously carries out research on procedures to further reduce waste generated by the company and ways to minimize cost of operations through sustainable business practices.

## Current status of Waste Management practices in Hirdaramani

Waste management practices refers to all activities which involves actions required to manage waste from its inception to its final disposal. When practicing waste management most of companies use a hierarchy of waste management in order to implement a proper system of waste management. When it comes to waste management hierarchy, it includes different stages.



According to the above figure, the hierarchy involves Reduce, Reuse, Recycle, Recover and Disposal of waste. In the waste management hierarchy, the most desirable option to manage waste is reduction of waste. That means minimization of the amount of waste produced by the entity. In our selected company, Hirdaramani, the minimization of waste is achieved by improving the efficiency of the production process. As per the explanation of the sustainability manager of Hirdaramani, the industry ratio of normal waste to inputs to the production process is around 20% - 30%.

The company is currently implementing practices in order to achieve the industry ratio of minimization of waste mainly through the processes of cutting and packaging. In cutting department, the employees of the cutting division are advised to cut the clothes in a manner which decreases the waste of cutting. In packaging division, they are achieving these minimization of waste by decreasing the packaging materials. Earlier when company distributes its garments, they tend to use a cardboard carton which consist of 50 to 60 finished garments which are covered by a poly bag for each and every garment. But

after implementing waste management hierarchy, they decided to remove the amount of poly bags by putting all the finished garments into a one poly bag when distributing.

The other method which they used to minimize waste is the reduction of unnecessary non value adding tiny tools and equipment like pins in the garments. When considering the level of hierarchy, reduction is the most advantageous process to manage waste since it reduces waste from the inception of the production process.

The second level in the hierarchy is reuse. It means using the materials more than once. Hirdaramani implements these reusing practices through selling the portion of clothes to the small buyers, which have been cut and separated in the cutting process. As an example, most of the cutting waste of Hirdaramani is sold to small and medium size buyers in Pamunuwa area while earning a small income. When consider about the hygiene and collection challenges, it is easier to reuse pre consumer textile waste rather than the post-consumer textile waste.

The third level of the hierarchy is recycling which refers to the usage of materials to make new products. Through our observation and as per the client's explanation, there are certain types of waste in Hirdaramani. Mainly they are E-Waste, Fabric-Waste, Cotton-Waste, Food-Waste, Energy-Waste, Water & Chemical-Waste and Other-Waste including polythene and plastic. In order to collect those types of waste, Hirdaramani uses a color coding system with the hope of making the waste collection process easier. There are different colors for different types of waste and they use bins at different locations to collect waste.

<b>Color</b>	<b>Type of Waste</b>
<b>Yellow</b>	Fabric waste
<b>Green</b>	Food waste
<b>Blue</b>	Paper waste
<b>Orange</b>	Polythene and Plastic

When considering about the fabric waste which is the main source of waste in apparel industry, Hirdaramani has taken several steps to recycle its fabric waste. Since Sri Lanka does not have any fabric waste recycling plants, Hirdaramani exports their fabric waste to different countries mostly to Best Travel Pillow co. Ltd in China and Aali Cotton in Pakistan. In the same way, Hirdaramani exports their

cotton waste to countries like Pakistan, India and China for the recycling process. When consider about the energy waste, there are several types of energy-waste management. For the purpose of saving energy, mainly they use solar panels in order to generate electricity.

In order to manage E-waste they return their used CFL bulbs to Orange Company Limited which is the one and only CFL bulb recycling company in South Asia named Asia Recycling Company. Also they send their Electronic waste to several recycling companies such as Think Green, Ceylon Waste Management Company and to Green Link. For recycling of other waste such as polythene and plastics there are several companies in Sri Lanka. So Hirdaramani collects their polythene and plastic waste and delivers them to their nearest polythene recyclers once in two weeks.

### **Reasons/Motivation for adopting waste management practices**

#### **i. Rules and regulation enacted by government**

Waste management practices has been came due to the effect of the laws and regulations. Various regulations has been imposed time to time and the practice of waste management necessarily acts according to the regulations.

