

**SUSTAINABLE PROCUREMENT IN THE RMG SECTOR OF
BANGLADESH: A Focus on Ethical Practices and Environmental
Impact''**

By

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A thesis submitted to the Department of Brac Institute of Governance &
Development (BIGD) in partial fulfillment of the requirements for the degree
of
Masters in Procurement & Supply management (MPSM)

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Brac Institute of Governance & development
Brac University
October,2023

1 Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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2 Approval

The thesis titled “Sustainable Procurement in the RMG sector of Bangladesh: A focus on ethical practices & Environmental Impact” submitted by

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3 Ethics Statement

Hereby, I, Md. Fakhrul Islam consciously assure that for the manuscript on sustainable procurement in the RMG sector of Bangladesh the following is fulfilled:

1. This thesis material is my own original work, which has not been published elsewhere previously.
2. This thesis paper is not currently being well-thought-out for publication elsewhere.
3. This thesis paper reflects my own research and analysis in a straight and complete manner.
4. This thesis paper properly praises the meaningful contributions of co-authors and co-researchers.
5. The outcomes are aptly placed in the context of prior and prevailing research.
6. All the sources are used suitably disclosed (correct excerpt). Literally replication of text must be showed as such by using citation marks as well as philanthropical proper reference.
7. All the authors have been personally and actively tangled in significant work leading to the paper, and will take public responsibility for its content.
8. All the information was collected through the various authentic sources & references. No false or fake information was provided in the thesis.
9. No activities have been done during the thesis which harms the animals & nature as well as people to collect date & physical visits to the factories.
10. All the information has been taken from the current factories in the Bangladesh as well as buyers' protocol who practices the sustainable procurement.

4 Executive Summary

Sustainable procurement involves purchasing environmentally preferable products and services. This study focuses on sustainable Procurement Practices (SPP) in the ready-made garments (RMG) sector of Bangladesh, examining their impacts, benefits, and existing gaps. The research aims to investigate how RMG firms procure, purchase, and produce recycled and eco-friendly products to minimize their environmental impact. Many garment companies are actively working to enhance the environmental performance of their operations and products, and incorporating green procurement practices is a natural extension of these efforts. This paper demonstrates how these practices are adopted as a means to improve products and operations from an environmental perspective, reducing risks, total cost of ownership, and enhancing supply chain performance.

The study reveals various sustainable procurement practices applied by the garments industry in different functions, including raw materials, machinery purchase, packaging and distribution, operations, office components, disposals, and suppliers' engagement. The findings show that 14% of firms are committed to implementing green procurement. Specifically, 7% purchase machinery with Eco Labels, 18% opt for energy-star-rated machinery, 12% prefer equipment repair, 68% procure sustainable raw materials, and 16% invest in recycled plastic products. Additionally, 92% prioritize chemicals that are not harmful to human health or the environment, while 92% seek Oeko-Tex-100 certification, and 84% obtain Environment Clearance from the Ministry of Environment. Furthermore, 16% use bio-based packaging, 100% choose materials that are not harmful to human health, and 16% focus on reducing consumption through reuse or recycling, with an additional 8% reusing or recycling used products.

However, there is a noticeable gap between the sustainable procurement standards and the actual practices followed by the garments industry. Despite

being closely linked to the broader goals of sustainable development, implementing SPP faces certain barriers. To bridge this gap, firm management should educate their employees about the best green procurement practices in different operations. Additionally, the Bangladesh Garment Manufacturers and Exporters Association (BGMEA) could introduce regulations on sustainable procurement for all firms to follow.

Though many buyers from Europe and America have been instructed few guidelines regarding the sustainable procurement practice. They pushed the factories to ensure this before manufacturing the goods as well as before shipping the goods to these countries. Not only that they also take the information of raw materials from where these are sourced & their making policy whether they have ensured sustainability or not? That is why they demanded few certificates which ensure the product manufacturing process of sustainability. For example, the certificate GRS (Global Recycle Standard) ensures the standard of maintaining of recycle process during the time of manufacturing of raw materials.

Oeko Tex certificate ensures that no hazardous chemicals were used in making of dyeing items such as button, sewing thread, yarn and fabric.

SEDEX certificate ensures that no child labor was worked during the making of goods in the finishing factory as well as manufacturing factories.

Also, FSC certificate ensures that paper items made of not cutting the forest or harming the weather because this paper was made the cultivated forest which only cultivated for making the paper items such as hang tag, back board, photo box and cartons.

Keywords:

Sustainable Procurement; Environmentally Preferable Product,

Recycled Product; Environmental Impact; Supply Chain Performance;

Sustainable Development; Green Procurement, Ready made garments; Global

Recycle Standard, (GRS); Global Organic Textile Standard (GOTS); Organic

Content Standard (OCS); Green Procurement Policy (GPP); Effluent Treatment

Plant (ETP); Business Social Compliance Initiative (BSCI).

5 Dedication

I dedicate my dissertation to Mr. Boshir Ahmed Talukder, honorable Vice Chairman of Pretty Group Ltd, who supported me a lot to complete this journey.

I also dedicate to Mr. Tajmul Akther, head of sourcing dept. who provided me advise & instruction regarding this dissertation & my colleague Mr. Shuvojit

Banik who helped me by providing various data & information to complete this dissertation. Finally, I would like to thanks & dedicate the entire works to my

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They have faith on me & I have completed the dissertation finally.

6 Acknowledgement

I express my sincere gratitude and thankfulness to the Almighty for granting me the strength and abilities to successfully complete my thesis report titled "Sustainable Procurement Practices: A Study on Ready-Made Garments Industry in Bangladesh." I am immensely grateful to my supervisor Dr. Md Moniruzzaman sir for his invaluable guidance and support throughout the preparation of this important report. His assistance has been instrumental in its completion, and I am thankful for being assigned such a practical report that has enriched my knowledge from various perspectives.

I would also like to extend my thanks to some of my helpful senior & junior colleagues who generously assisted me in preparing and shaping this report. Additionally, I acknowledge the contributions of all my esteemed teachers from my department, whose teachings have been invaluable throughout my academic journey.

I am also indebted to the Compliance Officers of the relevant firms who provided me with the necessary data, and I extend a special appreciation to the Procurement personnel of these organizations for sharing their practical experiences with me.

The presentation of this report holds great significance in the completion of my MPSM. program, and I am delighted to submit it, ensuring that all essential elements have been included.

Theoretical knowledge holds its true value when successfully applied in the practical field. Thus, I would like to convey my heartfelt thanks to all those who directly and indirectly supported me in completing this thesis report. Your assistance has been truly indispensable.

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List of Acronyms:

BSCI: Business Social Compliance Initiative

CO: Compliance Officer

EIA: Environmental Impact Assessment

FTA: Foreign Trade Association

FY: Financial Year

GPP: Green Procurement Practice

NGO: Non-Governmental Organization

RMG: Ready-Made Garments

WRAP: Worldwide Responsible Accredited Production

Green: A mandatory specification or fully implemented initiative

Yellow: An optional specification or partially implemented initiative

Red: Identified as a potential specification or initiative, but not yet incorporated into procurement.

8 Glossary

Thesis: An extended research paper that is part of the final exam process for a graduate degree. The document may also be classified as a project or collection of extended essays.

Glossary: An alphabetical list of key terms
This is an optional page and can be removed if not used.
Use one table row for each item to allow sorting using Word's table tools.
Apply the style **1_Para_NoSpace** to table rows as shown here.

Chapter One:

INTRODUCTION

1.1 Problem Statement

Sustainable procurement is a significant practice well-established in various developed countries, yet it remains inadequately implemented in our country, especially within the garments industry. The lack of sustainable procurement in this sector leads to environmental pollution, posing a substantial challenge for achieving sustainability. Although green purchasing is often linked with governmental regulations, it is also relevant within the realm of private industry.

In the context of the garments industry, sustainable procurement practices align with the broader goals of sustainable development. Research has shown that private corporations are increasingly adopting sustainable procurement due to consumer demand for eco-friendly products, government initiatives aimed at climate change and environmental preservation, recycling efforts, waste reduction, and job creation benefits.