Act No 47 of 1980 is the act which has been established a central environmental authority to make provision with respect to the powers, functions and duties of that authority and to make provision for the protection and management of the environment matters connected therewith or incidental thereto. Authority has been established for the governed, national environmental policy and criteria, protection of any portion of the environment and methods of discharge wastes which reduces the quality of the environment.

Further authority specifies standards, norms and criteria for the protection of beneficial uses and for maintaining the quality of the environment. Authority undertakes investigations and inspections to ensure compliance with this Act and to investigate complaints relating to non-compliance with any of its provisions. Due to above legal requirements, Entity started to adopt waste management practices from 1980.

In 1988, Government amendment the National Environmental Act, as National Environmental (Amendment) Act, No. 56 of 1988. In that amendment under part IV an environmental protection prohibit the discharge, emission or deposit of waste into the environment without having the license. As per the act, entities shall made application to the Authority in such form as may be prescribed, and on payment of the prescribed fee, issue a license to any person authorizing such person to discharge, deposit or emit, waste into the environment, in accordance with such standards and criteria as may be prescribed under this Act.

Entity acts in violation of any of the terms, standards and conditions of the license, National Environment authority has power to suspension or cancellation of the license. Since the company released waste water in to Borlasgamuwa Lake, regulation and control of pollution of the inland waters section applicable for the company. As per the environmental quality section, no any entity shall pollute any inland waters of Sri Lanka or cause or permit to cause pollution in the inland waters. So as per legal requirement of the act entity places waste on the beds, then it should be dry relevant period according to the composition of the waste water. Then off-shore waters to be raised or lowered to the river by more than the prescribed limits.

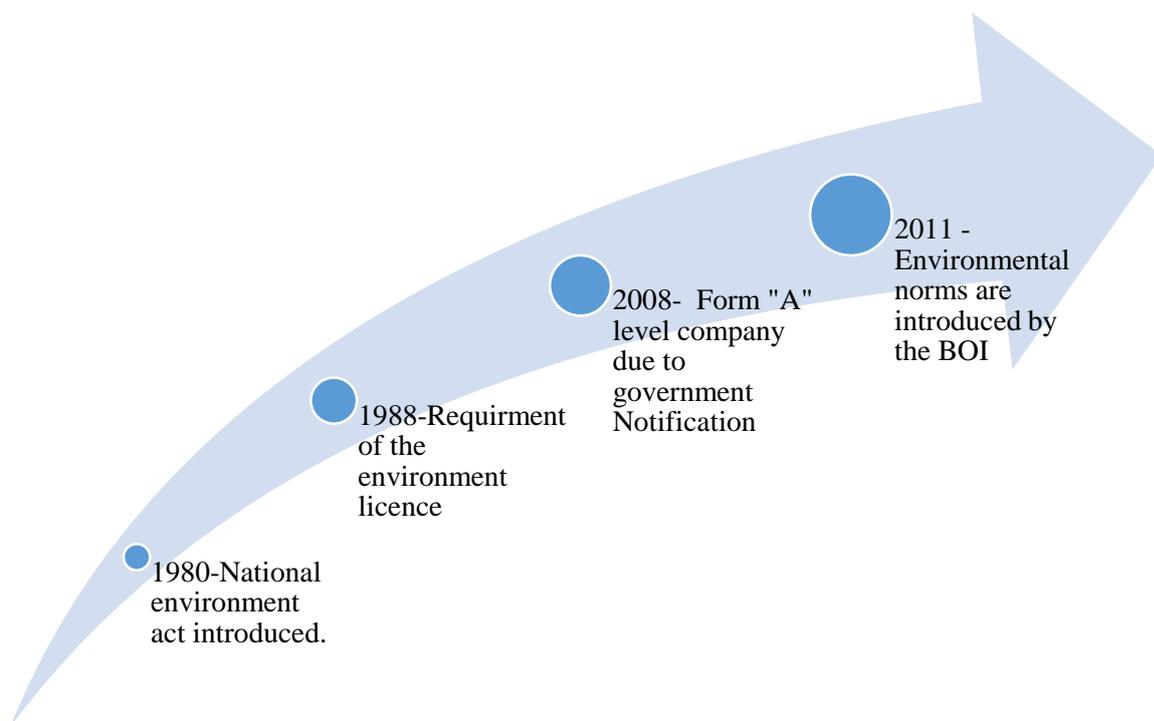
As per the amendment act, entities which contravenes the above requirements consider as guilty of an offence and liable fine not less than rupees ten thousand and not exceeding rupees one hundred thousand. Other than that, since company release waste to atmosphere, Entity has to follow the guidelines of the amendment act. Entity shall discharge or emit waste into the atmosphere in accordance with such standards or criteria as may be prescribed under National Environmental (Amendment) Act, No. 56 of 1988.

Further license may be valid for such period as shall be specified in the license, provided, it shall not be for more than a period of twelve months .Therefore entities have to renew their license annually. License type which has to be obtained from national environment act differ from organization to organization as per the government notification in 2008. It prescribe the activities which “A” license is required. Since the company is involved textile processing (i.e. bleaching, dyeing, printing) industries and garment washing industries, entity has to obtain “A” type of license.

Due to the corporate tax Incentives, Import Duty Exemption, Exemption Tax on Dividend, Exemption on Exchange Control, company has been registered as a BOI Company in 2008. Evolution of the waste

management practices leads due to the agreement of the BOI .Since the company is fallen under “A” category Environmental protection license has been obtained from the BOI.

In 2011 Board of Investment of Sri Lanka introduced environment norms which include the Ambient Air Quality Standards and tolerance Limits for Waste Water from Textile Industries being discharged into Inland Surface Waters. The enforcement of this provisions under the National Environmental Act is carried out by the BOI in respect of all projects establish under BOI. Due to this regulation, company is maintaining the required parameters according to the matrix of tolerance Limits for Waste Water from Textile Industries which has been issued by Board of investment.



As per the diagram which has been shown above, there are several rules and regulations which introduced time to time by national environment authority and Board of investment, affect to the evolution of the waste management practices of the company. Inception of waste management practices, continuous of waste management practices and current position of the waste management practices change with the effect of such rules and regulations imposed.

## ii. Self-Regulation

This is the fact of something as an organization regulating itself without intervention from external bodies. During the period when the factory was starting its operations there was no any rules and

regulations which relevant for waste water disposing. Therefore, before releasing the disposed waste water, which generated from the manufacturing process into the Boralasgamuwa lake, the company has put their consideration on all the villagers, animals and whole environment affected because of that action. Even though there was no any rules and regulations, owners and management of Hirdaramani has started to take necessary actions to protect the environment from waste water, disposing.

Company has built first industrial waste water plant within the factory premises. Due to the self-intention for the environment protection, company could be able to reduce the bad effects created by the company to the villagers and animals as well as for entire societies by disposing waste water into Boralasgamuwa lake. In this way the company has intended to initiate waste management practices without intervention from external bodies, including regulatory authorities, customers, suppliers and the general public. This is the most important fact behind the introduction of waste management practices to the factory which is located at Maharagama.

### **iii. Supplier and Customer Pressure**

One of the reasons behind the introduction of Waste management practices can be identified as the pressure from suppliers and customers of the company.

Hirdaramani Group is trying to become a member of Sustainable Apparel Coalition due to the pressure coming from their customers as well as suppliers. Sustainable Apparel Coalition is an international alliance for sustainable production in footwear, apparel and textile industry. Under the Sustainable Apparel Coalition, they have developed an index called “Higg Index” which is a standardized supply chain measurement tool. Higg index mainly measures energy, greenhouse gas emissions, water, waste water, effluents, air emissions, waste, chemical management and social impacts arise due to the apparel and footwear products. Under Higg index, the members need to enter data about their business’ impact areas. Based on the data entered, SAC members can generate standardized performance scores. Members can obtain highest performance scores if they maintain a lower level of environmental and social impact caused by their production process. These performance scores can be shared with their supply chain partners. Higg index helps to understand the environmental, social and labor impacts of making and selling their products and services. Further it helps members to address inefficiencies, resolve damaging practices and final to achieve the environmental and social transparency that consumers are demanding. Hirdaramani Group is having customers and suppliers mainly from Global market. These customers and suppliers are always trying to maintain their quality and brand name. For

that they prefer companies who have scored highest marks under Higg Index. Therefore, due to the pressures from suppliers and customers, Hirdaramani group is trying to get the membership from Sustainable Apparel Coalition.