This study seeks to analyze the present sustainable sourcing methods, their effects, advantages, and identified shortcomings within the clothing sector in Bangladesh. The goal is to promote the adoption of sustainable sourcing and explore the acquisition, buying, and manufacturing of eco-friendly goods to reduce environmental repercussions.

Despite the significant environmental impact of green procurement, there is a lack of comprehensive studies assessing its present implementation status. One concern is how relevant officials understand and apply the benefits of sustainable procurement procedures. This research will provide valuable insights for policymakers. I hypothesize that although the garments industry has an obligation to follow green procurement procedures, the actual implementation falls short of expectations. The inconsistency in putting these practices into action arises due to inadequate enforcement of standards established by relevant authorities. I contend that individuals engaged in the procurement procedure should receive proper training to completely grasp the advantages of environmentally-conscious purchasing.

The paper will include a literature review section, detailing the applied methods, data analysis, and concluding remarks. Garments industry players are beginning to realize the importance of sustainable procurement in sourcing raw materials and substances that promote a clean and healthy environment. To implement this practice effectively, firms must establish strong relationships with suppliers and motivate them with the benefits of sustainable development through green practices. Private firms are taking the initiative to adopt green procurement practices in this regard.

1.2 Background of the Study

Sustainable procurement involves purchasing products and services that are environmentally preferable and have a lower overall impact on the environment compared to standard equivalents. This approach integrates environmental considerations into purchasing decisions, considering factors like price, performance, and quality. Both public and private sectors are recognizing the substantial impacts and benefits of implementing sustainable procurement practices within their organizations.

Sustainable procurement not only brings social and environmental benefits but also has economic advantages. Cost savings are achieved through reduced energy consumption, efficient resource use, and improved material management. Consequently, private sectors have strong incentives to adopt sustainable procurement procedures. Private firms prioritize purchasing raw materials, substances, and chemicals that prioritize environmental, health, and safety concerns.

Bangladesh's impressive achievement in garment exports over the last twenty years has exceeded predictions, transforming the apparel export field into a substantial multi-billion-dollar manufacturing and export sector within the nation. This industry employs more than 1.5 million female workers in various semi-skilled and skilled roles for the purpose of clothing exports., the readymade garment sector accounts for over 70 percent of Bangladesh's total exports, playing a vital role in the country's economy. Introducing sustainable procurement practices in this sector can lead to notable improvements in environmental and safety aspects.

1.3 Justification of the Study

Sustainable Procurement Practice (SPP) plays a vital role in a country's development and is closely linked to the long-term sustainability of firms. However, in Bangladesh, no study on SPP has been conducted yet. Many developed and developing countries have already embraced this practice, and now, even in Bangladesh, the RMG sectors have begun adopting sustainable procurement.

This study aims to provide valuable insights to those interested in working in this area. It delves into SPP practices in different countries, exploring the implications, advantages, and impacts of sustainable procurement standards in various public and private limited organizations, with a special focus on the RMG sectors. This research serves as a valuable resource for RMG firms, offering ideas and insights into sustainable procurement practices.

Moreover, this paper contributes to raising awareness among the general public about the garments industry's efforts to adopt green procurement practices for ensuring its long-term sustainability. By highlighting the significance of green procurement, this study encourages a more environmentally responsible approach within the industry.

1.4 Research Objectives and Questions

The primary aim of preparing this report is to fulfill the requirements for completing the MPSM program by gaining practical knowledge, experience, and understanding how theoretical knowledge is applied in real-life scenarios. The main objectives of this report include:

Understanding and analyzing the ready-made garments industry in Bangladesh.

Examining the procurement systems employed in the ready-made garments factories in Bangladesh.

Investigating the various sustainable procurement practices within the ready-made garments industry.

Assessing whether factories in the industry implement sustainable procurement when purchasing raw materials, substances, and chemicals.

Gaining practical knowledge about sustainable/green procurement and its implications in RMG sectors.

Identifying the factors that drive the adoption of sustainable procurement in RMG sectors.

The questionnaire used to conduct the research has been included in the APPENDIX section. Through this research, I aim to contribute to the knowledge and understanding of green procurement practices in the ready-made garments industry and shed light on its significance for sustainable development.

1.5 Scope of the Study

In this paper, I conducted an analysis of sustainable procurement practices and identified the existing gaps within the RMG (Ready-Made Garments) industry. The research is essential to determine which firms are actively addressing environmental concerns through sustainable procurement practices and to identify the specific sectors where gaps in implementation exist. While some studies have examined sustainable procurement in the context of works and services within both public and private sectors, the majority of the existing literature has focused on the purchase of green products. However, this paper takes a different approach by concentrating on the current practices and gaps related to sustainable procurement in various aspects of the RMG sector in Bangladesh.

Specifically, I investigated sustainable procurement practices in areas such as the commitment to green procurement, machinery purchase, sourcing of raw materials, packaging and distribution methods, operations, office components, disposal practices, and supplier engagement within the RMG industry. By delving into these specific aspects, the paper aims to provide a comprehensive understanding of the current state of sustainable procurement adoption and identify areas where further improvements are needed. The findings of this research can potentially guide policymakers, industry stakeholders, and firms in the RMG sector to develop effective strategies for enhancing sustainability and environmental responsibility through green procurement practices.

1.6 Limitations of the Study

During the preparation of this report, several limitations were encountered, which are as follows:

- I.** Inadequacy of time: Time constraints restricted the depth of research and analysis that could be conducted for the report.
- II.** Inadequacy of money: Limited financial resources hindered the ability to access certain data sources or conduct extensive fieldwork.
- III.** Lack of data sources: Difficulty in obtaining relevant and reliable data sources restricted the scope of the study and led to potential gaps in information.
- IV.** Lack of experience: As a researcher, limited experience in the field of green procurement may have influenced the depth of analysis and interpretation of findings.
- V.** Inconsistency of data set: Inconsistencies in the available data presented challenges in forming a coherent and comprehensive analysis.
- VI.** Complexities in data collection: The process of data collection was complex and demanding, leading to potential limitations in the amount and quality of data obtained.

Despite these limitations, efforts were made to mitigate their impact on the overall research quality and findings. It is essential to acknowledge these constraints to provide transparency and context to the report's outcomes.

Chapter Two:

Literature Review

Bangladesh hosts a variety of manufacturing sectors, and the most dominant market shares are held by sectors such as Ready-Made Garments (RMG), textile production, non-metallic mineral product manufacturing, and food product manufacturing. Among these, the RMG sector claims the largest market share (48.8%). As per recent reports released by BGMEA, Bangladesh currently houses 4621 RMG factories, contributing to 84.2% of the nation's total exports. During the fiscal year 2018-19, the value of RMG exports reached a total of \$34,133.27 million US dollars. The primary clothing items exported by the country encompass shirts, trousers, jackets, sweaters, and t-shirts.

The illustration provided depicts a comparison of Bangladesh's RMG exports in contrast to other competitive nations. Since the start of the 21st century, the Bangladeshi RMG and apparel sector has encountered progressively significant challenges in delivering products that are both high in quality and low in cost, all while adhering to tight deadlines. Moreover, the industry has had to navigate health, social, and environmental compliance requirements in the midst of intensifying rivalry. In the midst of this demanding domestic and international competitive landscape, the continued existence and advancement of Bangladesh's RMG industry are confronted by substantial obstacles. The management sector of Bangladesh's garment factories is dealing with a challenging but promising issue of environmentalism which has come into attention due to certain treaties to fight climate change. This environmentalism has pressurized factories to come up with practices and procedures that will help make companies greener.

In addition to financial factors, now companies also have prioritized environmental factors and keep a balance between the factors. Sustainable procurement refers to the practice of purchasing products that are environmentally friendly and produced in an eco-friendly manner, causing no harm to the environment or human health. It involves selecting contractors and setting environmental requirements in contracts. Sustainable procurement is applicable to organizations of all sizes, and it integrates environmental considerations into the procurement process.

Globalization has made sustainable procurement not only beneficial for local environments but also for the global environment. Both private firms and governmental organizations are increasingly considering environmental issues in their purchasing decisions, making sustainable procurement a logical concept.

The key elements of a sustainable procurement program include using recycled content products, energy-efficient products, alternative fuel vehicles, fuel-efficient vehicles, and bio-based products. Sustainable procurement considers product life cycles, preferring products and services that consume fewer natural resources.