Hirdaramani Group is complying with environmental and social requirements of individual customers and suppliers. One such requirement is Patagonia social and environmental compliance benchmarks. Under this requirement, Hirdaramani need to communicate their energy and natural resource usage, emissions, discharges, carbon footprint and disposal of wastes and need to take steps to minimize the negative impacts on environment. This includes benchmarks relating to environmental management systems, energy and greenhouse gas emissions, water use, waste water, air emissions, ozone depletion substances, solid waste, hazardous waste, nuisances, footprint metrics, Contaminated Land, Soil and Groundwater Pollution Prevention and land use and biodiversity.

Another customer of Hirdaramani group expects from Hirdaramani to be adhered to their environmental commitment. Under that, Hirdaramani needs to comply with at least local and national statutory regulations and to reduce the environmental impacts. Hirdaramani group is subjected to the audits carried out by that customer if they suspect any noncompliance of Hirdaramani with environmental regulations.

#### **iv. Marketing Tool**

Waste management practices can be used as a marketing tool. In Hirdaramani, they always market themselves as an environmental friendly organization. They communicate to the society about their involvement in protecting environment. They try to reduce the impact caused to the environment and to the society at large due to their operations. And they use this effort as a marketing tool in order to differentiate themselves from other competitors.

Since many customers and suppliers are concerned about the environment, the company can attract many customers and suppliers through their environmental friendly operations. This can lead to improve profitability and reduce pressure coming from interested parties.

#### **v. To reduce Cost**

A reason behind the introduction of waste management practices at Hirdaramani group is to reduce the cost of their operations. Company gains cost savings through their proper waste management practices which leads to greater resource efficiency, reduce pollution and maximize profits.

The company recycle and reuse fabric, cut pieces, dyes and other textile materials in order to gain cost savings. They have saved a considerable amount of money through these processes. They have setup proper recycling and reusing processes within the factory and they encourage their employees to engage in these practices. Other than recycling and reusing, they have started to reduce the wastage through doing the right thing at 1<sup>st</sup> try, limiting the occurrence of faulty products. Through these practices, company can maximize the efficiency of material usage, increase profitability and minimize the cost of disposal.

#### **Problems**

When considering the problems encountered by the company when adopting waste management practices, there are several main problems to be discussed. One of the major issue that the company is facing is the lack of proper approved recyclers in Sri Lanka. The Government intervention is much needed in this regard. The Government needs to facilitate these requirements. With the lack of approved recyclers, the motivation to recycle is diminishing among companies. Although the recycling process is meant to be a cost saving, companies have to incur money more than the cost saving resulting from recycling in order to recycle.

Another issue relating to practical implementation of waste management practices in the company is the lack of proper regulations from BOI. There should be a proper guidance for companies. But in Sri Lanka, waste management is still a new concept for many companies. So, in order to motivate companies who, make efforts to develop a proper waste management system, the guidance should be given by regulations. Without clear regulation and enforcement improvements in waste management will not happen. The regulators need to motivate the companies by providing education and facilities.

The lack of awareness regarding waste management among the Sri Lankan society is another issue. In developed countries, there is a great place for waste management. People are aware and try to support companies who are trying to manage waste in an efficient way. But in Sri Lanka, the education on waste

management is not sufficient. The company has taken steps to educate their employees about the importance of waste management in order to reduce the confusion among employees. But still the company is facing problems due to lack of awareness and education of waste management

## **Conclusion, Limitations and Future Directions**

### **Conclusion**

The study addresses on exploring the evolution of waste management practices of a leading company in textile industry of Sri Lanka namely Hirdaramani. Further to that, throughout the thesis it has clearly discussed on the millstones of evolution of waste management practices in Hirdaramani, main causes and motives behind the implementation of such waste management practices of Hirdaramani and issues faced at the implementation of waste management practices within the organization.