Green purchasing, also known as sustainable procurement, involves integrating environmental considerations into purchasing policies, programs, and actions. It has gained momentum since the 1980s and 1990s, with many countries now implementing such policies. In private organizations, larger firms are more willing to adopt sustainable procurement due to their higher production volume, which brings advantages like reduced environmental risks, cost savings, energy conservation, and reduced material usage.

Collaboration and cooperation among companies, NGOs, and government entities are vital for effective sustainable procurement initiatives. Consumer pressure is a significant driver for environmentally friendly products, and suppliers play a crucial role in ensuring the green nature of the purchased products and services.

Sustainable procurement involves purchasing green products from environmentally conscious suppliers. Suppliers significantly influence the environmental impact of purchased goods, making collaboration and understanding between companies and suppliers essential.

The competitive advantage of a firm heavily depends on its green purchasing decisions, ensuring long-term sustainability by promoting environmentally friendly practices. Building a strong relationship with suppliers and making green purchasing decisions contribute to the overall success of sustainable procurement initiatives.

Chapter Three: Sustainable procurement

3.1 What is Sustainable Procurement?

Sustainable procurement, as described by Richard-Nicolas LACROIX, involves purchasing environmentally preferable products and services in alignment with established "green" procurement preference programs. It aims to select items that have a lower environmental impact throughout their entire life cycle compared to standard equivalents. This process integrates environmental considerations into purchasing decisions, taking into account factors like price, performance, and quality.

The focus of sustainable procurement is to give preference to products or services that use fewer natural resources and exert a lesser environmental impact compared to alternatives. The goal is to prevent waste and pollution by considering environmental factors alongside traditional criteria when making purchasing choices. Implementing sustainable procurement policies and programs can lead to reduced expenses and waste, improved resource efficiency, and influence various aspects of production, markets, prices, packaging, distribution, available services, and organizational practices.

Typical elements of a sustainable procurement program include using recycled products, bio-based products, eco-labeled machinery, alternative fuels, fuel-efficient vehicles, sustainable raw materials, and renewable energy sources. To ensure the effectiveness of sustainable procurement, products must meet established standards, carry relevant labels, or possess certifications that guarantee their environmental performance.

For successful sustainable procurement practices, both government and non-governmental organizations should collaborate to support ready-made garment firms in realizing the benefits of Green Public Procurement (GPP) in practical terms. Countries that embrace green procurement are often seen as promoting environmentally responsible citizenship. To further the development of eco-friendly products and services, it's essential to collect and share information on global purchasing

activities. This knowledge exchange can encourage more sustainable choices across the board.

3.2 Sustainable Procurement Practices

Sustainable procurement, also known as purchasing "Eco-friendly" products and services, focuses on choosing items with lesser environmental impacts. Consumers have the power to contribute to the environment positively by opting for products that are more environmentally friendly. This practice is not limited to individuals but extends to various entities such as governments, companies, universities, hospitals, garments, and industries, all of which make purchasing decisions regularly.

Prominent organizations like Niagra Textile Ltd and GMS Composite Ltd play a significant role in improving human health and the environment when they implement sustainable procurement policies and purchase more "eco-friendly" products and services.

Both public and private institutions are recognizing and quantifying the benefits of their sustainable procurement programs. Governments and companies are increasingly adopting sustainable procurement practices due to the numerous advantages they offer. Government organizations find that sustainable procurement policies lead to overall cost reduction, efficient use of materials, resources, and energy, improved employee health, and stimulation of markets for innovative products and services.

In the midst of fierce competition, regulatory demands, and market pressures, private enterprises recognize the economic advantage of procuring products and services that have minimal environmental effects. Additionally, they show a preference for suppliers who are dedicated to enhancing their environmental, health, and safety records. The power of their demand allows businesses and government agencies to accelerate the availability of greener, cleaner products. By setting specific criteria in tender specifications, such as minimum recycled content, improved energy efficiency, and reduced toxicity, buyers can significantly increase the supply and quality of environmentally superior products.

To validate supplier claims, there is a growing number of certification and labeling organizations available. Large organizations like Niagra Textile Ltd are encouraging manufacturers to produce a variety of environmentally friendly and improved products.

The BGMEA is playing a supportive role by providing guidelines to firms, helping them become more conscious and take initiatives to adopt sustainable procurement practices. Overall, sustainable procurement is becoming an important strategy for promoting sustainability and protecting the environment across various sectors.

Now in Bangladesh RMG sectors below sustainable policies are practicing hugely.

1. ETP set up in each factory
2. Green House stationary combustion tools
3. Waste inventory management
4. Energy Saving management
5. Using of solar Plant for power
6. Women empowerment
7. Ensuring health safety, doctor and hospital arrangement
8. Social and labor policy
9. Using of recycle materials
10. Using of Biodegradable materials
11. BSCI Audit in each year
12. GRS certificate & audit in each year
13. GOTS certificate
14. AMPHORI audit & certificate
15. Using of recycle chemicals
16. Child/baby day care facilities
17. Social goals and objectives policy
18. Sustainable goals policy
19. Ensuring proper sanitization and hygienic policy
20. Air Emission inventory liberty
21. Ethical procurement policy
22. Same opportunity to all
23. Ensuring international labor law.
24. Organized R&D section for sustainable improvement.

3.3 sustainable procurement practices in Bangladesh RMG.

Sustainable Procurement Practice (SPP) offers significant economic benefits for private companies, including risk management, cost reduction, and revenue growth. The advantages of SPP are multifaceted, such as reducing expenditures and waste, increasing resource efficiency, and influencing production, markets, prices, distributions, and available services. Implementing SPP also helps countries meet multilateral requirements, demonstrating a commitment to environmentally sustainable purchasing decisions.

For governments, sustainable procurement plays a crucial role in mitigating negative and unintended environmental impacts, such as pollution and degradation of local air quality. It supports companies that provide products and services with fewer environmental impacts and fosters the development of "green" and innovative products and businesses. By embracing sustainable procurement, governments can save money that would otherwise be spent on cleaning up pollution and managing environmental consequences.

Private companies benefit from sustainable procurement by making sustainable purchasing choices. Implementing and evaluating sustainable procurement strategies, selecting environmentally conscious suppliers, and prioritizing environmental concerns in key purchasing areas are all part of the process. Sustainable procurement also enables organizations to influence the market by driving demand for more sustainable and eco-friendly products and services. This influence is especially potent for larger companies, including government entities.

Financial benefits for private companies come from reduced resource consumption when using green products, leading to savings on energy, water, fuel, and other resources. Additionally, cost savings can be achieved through recycling and using products with reduced waste, thereby lowering disposal expenses. Companies can avoid costs related to waste management or hazardous materials by adopting

Pretty Group has the Air emission reduction policy & air purification policy based on the sustainable strategy. Ambient air monitoring evaluates the status of the atmosphere and provides air quality information to regulators, scientists, industry, and the public. Ambient air quality monitoring is required to determine whether a geographical region or area is meeting the National Ambient Air Quality Standards (NAAQS) for criteria pollutants. In addition to determining areas where air quality standards are not being achieved (non-attainment areas), the monitoring data are used to assess trends in air quality, and to assess the impact of pollution generated by various activities. The emissions from stationary sources (and other types of sources, e.g., mobile sources such as automobiles) directly impact the ambient air quality of a region and the pollutant levels detected by ambient monitoring.

Stationary source emissions monitoring provides data and information from a regulated stationary source (facility) to demonstrate compliance with certain regulatory requirements in Federal or State rules and/or in an operating permit, as well as provides useful information to the facility operator about the performance of the process and air pollution control device so that corrective action can be taken, if necessary. Most monitoring that stationary sources must conduct is related to specific regulations resulting from the Clean Air Act (CAA).

Pollutants that are monitored may include criteria pollutants and toxic air pollutants. There are six criteria pollutants that the Clean Air Act has outlined as being most important to examine: Carbon Monoxide (CO), Particulate Matter (PM), Sulfur Dioxide (SO₂), Nitrogen Dioxide (NO₂), Ozone (O₃), and Lead (Pb). Toxic air pollutants, also referred to as Hazardous Air Pollutants (HAPs), are known or suspected to cause serious health problems. There are currently 188 HAPs that are regulated under EPA's federal National Emission Standard for Hazardous Air Pollutants (NESHAP) program. Individual local and State air pollution programs also often define what specific pollutants are considered to be toxic air pollutants. The Air emission inventory report as below:



AIR EMISSION INVENTORY SHEET

Version 1

| Name of Company/Production Unit: PRETTY SWEATERS LTD. | | | | | | | | | | | | |
|---|----------------|--|---------------------------|-----------------------------|--|----------------------|--------------------------------|--------------------------------|--|--|-------------------------------------|---------|
| Updated on: | | Date: 04/04/2017 | | | | | | | | | | |
| Responsible Person | | Name: Md. Amirul Islam | | | | | | | | | | |
| | | Designation: Manager (Maintenance) | | | | | | | | | | |
| S.I.No | EMISSION POINT | NAME OF POLLUTANT | SOURCE/ EQUIPMENT | EMISSION AMOUNT (AND UNITS) | LEGAL EMISSION LIMIT(IF ANY) | MONITORING FREQUENCY | ANY CONTROLL DEVICES INSTALLED | DATE OF LAST AIR EMISSION TEST | EMERGENCY CONTACT PERSON(NAME, DESIGNATION & CONTACT NO.) | CHECKED BY(NAME & DESIGNATION) | CHECKED ON(DATE - FORMAT DDMMYYYY) | REMARKS |
| 1 | Stack #1 | 1.Particulate. 2.Oxides of Nitrogen | GAS Generator (1.5 MW) | | 1. 350 mgNm ³ 2. 30 PPM | Annual | No | N/A | Md.Arif Hasan Jony Desg. Asst.Manager (Compliance) | Engr. Amirul Islam Desg. Manager (Maintenance) | 23/04/2017 | |
| 2 | Stack #2 | 1.Particulate. 2.Oxides of Nitrogen | GAS Generator (1.5 MW) | | 1. 350 mgNm ³ 2. 30 PPM | Annual | No | N/A | Md.Arif Hasan Jony Desg. Asst.Manager (Compliance) | Engr. Amirul Islam Desg. Manager (Maintenance) | 23/04/2017 | |
| 3 | Stack #3 | 1.Particulate. 2.Oxides of Nitrogen | Diesel Generator (1000KW) | | 1. 350 mgNm ³ 2. 30 PPM | Annual | NO | N/A | Md.Arif Hasan Jony Desg. Asst.Manager (Compliance) | Engr. Amirul Islam Desg. Manager (Maintenance) | 23/04/2017 | |
| 4 | Stack #4 | 1.Particulate. 2.Oxides of Nitrogen | Diesel Generator (400KW) | | 1. 350 mgNm ³ 2. 30 PPM | Annual | No | N/A | Md.Arif Hasan Jony Desg. Asst.Manager (Compliance) | Engr. Amirul Islam Desg. Manager (Maintenance) | 23/04/2017 | |
| 5 | Stack #5 | 1. Soot & Particulate. 2.Oxides of Nitrogen | Gas Boiler (3.0 Ton) | | 1. 100 mgNm ³ 2. 150 mgNm ³ | Annual | No | N/A | Md.Arif Hasan Jony Desg. Asst.Manager (Compliance) | Engr. Amirul Islam Desg. Manager (Maintenance) | 23/04/2017 | |
| 6 | Stack #6 | 1. Particulate. 2.Oxides of Nitrogen | Gas Boiler (6.0 Ton) | | 1. 100 mgNm ³ 2. 150 mgNm ³ | Annual | No | N/A | Md.Arif Hasan Jony Desg. Asst.Manager (Compliance) | Engr. Amirul Islam Desg. Manager (Maintenance) | 23/04/2017 | |

3.4 Shortcomings of Sustainable Procurement

While sustainable procurement practices offer numerous advantages, there are also certain shortcomings that can make their implementation challenging. These shortcomings can occur in various sectors. Some of the key sectors where challenges may arise include:

Cost Considerations: One of the primary challenges is that eco-friendly products and services may sometimes have higher upfront costs compared to conventional alternatives. This can deter some organizations, especially smaller ones with limited budgets, from adopting sustainable procurement practices.

Limited Availability: In certain regions or industries, there might be a limited supply of environmentally preferable products and services. This can make it difficult for organizations to fully embrace sustainable procurement, as they might struggle to find suitable suppliers.

Product Performance and Quality: Some eco-friendly products may not yet match the performance or quality standards of their traditional counterparts. Organizations might be hesitant to compromise on performance, which can hinder the adoption of sustainable procurement practices.

Lack of Awareness and Information: Many businesses and government agencies might not have sufficient awareness or information about environmentally friendly options. Without proper education and knowledge, decision-makers may not prioritize sustainable procurement.

Complexity of Supply Chains: In industries with complex supply chains, it can be challenging to trace the environmental impact of every component and material used. This makes it difficult to ensure that the entire supply chain adheres to sustainable procurement principles.

Regulatory Barriers: Sometimes, existing regulations or policies may not be fully aligned with sustainable procurement goals. This can create obstacles for organizations aiming to make environmentally conscious purchasing decisions.

Long-Term Benefits vs. Short-Term Costs: While sustainable procurement practices may yield long-term benefits for the environment and society, some organizations might focus more on short-term financial gains, which can deter them from investing in eco-friendly options.

Resistance to Change: Resistance to change within organizations can be a significant barrier to implementing sustainable procurement practices. Convincing stakeholders to adopt new policies and procedures may require substantial effort.

Measurement and Reporting Challenges: Effectively measuring and reporting the environmental impact of procurement decisions can be complex. This can make it difficult for organizations to assess their progress and demonstrate the benefits of sustainable procurement.

Sustainability Standards and Certifications: The proliferation of different sustainability standards and certifications can lead to confusion and make it challenging for organizations to identify credible and relevant eco-friendly products and services.

Despite these challenges, it is essential to recognize the potential benefits of sustainable procurement and work towards overcoming these shortcomings. Collaboration between governments, businesses, and other stakeholders can play a crucial role in addressing these challenges and promoting more sustainable procurement practices.

Price:

The common belief that green products are more expensive is accurate in certain cases, primarily when development costs are incorporated into their pricing. However, the underlying problem may stem from ordering products in small quantities or facing limited local availability. It is worth noting that some green products might initially cost more, but their overall lifetime expenses are lower. For instance, non-toxic alternatives to harmful products result in reduced transportation, storage, handling, and disposal costs. They also require fewer permits and less staff training, while accidents have less severe consequences. Additionally, products with minimal packaging and easy recyclability or reusability incur lower disposal expenses. Therefore, although green products may seem pricier initially, their long-term advantages and decreased operational costs make them more financially viable options. Embracing sustainable procurement practices that prioritize sustainable products and services not only lead to cost savings but also contribute to environmental preservation (CO, GMS textile Ltd).

Lack of corporate commitment:

To establish a sustainable procurement program, a firm needs commitment from all levels, including senior management and purchasing agents involved in sourcing raw materials, manufacturing finished goods, and delivering products to customers. This endeavor can be challenging due to the complexity of managing and coordinating communication across the supply chain.

Addressing these challenges involves securing support from top management, effective communication and training, clear guidelines and policies for sustainable purchasing, engaging with eco-conscious suppliers, offering incentives and recognition, establishing data collection and reporting systems, and overcoming specific barriers hindering sustainable procurement. Continuous improvement and a shared commitment to environmental responsibility are vital to the success and sustainability of the green procurement program.

Insufficient knowledge:

Numerous organizations are unfamiliar with the concept of sustainable procurement. To engage in such practices, an organization must grasp the underlying concepts, vocabulary, and terminology. Additionally, availability poses another obstacle. Often, local distributors do not carry green products, or if they do, it's in limited quantities. The preference of local customers for low-cost items can also cause delays in acquiring green products. However, by increasing market demand, it becomes possible to overcome this challenge.

Lack of Capital

Another hindrance to Green Public Procurement (GPP) is the lack of capital to invest in energy-star-rated and eco-labeled machinery necessary for producing green products. These advanced machines come with a high price tag, making them costly investments. Smooth production operations often require the use of such machinery. Unfortunately, smaller firms with limited production volumes might find it challenging to afford these costly machines. Consequently, they face difficulties in participating in GPP initiatives.