The data was obtained through unstructured and semi structured interviews with management and employees of the organization and the historical data was collected throughout the company reports, magazines, legal reports published by government authorities and other publications on waste management practices of the company. Current practices of Hirdaramani Limited were observed by several factory visits done throughout the research period. A questionnaire was developed to guide unstructured and semi structured interviews with the key informants mainly as group sustainability manager and Human Resource Manager of the company. The research was carried on qualitative basis of research methods and in-depth analysis of the case has been done based on the data collected through primary and secondary sources.

The evolution of waste management practices was identified through seven eras of Hirdaramani since its establishment in 1974. Currently company has established its group sustainability development division (in 2012) and throughout this period from 1974 to 2017 by introducing number of waste management practices mainly focusing the attention towards “cutting waste”. Currently the company is continuously carrying out research on procedures to further reduce waste generated by the company and ways to minimize cost of operations through sustainable business practices. The company is currently implementing practices in order to achieve the industry ratio of minimization of waste mainly through the processes of cutting and packaging focusing on reduction of non-value adding tools and equipment. Company apply reuse concept through selling the unnecessary portion of cloths to small sellers. Currently, company is practicing number of recycling procedures in order to minimize waste.

In this study, reasons for adopting waste management practices were identified as legal rules and regulations, self-regulation, supplier and customer pressure, marketing tool and as a strategy for reducing cost. The major problems encountered by the company are the lack of proper approved recyclers in Sri Lanka and the lack of proper regulations from BOI.

### **Limitations and future research directions**

As with any research, limitations are insistent and the limitation of this case study are as follows. Firstly the research was conducted based on qualitative nature and the quantitative aspect was not considered. Secondly, since the research conducted in qualitative case study basis, the associated problem of generalization exists. In this research study, textile industry was mainly focused and from that one leading company is selected. Due to that, this study cannot be generalized to other industries such as finance and banking, hotel and hospitality, agricultural, government etc. Thirdly, the study cannot be replicated easily because there are no straight forward matters that match with the context of other companies. Fourthly, this kind of research always criticized because it is too impressionistic, subjective and biased. The people from whom the information was collected and to whom interviews were carried on can be biased towards their company.

Finally, in this research only apparel industry and from that one leading company was selected. In future research, the studies can be extended to other industries such as agriculture, manufacturing, banking and finance, hotel and hospitality etc. in Sri Lankan and global context.

## References

- Agrawal, R & Sharan, M 2015, 'Municipal textile waste and its management', Vol. 3(1), pp 4-9
- Bandara, NGJ 2010, 'Environmental impacts with waste disposal practices in a suburban municipality in Sri Lanka' *Int. J. Environment and Waste Management*, Vol. 6, no. 1/2.
- Dhakal, R 2008, 'Best practices on solid waste management of nepalese cities'
- Jordeva, S et al. 2014, 'Current state of pre-consumer apparel waste management in macedonia'
- Kavitha, S & Manimekalai, G 2014, 'A study on waste disposal management in garment industry', *International Journal of Textile and Fashion Technology (IJTFT)*.
- Weerakoon, TCT et al. 1996, 'Topical agricultural research', Vol.8, pp. 262-273.
- Yacout, DMM, AbdEl-Kawi, MAA, HassounaDalia, MSM.MY, 'Applying waste management in textile industry'.
- Waste management*, viewed 02 March 2017, [https://en.wikipedia.org/wiki/Waste\\_management](https://en.wikipedia.org/wiki/Waste_management)
- What is waste management? Definition and meaning  
<http://www.businessdictionary.com/definition/waste-management.html>
- Apparel, power & leisure diversified conglomerate- about the company-hirdaramani viewed 02 March 2017, [http://www.hirdaramani.com/company/about\\_us\\_intro.php](http://www.hirdaramani.com/company/about_us_intro.php)