More Interest to Earn Profit

Some companies prioritize their pursuit of profits over ensuring quality production, which leads to a lack of interest in engaging in activities focused on sustainability and responsible practices. These profit-driven firms tend to prioritize short-term financial gains and may overlook the importance of adopting environmentally friendly measures and participating in initiatives that promote social and environmental responsibility.

While profitability is a critical aspect of running a business, it is equally important to strike a balance between financial success and ethical conduct. Embracing sustainable practices, such as Green Public Procurement (GPP), can offer various long-term benefits, including cost savings, enhanced brand reputation, increased appeal to environmentally conscious consumers, and positive contributions to environmental preservation.

Addressing the behavior of profit-driven firms involves raising awareness about the value of sustainability and encouraging them to adopt more responsible business practices. Government regulations, consumer demand for eco-friendly products, and public pressure for corporate social responsibility can play pivotal roles in motivating these firms to reconsider their priorities and embrace a more sustainable approach to business.

No specifications

Suppliers should be requested to furnish the environmental specifications of the products they offer. Similarly, purchasers must clearly outline their needs and requirements.

People's purchasing habits pose a significant barrier to sustainable procurement since individuals often stick to their usual ways of buying. Overcoming this mindset can be challenging.

Existing relationships between purchasers and suppliers may make it difficult to transition to alternative, more environmentally friendly options.

Potential barrier to trade

Globalization and international trade present challenges in establishing green procurement programs for private firms. Trade barriers, such as export and import quotas, can hinder the adoption of green procurement practices. When an importing country imposes high tariffs on products from the exporting country, it can lead to financial losses for the exporting firms. This becomes a significant obstacle for implementing green procurement because if firms face losses, they may be discouraged from investing in sustainable practices and producing high-quality products.

CHAPTER FOUR: READY-MADE GARMENTS INDUSTRY IN BANGLADESH

4.1 RMG In Bangladesh:

The Ready-Made Garments (RMG) sector in Bangladesh took its initial step into the clothing export market in 1978, making it just 30 years old today. Over time, Bangladesh has grown remarkably in this industry and currently holds over 4 percent of the global clothing export market share, ranking as the third-largest garments exporting country after China and Turkey. In the fiscal year 2012-2013, RMG exports amounted to USD 21.5 billion (M M Shahnewaz Kabir Shawon, 2011).

RMG products mainly fall into two categories: knit garments and woven garments. While the country predominantly focused on and produced woven garments in the past, there has been a strategic shift towards prioritizing the production of knitwear garments. This change in focus has resulted in Bangladesh gaining competitive advantages in the global clothing export market. As a testament to this success, Bangladesh secured the second position as a knitwear exporter in terms of volume in 2010. In 2013, the country's textile and clothing exports amounted to USD 2696.4 million, showing growth from USD 2538.8 million in the same period of the previous year (M M Shahnewaz Kabir Shawon, 2011).

Several factors contributed to this tremendous achievement in the garments industry, including the availability of a cheaper workforce, the adoption of new technology, the supply of cheaper energy, and supportive policies from the government. These combined efforts have propelled Bangladesh's clothing industry to its current position in the global market.

4.2 Impacts of Ready-Made Garments on Country Economy

The ready-made garments industry significantly contributes to Bangladesh's economy, and its impact is continuously increasing. Currently, the RMG sector has provided employment opportunities for nearly 5 million workers, with women comprising 50 percent of the workforce. This has led to more women participating in the workforce outside their homes, contributing to their families' income, achieving self-sufficiency, and consequently reducing the unemployment rate. Additionally, the RMG sector plays a supportive role in the country's banking and financial sectors.

Despite some challenges such as port and transport inefficiencies, insufficient electricity and gas supply, and the rise in cotton prices, Bangladesh has consistently demonstrated strong growth in RMG exports.

4.3 Present Situation in Ready-Made Garments

Bangladesh holds the position of the second largest exporter of ready-made garments globally. During the July-June period of 2012-2013, the country's garment exports experienced a significant increase of about 12.7 percent, reaching US\$ 21.515 billion, compared to US\$ 19.089 billion in the corresponding period of 2011-2012. Europe was the primary export destination, accounting for US\$ 12.56 billion, followed by the USA and Canada, contributing US\$ 4.99 billion and US\$ 980 million, respectively (Ferdus Alam, 2013).

However, Bangladesh's industrial reputation has been affected by two major industrial accidents. The Tazreen Fashion Factory fire in November 2013 claimed 110 lives, while the collapse of the Rana Plaza garments factory in April 2013 resulted in the death of 1,100 people, making it one of the world's deadliest industrial accidents. Following these incidents,

the US government suspended the Generalized System of Preferences (GPS) from Bangladesh, which allowed duty-free entry of goods from least developed countries. This suspension led to an export fall of nearly \$40 million, as the country annually exports \$5 billion worth of garment products to the USA market. The suspension of GPS accounted for a 0.8 percent decline in exports. There is concern that the European Union might also take similar action in response to the situation.

Another issue in the ready-made garments sector is worker clashes demanding a minimum monthly wage of Tk8000. These clashes have resulted in the closure of some factories, and eventually, a minimum wage of Tk 5300 per month has been fixed for workers.

In December 2013, the European Union threatened to withdraw the Generalized System of Preferences from Bangladesh as well. If this occurs, the price per unit of garments will rise, leading to substantial losses for the country. The present political instability in Bangladesh has further exacerbated the situation, with the ready-made garments sector suffering losses in billions of takas annually. Political unrest has caused buyers to cancel orders, as firms struggle to supply garment products on time. If this situation persists, the Bangladesh RMG industry is expected to incur significant losses.

4.4 Sustainable procurement & its practices:

The ready-made garments industry offers numerous opportunities for implementing sustainable procurement practices. These opportunities include:

Commitment to sustainable Procurement: Making a dedicated commitment to prioritize and integrate environmentally friendly procurement practices throughout the organization. Recently all the buyers taking the products of recycle materials. For example, buyers are taking thread which made of bamboo or recycled plastic wastage. They are taking recycle

resin made button & labels. Not only that in the packaging sectors they take carton paper from the FSC certified company, who ensure the paper quality of recycle. Not only that now a day's buyers are taking recycle & biodegradable or compostable poly bag which mixed up with the soil within fifteen days of unused.



Machinery Purchase: Opting for eco-friendly and energy-efficient machinery when procuring equipment for garment manufacturing. Currently in the RMG sector machineries are made based on eco-friendly system. Less emission of air, less use of fuel, less use of hazardous chemicals, which mostly imported from Germany, Japan, Italy, Korea & china.

Raw Materials: Sourcing sustainable and environmentally preferable materials for garment production. Such as biodegradable poly resin, recycle polyester button resin, recycle yarn grey, recycle hang tag paper, recycle paper gum tape. Also, the chemicals which uses in the dyeing & washing and the ETP plant are made of from sustainable source.

Packaging and Distribution: Utilizing eco-friendly packaging materials and adopting efficient distribution methods to reduce environmental impact. In the RMG sector all the packaging materials are now going to be in the recycle materials items such as paper gum tape, FSC paper for carton & biodegradable poly bag & blank carton without printing.

Operations: Implementing green practices within the production processes and daily operations of the garment factories.

Office Components: Employing eco-friendly office supplies and equipment to minimize environmental footprint in administrative functions.

Disposal: Properly managing waste and promoting recycling or responsible disposal of materials used in garment production. ETP plant is the vital example of it. It helps to clean the water & reuse it several times in the production. for a single garments production, need at list 2000 ltr water. If we not use ETP then this could be impact hugely on environment.



Supplier Engagement: Engaging with suppliers who follow sustainable practices and adhere to green procurement principles.

Reports and Billing: Incorporating environmental criteria and sustainability considerations into reporting and billing procedures. Now using ERP software & paper less report & bill could be submitted

Reduction or Reuse: Implementing measures to reduce waste generation and encourage the reuse of materials wherever possible.

Resources Input: Optimizing the use of resources, such as water and energy, to reduce consumption and minimize environmental impact.

Products Design: Incorporating eco-friendly design principles to create garments that have a reduced environmental footprint throughout their lifecycle.

Manufacturing: Emphasizing environmentally responsible manufacturing processes and adopting eco-friendly technologies. Now a days using solar panel & wind shell for the power support reduces the high use of gas generator & diesel which saves nature.



Use and Maintenance: Encouraging consumers to use and maintain garments in a sustainable manner, extending their lifespan and reducing waste.

By embracing these scopes of green procurement, the ready-made garments industry can contribute significantly to environmental conservation and sustainability.

CHAPTER FIVE:

METHODOLOGY

5.1 Sampling

There are around 5000 firms in the garments industry, as reported by BGMEA (accessed on March 2, 2015). For my study, I selected a sample of 25 firms from two different regions. However, it's important to acknowledge that this sample size may not fully represent the entire population of 5000 firms due to two main factors: locational and product variations.

Firms' procurement practices are influenced by their location. For instance, firms situated in urban areas may have different procurement facilities compared to those in rural areas. Additionally, the type of final products being manufactured also impacts the procurement process. To account for these variations, I aimed to conduct a sampling that includes both urban and rural areas, as well as firms producing different final products. Consequently, I visited firms from two urban areas, Ashulia and Gazipur, mainly focusing on those producing jeans and shirts. However, this approach unintentionally excluded firms manufacturing items such as kids' dresses, pants, and T-shirts.

Regrettably, I encountered challenges that prevented me from achieving a fully representative sampling. Firstly, time constraints limited the number of firms I could include in the study. Secondly, resource limitations made it difficult to expand the sample size to cover both urban and distant rural areas adequately. Lastly, as the sole interviewer, I found it demanding to effectively communicate with respondents, which further affected the scope of the study.

5.2 Sampling Techniques

I utilized the snowballing technique for gathering data, where one respondent would inform me about other respondents in the garments industry. I also inquired if they had any acquaintances working in other industries who could participate. In some cases, the respondents themselves contacted potential participants on my behalf, and on other occasions, they provided me with their business cards. Through this method, I managed to obtain introductions to approximately 20 respondents.

However, it is important to acknowledge a potential flaw in the snowballing approach. This technique may lead to a biased sample, as the introduced respondents could have similar environmental concerns. This bias can result in either an overly positive or overly negative set of results, particularly since familiar individuals often hold similar ranks and positions. Due to limitations in time and resources, I was unable to address or eliminate these biases during the course of this study.

5.3 Interview:

During the interviews, I employed a structured questionnaire consisting of closed-ended questions with three response choices: Green, Yellow, and Red. The questionnaire was divided into nine segments, covering various aspects related to environmental practices. These segments included commitment to green procurement, machinery purchase, raw materials, packaging and distribution, operations, office components, disposal, supplier engagement, and others.

I read the questions from the questionnaire to the respondents and recorded their responses by ticking the appropriate boxes. On average, each interview lasted approximately 45 minutes. To maximize efficiency, I conducted five interviews per day. This approach allowed me to collect valuable data on the respondents' environmental commitments and practices in the garments industry.

5.4 Questionnaire

I developed the questionnaire based on the Canadian green procurement standard, which I obtained from a website. Despite the socio-economic disparities between Canada and Bangladesh, I chose to use the Canadian standard for two specific reasons.

Firstly, adopting the Canadian standard allowed me to establish a benchmark and set targets for addressing environmentally sensitive issues and concerns within the garments industry in Bangladesh. By aligning with an established and recognized standard, I aimed to promote sustainable practices and contribute to environmental preservation.

Secondly, considering Bangladesh's export relations with developed countries like Canada, conforming to their environmental standards could have positive effects on our export volumes. Complying with internationally accepted green practices enhances the reputation of Bangladeshi garments in the global market and may lead to increased demand for our products.

By utilizing the Canadian green procurement standard as a reference, I sought to promote sustainable practices within the Bangladeshi garments industry and potentially elevate our export competitiveness in the international marketplace.

5.5 Sources of Data

The data collection for this study involved both primary and secondary sources. Primary sources included direct conversations with officials from selected garments industry firms and observations of various organizational procedures. These direct interactions and observations are considered primary sources of data.

On the other hand, secondary data were collected from external sources such as magazines, journals, periodicals, publications, internet browsing (various websites), books, and articles. These sources provided existing information that was not gathered directly for this study but was relevant to the research objectives.

During the data collection process, the visited garment firms provided information in a descriptive manner, offering insights into their environmental practices and policies. Subsequently, the data analysis was conducted with a focus on the specific research objectives and intended outcomes of the study.

By employing a combination of primary and secondary sources, the study aimed to gather comprehensive and relevant information regarding the environmental practices within the garments industry. The analysis was guided by the study's purpose and objectives to derive meaningful results from the collected data.

CHAPTER SIX: Result and findings

Data have been analyzed below following segments.

6.1 Commitment to Sustainable Procurement

| Area | Green | Yellow | Red |
|---|--------------|---------------|------------|
| considerations into procurement considerations into procurement | 14% | 70% | 16% |
| Comprehensive Guidelines for Green Procurement Practices. | 0% | 14% | 86% |
| Voluntary persuasive for green procurement | 0% | 100% | 0% |
| Discretion of environment more than costs | 0% | 30% | 70% |

In the survey of 25 firms, only 14% of the respondents expressed their willingness to design and implement green procurement practices. However, it is noteworthy that the Compliance Officer (CO) of Niagra Textile Ltd stated their ambitious "vision-2021," aiming to secure the top position in the garments industry by integrating environmental considerations into procurement. These firms prioritize environmental issues over costs.

A majority of the companies surveyed express a dedication to implementing green procurement principles across multiple dimensions of their supply chains, encompassing machinery procurement, raw materials, packaging and distribution, office supplies, operations, disposal practices, and engagement with suppliers. Nonetheless, it's noticeable that these supply chains are not entirely synchronized with green procurement standards. Only a minority of firms, approximately 14%, partially adhere to green procurement guidelines without complete compliance. On a positive note, all surveyed firms, constituting 100%, have voluntarily taken initiatives for green procurement practices, demonstrating their proactive approach towards environmentally responsible actions.

Overall, the survey indicates a mix of intentions and actions among the surveyed firms regarding green procurement. While some firms are actively pursuing green practices and have ambitious goals, others may need further encouragement or support to fully implement and integrate green procurement throughout their operations.

6.2 Machinery Purchase

| Area | Green | Yellow | Red |
|--|-------|--------|-----|
| Purchase of Eco style machinery | 7% | 77% | 16% |
| Purchase vigor Star machinery | 18% | 70% | 12% |
| Make up the equipment rather than replacing | 12% | 40% | 48% |
| Purchase machines made from recycled materials | 0% | 100% | 0% |
| Use of renewable energy | 0% | 38% | 62% |
| Certification of Okeo- Tex 1000 | 0% | 26% | 74% |

In the garments industry, some firms have embraced green procurement by purchasing Eco Labeled machinery, which meets the requirements of environmentally responsible practices. Additionally, they invest in Energy Star machinery certified by the USA, which emits no smoke and helps prevent environmental pollution. These machines are not only energy-saving but also equipped with various fonts, symbols, and exclusive features, contributing to a cleaner and healthier environment. Although the initial cost of purchasing these machines is high, they prove to be efficient and cost-effective in the long run.

Only a small percentage of firms, around 7%, currently invest in Eco Labeled machines, while approximately 18% opt for Energy Star machinery. This suggests that there is still room for more firms to adopt these environmentally friendly options.

Regarding machinery performance, the surveyed firms prefer replacement if a machine does not function well, indicating their commitment to maintaining optimal efficiency and productivity.

However, it is worth noting that none of the surveyed firms currently use renewable energy sources for their operations. This indicates a potential area for improvement, as shifting to renewable energy could further enhance the environmental sustainability of the garments industry.

Interestingly, 26% of the surveyed firms possess Oeko-Tex-1000 certificates. However, it is specified that these certificates are not necessarily obtained in a "green" manner, suggesting that there might be additional steps or measures needed to fully align these certifications with green procurement practices.

Overall, the findings indicate some positive steps taken by certain firms in the garments industry towards green procurement, particularly in machinery selection and certification acquisition. However, there is room for further progress in terms of renewable energy adoption and ensuring that certifications truly reflect environmentally friendly practices.

6.3 Raw Materials

| Area | Green | Yellow | Red |
|---|-------|--------|-----|
| Purchase of green raw materials (fabric, yarns etc.) | 68% | 32% | 0% |
| Recycled plastic products (buttons and others) | 16% | 84% | 0% |
| Metal parts contain recycled material (zippers, metal buttons etc.) | 16% | 84% | 0% |
| Purchase of bio-based materials | 0% | 88% | 12% |
| Chemicals are not harmful to human | 92% | 8% | 0% |

| | | | |
|--|-----|-----|----|
| health or environment | | | |
| Certification of Oeko-Tex 100 | 92% | 8% | 0% |
| Environment Clearance from Ministry of Environment | 84% | 16% | 0% |

Raw materials purchasing plays a crucial role in the production of finished products, and green procurement extends to the sourcing of these materials. It is essential for the entire procurement process to be environmentally responsible; otherwise, the entire supply chain could be compromised. The quality and sustainability of raw materials significantly impact the lifetime and environmental footprint of the finished products. Fortunately, 68% of the surveyed firms are conscious of this fact and make efforts to purchase raw materials from sustainable fabric sources.

Another positive aspect of green procurement is the limited use of plastic products, with only 16% of the firms opting for recycled plastic items. Additionally, these firms prioritize the use of chemicals that are non-harmful to the human body, highlighting the importance of health-conscious practices in green procurement efforts.

An essential certification in the textile industry is Oeko-Tex 100, an independent testing and certification system that assesses the environmental safety of textile raw materials and products at all stages of production. It covers a wide range of items, including raw and dyed/finished yarns, fabrics and knits, and ready-made articles like clothing, household textiles, and more. It's encouraging to note that 92% of the firms surveyed have obtained this certification, demonstrating their commitment to ensuring the environmental friendliness of their products.

Furthermore, it is commendable that 84% of the firms have received certification from the Ministry of Environment, attesting to their diligence in preventing environmental pollution.

Overall, the findings indicate a positive inclination towards green procurement practices in the area of raw materials purchasing. The use of sustainable fabrics, limited plastic consumption, and adherence to certifications demonstrate the efforts made by a significant portion of the surveyed firms to prioritize environmental sustainability in their supply chains.

6.4 Packaging and Distribution

| Area | Green | Yellow | Red |
|---|-------|--------|-----|
| Use of bio-based packaging | 16% | 84% | 0% |
| Cartons are made from recycled cardboard | 0% | 100% | 0% |
| Re-use cardboard cartons to ship products | 0% | 68% | 32% |

Green procurement implementation involves various aspects, including packaging and distribution. Approximately 16 percent of companies opt for eco-friendly options by using bio-based packaging, which excludes recycled cardboard cartons. The shipment of products plays a crucial role in the selling process, and currently, no firms utilize reused cardboard for this purpose. However, 68 percent of companies adopt a more flexible approach, employing both new and reused cardboard depending on the specific situation.

6.5 Operations

| Area | Green | Yellow | Red |
|---|-------|--------|-----|
| Purchase materials that are not harmful to human health | 100% | 0% | 0% |
| Reduce consumption through Reuse or Recycle | 16% | 72% | 12% |

Every company prioritizes the acquisition of materials that pose no harm to human health, which signifies effective implementation of green procurement practices. Another key aspect of green procurement involves evaluating the extent of material recycling and reuse. Additionally, the approach aims to promote the trend of dematerialization by utilizing lighter equipment made from readily available materials.

Around 16 percent of firms actively adhere to guidelines focused on reducing paper usage and conserving resources like water and electricity. However, 12 percent of companies do not currently follow these guidelines.

Since the primary goal of these firms is to maximize profits while ensuring long-term sustainability, they heavily rely on exporting or selling garments to target customers. To cater to the demands of buyers, who are often foreign entities, these companies must align with environmental considerations in their procurement practices. Foreign buyers, in particular, emphasize reducing consumption and adopting eco-friendly measures, thereby influencing the local firms to comply with such guidelines to attract customers.

6.6 Office Components

| Area | Green | Yellow | Red |
|---|-------|--------|-----|
| Purchase of recycled paper | 0% | 100% | 0% |
| Use of bio-based materials (inks, carpets etc.) | 0% | 100% | 0% |

Paper usage and consumption present significant concerns within the garments industry. Interestingly, some companies have adopted a sustainable approach by reusing paper up to three times. For instance, the CO (Chief Officer) of Niagra explained their practice of using A4 size paper for printing initially. Once one side is printed, they utilize the other side for

printing as well. Finally, the paper with both sides printed is repurposed for providing breakfast to the workers, exemplifying a commendable effort to minimize waste.

Furthermore, all firms, totaling 100 percent, are conscious of the importance of purchasing paper that can be recycled, showing their commitment to environmentally friendly practices. In addition to this, many companies within the industry are embracing the use of bio-based materials, such as ink and carpets, further promoting sustainability and reducing their ecological footprint.

6.7 Disposal

| Area | Green | Yellow | Red |
|--|-------|--------|-----|
| Purchase of product that generate no or less waste | 0% | 84% | 16% |
| Reuse or recycle the used products | 8% | 92% | 0% |

Sustainable procurement emphasizes the importance of purchasing products that lead to minimal waste generation, aiming for products with low waste emissions or none at all. As part of this commitment, approximately 84 percent of firms actively seek out products that have a low waste impact. Moreover, 8 percent of these companies take the extra step to recycle or reuse used products, a pivotal aspect of green procurement, as it offers cost-saving benefits.

In fact, recycling and reusing products prove to be financially advantageous, making it a significant factor in implementing sustainable procurement practices. Notably, all firms engage in some form of using recycled or reused products, as the decision depends on the specific products or circumstances involved. This approach not only supports environmental preservation but also demonstrates a practical way to achieve cost efficiencies.

6.8 Supplier Engagement

| Area | Green | Yellow | Red |
|--|-------|--------|------|
| Survey on suppliers to identify environmental features of products | 0% | 32% | 68% |
| Helping them to increase green products | 0% | 0% | 100% |

Suppliers play a crucial role in the overall procurement process, making their engagement with green procurement requirements essential. The connection between suppliers and manufacturers is strong, as manufacturers rely on them to obtain raw materials like cotton and buttons, which influences the extent of green procurement. The concept of green procurement encompasses various aspects from raw materials to the final product. Having experience in specific areas related to this, suppliers are well-informed about a firm's environmental consciousness. Suppliers don't conduct formal investigations to determine if firms produce environmentally friendly goods, but they do communicate and encourage firms to adopt environmental objectives for the future.

Suppliers, both local and foreign, are involved in the procurement process, but many firms don't publicly disclose information. Only external information is made available to the public. Surprisingly, 68 percent of suppliers seem indifferent to their manufacturers' eco-friendly initiatives. Despite firms claiming to implement green procurement, discrepancies exist between their stated standards and actual practices. Nevertheless, the garment industry mostly endeavors to follow green procurement guidelines.

The presence of this gap can be attributed to several reasons. Some suppliers prioritize profit-making over environmental concerns, especially local suppliers. In contrast, foreign suppliers are more environmentally conscious and emphasize the importance of environmentally

friendly practices, significantly impacting green procurement efforts. A focus on maintaining a healthy environment is essential for successful green procurement, as pollution is antithetical to this approach. Another reason for the gap is suppliers' lack of awareness about environmental issues, which hinders their ability to produce eco-friendly products.

6.9 Others

| | |
|--|--|
| Other certificates for Sustainable procurement | <ol style="list-style-type: none"> 1. OEKO-TEX STANDARD100 2. OEKO-TEX STANDARD1000 3. WRAP 4. BSCI 5. EIA 6. Certification from Environment Clearance |
|--|--|

The Hohenstein Institute played a pivotal role in the establishment of the International Association for Research and Testing in the Field of Textile Ecology (OEKO-TEX). The OEKO-TEX Standard 100 constitutes an autonomous testing and certification framework that evaluates textile raw materials, intermediary items, and finished products throughout all phases of manufacturing. In tandem with this certification, the OEKO-TEX Standard 1000, introduced in 1995, is centered around certifying ecologically responsible production facilities within the textile and apparel sector. This standard is designed to assess and certify the production conditions within specific textile manufacturing sites.

Based in the USA, with additional offices in Hong Kong and Bangladesh, as well as representatives in India and Southeast Asia, WRAP is an independent, nonprofit organization comprised of experts in global social compliance. Their primary objective is to advance secure, legal, and ethical manufacturing practices on a global scale through certification and educational initiatives.

BSCI was launched in 2003 as an initiative by the FTA (Foreign Trade Association) to address the growing demand from businesses for transparency and improved working conditions in the global supply chain.

EIA (Environmental Impact Assessment) is the process of evaluating the potential environmental effects of a proposed project and identifying measures to mitigate any adverse impacts. Its primary purpose is to provide decision-makers with valuable information about the likely environmental consequences before finalizing their decisions.

Most firms, approximately 98 percent, possess these certifications. When foreign buyers intend to purchase products from a particular firm, they thoroughly investigate whether the firm holds these certificates. If the firm is certified, the foreign buyers proceed with their orders. This indicates that foreign buyers are more environmentally conscious and considerate when making their purchasing decisions.

CHAPTER SEVEN: CONCLUSIONS AND

RECOMMENDATIONS

7.1 Findings

Green products are typically manufactured with a focus on using fewer natural resources. This can involve reducing energy consumption during the manufacturing process and when they are used. Additionally, these products often contain fewer hazardous or toxic materials. In the garments industry, various green procurement practices were studied, including the sourcing of eco-labeled machinery, energy-efficient equipment, sustainable raw materials, and environmentally friendly packaging. Despite some firms showing commitment to green procurement, there is still a gap between the established green procurement standards and the actual practices within the industry.

One of the main obstacles to wider adoption of sustainable procurement practices is the perception that green products are expensive. While this may be true in some cases, the long-term benefits of these products are often overlooked. Government laws and regulations play a significant role in influencing the readiness of Ready-Made Garment (RMG) companies to adopt green procurement practices. However, there are instances where these measures are not fully enforced. The government should work towards raising awareness among the general public about the consequences of climate change and encourage the adoption of green practices across different industries. The Bangladesh Garment Manufacturers and Exporters Association (BGMEA) should also play a role in promoting the growth of a green economy as a solution to various problems. They can take steps to ensure that all firms adhere to the laws and regulations regarding green procurement.

7.2 Conclusions

Sustainable procurement, also known as sustainable purchasing, involves considering environmental factors alongside price and performance criteria when making purchasing decisions in both public and private sectors. Its main goal is to identify and reduce an

organization's environmental impacts while maximizing resource efficiency. Green products are typically manufactured in a way that uses fewer natural resources and consumes less energy during production and use.

The study revealed that firms, on average, perform about 42% of their functions in a green way. These functions include commitment to implementing green procurement, purchasing eco-labeled machinery, energy-star rated machinery, repairing equipment, buying sustainable raw materials, using recycled plastic products, avoiding harmful chemicals, obtaining certifications like Oeko-Tex 100 and Environment Clearance, adopting bio-based packaging, choosing materials that are safe for human health, reducing consumption through reuse or recycling, and promoting the reuse or recycling of used products. However, there is a 48% gap between the established green procurement standards and the actual practices in the garments industry, indicating the need for new mechanisms to improve green procurement practices.

Some firms suggested that governments and businesses should focus on trends that will shape future markets, such as renewable energy and materials, and the demand for greater safety and security. It is important for both governments and businesses to establish agreed-upon standards defining what constitutes a green product, aligning with international green procurement practices. These measures are not only for economic growth but also for meeting international and local production standards and preserving the environment.

Sustainable procurement practices also offer cost savings for organizations and contribute to improved health and safety in workplaces and communities. To enhance green procurement implementation, existing firms should educate their employees about its benefits and allocate sufficient financial resources.

In summary, Sustainable procurement aims to incorporate environmental considerations into purchasing decisions, leading to resource efficiency, reduced environmental impacts, and cost savings, while businesses and governments must collaborate to establish and adhere to agreed-upon green product standards. Educating employees and allocating financial resources are essential steps to enhance sustainable procurement practices within organizations.

7.3 Recommendations

Based on these findings, the suggested actions are as follows:

1. The government ought to take decisive measures to ensure that all companies adhere to green procurement practices. This approach will not only enhance the production standards of goods but also promote a competitive advantage among firms while contributing to environmental preservation.
2. Company management should prioritize educating their employees about the best green procurement practices suitable for their respective operations.
3. The garments industry's management should allocate sufficient financial resources to facilitate the successful implementation of green procurement practices.
4. It is essential to conduct thorough background checks on suppliers to make informed decisions about reliable partners for efficient business operations.
5. BGMEA should establish regulations pertaining to green procurement practices that all companies must adhere to. This will promote widespread adoption of environmentally responsible approaches throughout the industry.

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Pretty group website: <https://www.prettygroupbd.com/>

Appendix

Questionnaire:

 Green indicates a mandatory specification or a fully implemented initiative.

 Yellow signifies an optional specification or a partially implemented initiative.

 Red signifies a potential specification or initiative that has been identified but has not yet been integrated into the procurement process.

| INITIATIVES | | Green | Yellow | Red | REMARKS |
|---|---|-------|--------|-----|---------|
| <i>Commitment to Green Procurement</i> | | | | | |
| 01 | Standard statement of intent to incorporate environmental factors into procurement. | Green | Yellow | Red | |
| 02 | Complete green procurement best practices guidelines | Green | Yellow | Red | |
| 03 | Green procurement efforts on a voluntary basis | Green | Yellow | Red | |
| 04 | Environmental factors rather than financial factors | Green | Yellow | Red | |
| <i>Machinery Purchase</i> | | | | | |
| 05 | Purchase of machinery with an eco-label | Green | Yellow | Red | |
| 06 | Purchase Energy Star machines | Green | Yellow | Red | |
| 07 | Equipment repair alternative | Green | Yellow | Red | |
| 08 | Buy machines made from recycled material. | Green | Yellow | Red | |
| 09 | Conduct of renewable energy | Green | Yellow | Red | |
| 10 | Certification of Oeko-Tex Standard 1000 | Green | Yellow | Red | |
| <i>Raw Materials</i> | | | | | |
| 11 | Buying of green raw materials (fabric, yarns etc.) | Green | Yellow | Red | |

| | | | | | |
|-----------------------------------|--|-------|--------|-----|--|
| 12 | Recycled plastic items (buttons and others) | Green | Yellow | Red | |
| 13 | Metal parts take on recycled material (zippers, metal buttons etc.) | Green | Yellow | Red | |
| 14 | Buying of bio-based materials | Green | Yellow | Red | |
| 15 | Chemicals aren't pernicious to human health or environment | Green | Yellow | Red | |
| 16 | Certification of Oeko-Tex Standard 100 | Green | Yellow | Red | |
| 17 | Environment Clearance from Ministry of Environment | Green | Yellow | Red | |
| Packaging and Distribution | | | | | |
| 18 | Apply of bio-based packaging | Green | Yellow | Red | |
| 19 | Cartons are made from recycled cardboard | Green | Yellow | Red | |
| 20 | Re-use cardboard cartons to ship products | Green | Yellow | Red | |
| Operations | | | | | |
| 21 | Purchase materials that are not harmful to human health | Green | Yellow | Red | |
| 22 | Reduce consumption through Reuse or Recycle | Green | Yellow | Red | |
| Office Components | | | | | |
| 23 | Purchase of recycled paper | Green | Yellow | Red | |
| 24 | Use of bio-based materials (inks, carpets etc.) | Green | Yellow | Red | |
| Disposal | | | | | |
| 25 | Purchase of product that generate no or less waste | Green | Yellow | Red | |
| 26 | Reuse or recycle the used products | Green | Yellow | Red | |
| Supplier Engagement | | | | | |
| 27 | Supplier identification survey product environmental characteristics | Green | Yellow | Red | |
| 28 | Helping them to increase green products | Green | Yellow | Red | |
| Others | | | | | |
| 29 | Other certificates for green procurement | | | | |